Guofang Wan
Dianne M. Gut
*Editors*

Explorations of Educational Purpose 13

# Bringing Schools into the 21st Century

Springer

Bringing Schools into the 21st Century

# EXPLORATIONS OF EDUCATIONAL PURPOSE

**Volume 13**



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In today's dominant modes of pedagogy, questions about issues of race, class, gender, sexuality, colonialism, religion, and other social dynamics are rarely asked. Questions about the social spaces where pedagogy takes place – in schools, media, and corporate think tanks – are not raised. And they need to be.

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# Bringing Schools into the 21st Century

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ISBN 978-94-007-0267-7 e-ISBN 978-94-007-0268-4
DOI 10.1007/978-94-007-0268-4
Springer Dordrecht Heidelberg London New York

*To my 100-year old grandparents, Bohua and Jiyun, who instilled in me the values and principles of life. It is they to whom this book is dedicated by Guofang Wan.*

*To all the students, preservice teachers, and educators I have and will have the privilege to work with. You challenge me to be a lifelong learner, striving constantly to learn more and do more to ensure all students are prepared for their futures. (Dianne Gut)*

# Acknowledgements

This book could not have been written without the help of many people. First, my deep appreciation goes to the authors who have contributed to this book by sharing their bold thinking and innovative stories. They are a virtual team spanning across the world but with the same belief that time has changed and schools need to follow. Here I especially want to remember Dr. Joe Kincheloe, the late series editor of the book and thank him for his personal encouragement and unfailing support over the years. I thank my family, my husband, Hong, and daughter, Missy, for putting up with many weekends that were taken up with my research and work on the manuscripts, as well as for a few canceled vacations without complaints. (Guofang Wan)

I would like to acknowledge the timely contribution of Mr. Scott Sheeler who provided assistance with the content analysis of the ORC lesson plans and all the preservice teachers who recognized the importance of incorporating 21st century skills first in their content lesson plans and now in their teaching. I would like to thank my family and friends for their ongoing support and understanding, as I take on each new project and challenge. A special thank you goes to Zip for his quiet understanding and unquestioning and unending support. His unwavering belief in me gives me confidence that all can and will get done. (Dianne Gut)

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**Rosalyn Anstine Templeton** is Provost and Vice Chancellor for Academic Affairs at Montana State University-Northern. She has taught and held administrative positions at Willamette, Bradley, Ferris State Universities and Marshall University before joining Montana State University-Northern. Her research focuses on learning environments in higher education and for individuals at risk of failure in school, home, or community environments. A special emphasis of her research deals with using Life Space Crisis Intervention (LSCI) strategies to reduce violence in students.

**Mark Treadwell** is an independent education consultant and director of Dataview Ltd in New Zealand. He has been keynote at numerous international, national, and regional conferences. His recently released books in the "Whatever!" series (2008–2009) include "Whatever: The Revolution of School v2.0", "Whatever Next! The Global, Conceptual Curriculum," "Whatever: Were We Thinking?," and "Whatever: Were Parents Thinking?" As director/part owner of Dataview, a hi-tech company based north of Auckland, NZ, he is involved in several New Zealand Ministry of Education projects. He is a member of the Ministry of Education New Zealand Curriculum Review group and a curriculum commentator for the New Zealand Ministry of Education.

**Guofang Wan** is Professor of Education and Associate Director for the Stevens Literacy Center at The Patton College of Education and Human Services at Ohio University. Most recently, she was recognized with the Margaret B. Lindsey Award for Distinguished Research in Teacher Education by American Association for Colleges of Teacher Education. The National Council of Teachers of English recognized her exemplary work with the Fourth Annual Media Literacy Award in 2009. Her research focuses on media literacy education, effective teaching strategies, and education of diverse students. She has authored several books, developed curriculum and published many articles in these areas.

**John Watson** is founder of Evergreen Consulting Associates that specializes in K-12 online education. He has helped many educational organizations launch their online programs and was instrumental in developing the company's K-12 strategy. John and Evergreen's work has been cited in the New York Times, Education Week, and eSchool News, and he has appeared on NBC Nightly News. He is the lead author of *Keeping Pace with K12 Online Learning*, the series *Promising Practices in Online Education*, six white papers written for the International Association for K-12 Online Learning (iNACOL), and numerous other reports and policy papers.

# Chapter 1
# Introduction

**Guofang Wan and Dianne M. Gut**

*The most dangerous experiment we can conduct with our children is to keep schooling the same at a time when every other aspect of our society is dramatically changing.*
Chris Dede, written statement to the PCST panel, 1997

*The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.*
Alvin Toffler

*Teaching our high school students 21st Century skills is no longer an option, it is a necessity*
—Steven L. Paine, West Virginia Superintendent of Schools

Today's students live in a world that is extremely fast-paced, constantly changing, increasingly culturally diverse, technologically driven, and media-saturated. All this requires a fresh set of responses from education. However, many of our schools continue to deliver a 20th century, scientific-management, factory-model of education (Shaw, 2004). We argue that education needs to be redesigned, organized, and managed with a relentless focus on student success in postsecondary education, the workplace, and community life of the 21st century.

A nationwide poll of registered voters reveals that a majority of Americans report that the kind of skills students need to be prepared for the jobs of the 21st century are different from those needed 20 years ago (the Partnership for 21st Century Skills, 2007). An extensive review of the literature about 21st century skills suggests that educational decision makers must acknowledge that the academics of yesterday are no longer sufficient for today (Lemke, Coughlin, Thadani, & Martin, 2003). The New Commission on the Skills of American Workforce (2006) concludes that we need to bring what we teach and how we teach into the 21st century.

There is growing consensus among various stakeholders, including the general public that American high schools are not adequately preparing students for

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_1,

success in the evolving 21st century (Partnership for 21st Century Skills, 2006; Wagner, 2009). Fundamental reform of education is called for by people at all levels to make the education system more robust, rigorous, and relevant for students, and to better prepare them to live, learn, work, and serve the public in a digital and global society. Skills such as global literacy, problem solving, innovation, and creativity have become critical in today's increasingly interconnected workforce and society (NCREL/Metiri, 2002; Partnership for 21st Century Skills, 2007). Currently, students need more than basic skills to compete in a global economy. Apart from high level competence in the traditional academic disciplines, students need to know more about the world, they need to learn to think outside the box, access and strategically use new sources of information, and develop good people skills (Wallis & Steptoe, 2006). Friedman (2007) also calls for action from nations to adapt to the challenging flattened world if they want to remain competitive. His call for change stems from what has been termed the *death of distance,* first driven by aviation and then by the Internet. The United States is entering a global era in which Americans will have to compete for jobs in a global marketplace—not only with their neighbors down the street, but with highly motivated, highly capable, increasingly well-educated individuals from around the world (Augustine, 2007).

This book addresses the topic of responding to the shift and moving the current educational system into the 21st century. It explores issues related to "the impact of societal shifts on education," "efforts from various levels to bring schools into the 21st century," "identifying 21st century skills," "reforming the curriculum," "creating alternative models of schooling," "innovative use of technology in education," and many others. It addresses questions like: Should schools/education systems adapt to better meet the needs of tomorrow's world and how should this be accomplished? How can society better prepare students for a changing and challenging modern world? What skills do students need to lead successful lives and become productive citizens in the 21st century? How can educators create learning environments that are relevant and meaningful for digital natives? How can/should the school curriculum be made more rigorous to meet the needs of the 21st century?

This book encourages readers to transcend the limits of their own educational experience, to think beyond familiar notions of schooling, instruction and curriculum, to consider how to best structure learning so that it will benefit future generations. We hope to fuel a wider debate on an issue that can no longer be ignored. The book encourages a deeper analysis of the existing education system, and offers practical insights into future directions focused on preparing students with 21st century skills.

The contributors to this book are leaders, pioneers, and advocates in this reform movement representing academia, government, state, private agencies, and school districts. They have been solicited because of the important role they have played and will continue to play in reframing education to meet the needs of the 21st century. This book has a U.S. educational focus but certainly presents international implications with contributions from New Zealand author and international curriculum studies.

This book is written for anyone who cares about the future of education and wishes to participate in the redesign of schooling for the next generation of learners. This is a global issue that goes beyond the boundaries of nations. It can be adopted as a textbook for undergraduate and graduate courses in teacher education, educational foundations, curriculum studies, and educational leadership. It will serve as a good reference book for educational administrators, government and state policy makers, community leaders, teachers, and parents concerned about the future education of children.

The book contains eleven chapters that range from global perspectives to individual responses—from a macro view to the micro-systems involved in the shift, from the theoretical to the practical, and from the why to the how.

Treadwell's work in New Zealand provides the global perspective to begin our discussion and has served as a leader in this international conversation. He argues in Chapter 2 that globally the web-based learning/communication environment is causing a paradigm shift that will have a profound effect on education for the next 20–50 years. His heralding of a second Renaissance period, the "Nouvelle Comprehension" [The New Understanding], provides new opportunities for educators and as he proposes, "ushers in a new paradigm around teaching and learning, setting the platform for School v2.0." The idea that more people will be able to center their workplace on their passion, what they are naturally good at, and what they would do even if they were not being paid is an appealing prospect that encourages creativity, productivity, and commitment.

In Chapter 3, Kay and Greenhill provide a framework outlining the 21st century themes and skills that, when imbedded in the core academic content, will prepare learners for success in the 21st century economy and workplace. The Partnership provides suggestions and support for states, districts, and schools to assist in planning a comprehensive approach for reforming their educational programming to incorporate 21st century learning principles and skills.

In Chapter 4, Templeton, Huffman, and Johnson profile national efforts in response to international pressures of political, economic, cultural, demographic, technological, linguistic, and environmental globalization. They highlight the accomplishments of the State of West Virginia and the model it provides for state-level reforms. Implications of "the shift" for higher education, and in particular teacher education, are explored by Johnson and Templeton in Chapter 6 as they highlight reform efforts being led by successful teacher preparation programs in Maine, Massachusetts, North Carolina, North Dakota, West Virginia, and Wisconsin.

Using Tyler's (1949) model of curriculum development and change, in Chapter 5 Wan presents the findings from a multiple stakeholder needs-assessment on American school curriculum change; recognizes the need for curriculum change to address the priorities of 21st century education; and identifies specific curricular areas in need of change by taking into consideration the needs of society, students, and subject matter.

After providing evidence of preservice teachers' ability to incorporate 21st century skills in their lesson planning and findings from an analysis of the inclusion

of 21st century themes and skills in content area lessons available from an online data base of best practice, in Chapter 7 Gut suggests several strategies that can be adopted by teachers who are ready to begin incorporating 21st century skills into their content area instruction. She provides a plethora of resources for educators looking to expand their students' skills, and create their own activities and lessons that encourage and utilize 21st century themes and skills imbedded in content area instruction.

Moving to a more specific focus on one 21st century skill, in Chapter 8 Collins, Doyon, McAuley, and Quijada from the New Mexico Media Literacy project afford a comprehensive look at media literacy from its early beginnings to its global impact and inclusion in the curriculum, underscoring the importance of teaching media literacy to today's students. In Chapter 9, Franklin follows with an examination of how mobile technologies can interface with Web 2.0 virtual environments and offers suggestions for how instruction can be made relevant to real-world activities in new and exciting ways.

In Chapter 10, an alternative approach to traditional schooling is proposed by Watson and Johnson, two K-12 online education leaders in the United States, as they describe how to deliver high quality 21st century education through the Internet to students across the United States. Online alternative schooling addresses the needs of students in rural and inner-city schools, affording opportunities to those with previously limited access.

The final chapter tells the story of how one college of education is adapting its teacher training programs to meet the unique needs of the region it serves within the 21st century context. The collaborative efforts between the region and the college provide a model of reform for teacher education framed by regional, local, community, and businesses needs for the 21st century workforce.

It is abundantly clear that the authors included in this book have made significant contributions and have paved the way for much of the current discussion regarding 21st century teaching and learning. Their insights and recommendations give guidance to all stakeholders who recognize the need to respond to the "shift" that has occurred and those seeking ideas for how to assist schools in their move into the 21st century, thereby providing the education necessary for our 21st century citizens, guaranteeing their success now and in the future.

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# Chapter 2
# Whatever Happened?

**Mark Treadwell**

## Introduction

Global communication and knowledge sharing capabilities made possible via the internet have resulted in the world being on the cusp of a second Renaissance period; "**Nouvelle Compréhension**" [The New Understanding]. The capability of being able to instantly share knowledge and understanding with peers around the world propels the potential for creativity and innovation to unheard of levels. With macro paradigm shifts on this scale, there is always turbulence and upheaval as old systems give way to new ones and each social structure reorganizes and reforms itself into the required new structures. This includes political, sociological, economic, religious, scientific and technological, business, legal and education systems. The evidence for this upheaval is everywhere and is evident through casual observation and newspaper reports every day, and what we are seeing now is just the beginning. Education and more importantly, learning, sits at the pivot point of this paradigm shift. The Paradigm Shift, initiated by the Internet, coupled with fundamental shifts in our ability to access and process knowledge cheaply and effectively, provides the ability to collaborate within local, regional, national, and international contexts.

The ability to publish our ideas to a global audience and our capacity to communicate with anyone, anywhere, anytime, presents educators with the capability to radically change their teaching and learning practices. The new focus of education is on an outcome of understanding and wisdom rather than the historical end-point of knowing and remembering. "Nouvelle Compréhension." The second Renaissance will not be confined to several tens of thousands of wealthy people as in the first historical European Renaissance but rather it will be global and will include and affect billions of people. For those countries that adopt the paradigm shift "Nouvelle Compréhension" will have a profound effect on the education of learners at every level. If educators can transition their practices to focus on teaching for understanding and lifelong learning, these 21st century learners will be well prepared for the

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_2,

"real world" they will enter, live, and work in. Those countries that make the necessary infrastructure, teaching, and learning changes and facilitate environments that foster creativity and innovation, will provide the world with the creative workforce that will power economies and societies for the next 20–50 years.

Schools must now focus on innovation and setting the highest of standards, continually pushing the limits and adapting to the constantly changing world we live in. This will always involve a degree of risk but the far greater risk is to do nothing.

In order to achieve lifelong learning capability for learners, educators need to form new understandings around curriculum, assessment and e-learning environments and weld these into a framework that we can manage and implement over a number of years. In this chapter the author will introduce this paradigm shift and the resulting second renaissance and demonstrate how each of the elements relate to each other in order to provide a seamless new paradigm in teaching and learning.

## Paradigm Shifts

Paradigm shifts have entered our lexicon of everyday speech, and while the initial idea was developed by Joel Barker, we now know that paradigm shifts can happen at a number of different levels. Micro paradigm shifts are changes in how we perceive and apply ideas in a singular context such as filmmaking, political systems, health breakthroughs, or new technologies such as the Internet or new materials. Macro paradigm shifts are far rarer and concurrently affect all societal systems. A single new idea may set off a micro paradigm shift, but it takes the simultaneous development of a wave of new ideas that resonate to develop a macro paradigm shift. The last macro paradigm shift gave rise to the Renaissance period 500 years ago.

Macro paradigm shifts affect every social, political, technological, financial, environmental, artistic, and business institution. Metaphorically speaking, these institutional "playing cards" are put back in the pack, the deck is reshuffled, and the cards are re-dealt to the players with their "luck" dependent on their ability to adapt and make use of creative innovation. Currently, the world is experiencing the largest macro paradigm shift of all time, one that will dwarf the Renaissance period in both the number of people involved and the extent and implications of ideas generated. It will impact every known institution on a scale humankind has never experienced. The industrial revolution changed workplaces through the advent of new technological systems but left many of the other (financial, sociological, environmental, political, and artistic) systems relatively untouched. Accordingly, the industrial revolution was a micro paradigm shift.

Generally speaking, a paradigm shift follows a developmental cycle and provides the *potential* for increased efficiency and effectiveness within each of the contributing systems/institutions. Human nature is not adorned with an abundance of logical, sensible, and rational behaviors. Thankfully, humans have a tendency to be swayed by passion and non-rational thinking! The upshot is that even when faced with the opportunity to increase our efficiency and effectiveness we may not necessarily act on the opportunity due to fears, uncertainty, and lack of political risk taking. Our

passionate and non-rational nature makes us thoroughly entertaining, wonderful company, totally frustrating, and in the same moment impossible to live with and without. However, when it comes to paradigm shifts, human nature can either come to the rescue in our search for the future or cause us to seek the perceived security of the past.

Paradigm shifts are driven by the development of new ideas stimulated by new technologies, political processes, social pressures, and changes in societal values and beliefs that prompt the ability to think, learn, and develop creative and innovative products, systems, and environments. The sigmoid curve (Fig. 2.1) represents the generic potential increases in effectiveness of *learning* and the development of new ideas that change the way we learn. Potential effectiveness gains initially track slowly followed by a rapid rate of change indicated by the increasing slope of the line (calculus 101). After an initial burst of new ideas about how we learn at the beginning of the Renaissance (spread over almost 150 years), the rate of change decreased quickly and subsequently plateaued. The last 40 years of education appear to have changed dramatically, but surprisingly, the overall improvement in reading, writing, mathematics, and science test scores have been less than 0.5% as measured by The International Center for Education Statistics. This does not mean new education ideas were not being developed and deployed, but rather they did not significantly increase the effectiveness or the efficiency of the learning processes that we measured!

The period of rapid rate change that drove a reconceptualization of ideas about learning is termed the Renaissance period. The Renaissance period represented a number of micro paradigm shifts that resonated in order to develop a macro

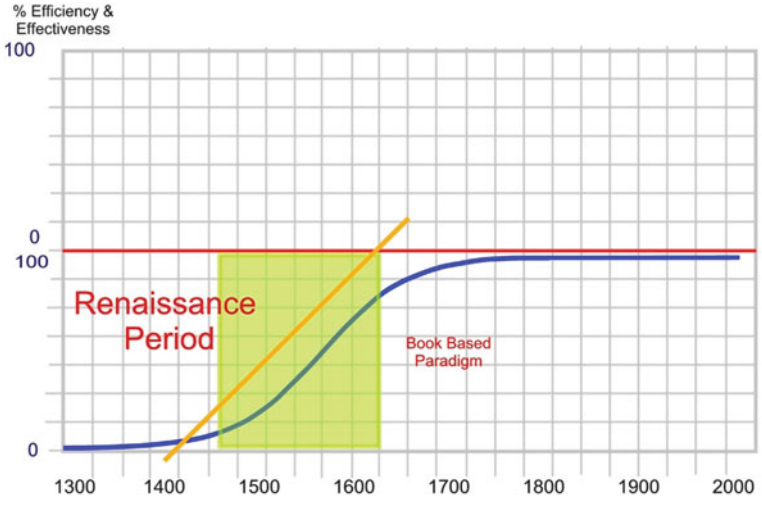


**Fig. 2.1** The sigmoid curve

paradigm shift around how learning happened. The key micro paradigm shifts included the following:

- the invention of the printing press: lowered the cost and increased the portability of knowledge via the technology of the printed book
- the dramatic increase in trade: led to new ideas around learning brought from other cultures and provided significant increases in wealth outside of traditional monarchies and political systems broadening the wealth base
- the reformation: allowed people to think thoughts and discuss ideas outside of the canonical knowledge that had been previously decreed by "the church" as the only true knowledge
- people being paid to think: wealthy monarchies, traders, and entrepreneurs were paying people just to think about new ideas across the arts, humanities, sciences, and technologies
- drift to the city: cities drew people into closer contact allowing for collaboration, a higher rate of diffusion and acceptance of new ideas, and the eventual formalization of learning.

Each of these factors and others resonated to bring about the Renaissance period. Following the Renaissance, a variety of sociological and political events unfolded that caused countries to look inwardly, and the rate of change quickly died off. As mentioned earlier, the Industrial Revolution caused another micro paradigm shift as did the invention of the microcomputer; however, throughout both of these micro shifts most institutional systems continued in their present form. The key to the Renaissance was the underlying increase in effectiveness and efficiency of learning, which drove a transformation in all societal structures.

Generally speaking, when one paradigm shift plateaus for some time (as it approaches its upper limit of effectiveness and efficiency), a new macro paradigm shift emerges, driven by a new set of resonant micro paradigm shifts. In late 1999, a new macro paradigm shift was predicted to emerge in 2005 driven by the technology of the Internet. Other factors would contribute, but the Internet would be the primary initiator of the new macro paradigm. It was also predicted that this paradigm shift would mature by 2020. What this means is that by 2020 the potential exists for any country/citizen to adopt the underlying drivers of this macro paradigm shift and benefit from them (Fig. 2.2).

In the new paradigm shift, the five factors driving the first Renaissance period are once again at play, but on a scale that would dwarf what happened in the 14th and 15th centuries. Another difference is this shift would not take place in an exclusively European context, but rather would be played out within a global context. Furthermore, the ruling elite would not be controlling these processes as they did in the first Renaissance period; in this macro paradigm shift egalitarianism rules.

Macro paradigm shifts on this scale are underpinned by a fundamental technological driver, and in this new paradigm, the driving technology is the Internet, supported by a cast of micro, but equally critical, drivers which also underpinned the first Renaissance. The new drivers are as follows:

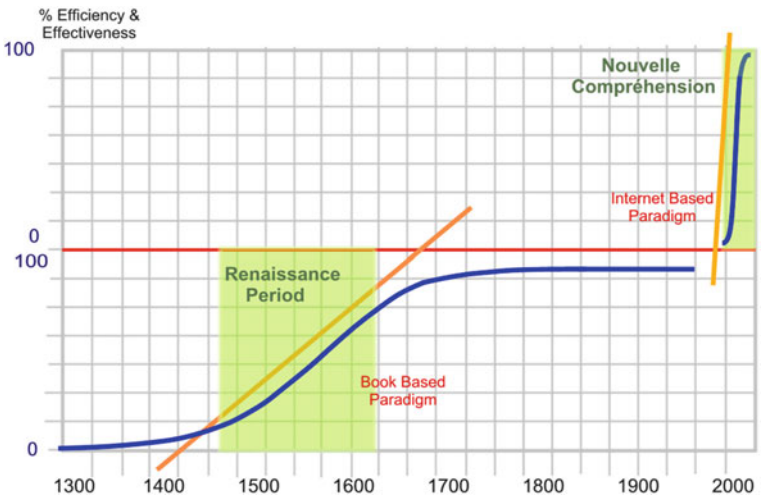


**Fig. 2.2** New paradigm shift 2005–2020

- The invention and the *widespread adoption of the Internet*: the Internet is a combination of vast amounts of information, coupled with research, communication, collaboration, and publishing tools, accompanied by a significant reduction in the costs of these services while simultaneously, significantly increasing efficiency and effectiveness.
- The *dramatic increase in trade*: the reduction in trade barriers and increased efficiency and effectiveness of trade. The Achilles heel of this dramatic upswing is reliance on a limited resource—oil, and finding a replacement is now a global imperative.
- The ability to *publish to Anyone, Anywhere*, *and at Anytime* through blogging, e-mail, social networking sites, sharing photographs online, YouTube videos, and iTunes podcasts . . . Ideas can now be published to global audiences at almost no cost.
- People being *paid to think*: we have more researchers now than at any point in history; who have better and easier access to vast online multimedia resources.
- The drift to the city: large cities (greater than 0.5 million inhabitants) accommodate 75% of all the people on the planet. People are able to *collaborate with Anyone, Anywhere,* and *at Anytime* in order to share, brainstorm, and publish their ideas in very short time frames.

This paradigm shift will have an effect on every institutional structure across the globe, and education is the pivotal point about which this paradigm shift will unfurl. In fact, successful education systems should (and probably will) become the vector that initiates the full emergence of a second Renaissance period: "Nouvelle Compréhension," or the new understanding. In order for the second paradigm shift to take place, a reconceptualization of how humankind thinks and learns must occur.

If education is to be the vector in this dramatic unfolding of the new paradigm, then we have to reevaluate the purpose and scope of education systems.

During the latter 300 years of the previous paradigm shift, the rate of change within education dropped off dramatically and the purpose of education became "knowing stuff" and reproducing that information in summative testing environments. The education race has become focused on who can remember the most as opposed to who can develop, debate, create, and innovate new ideas, and take the risk of presenting those ideas with the aim of expanding and developing them further. To accomplish this, the process we often flippantly refer to as "thinking" must be understood.

## The Personalized Curriculum

Personalized learning has become a common catchphrase, but many have interpreted it as individualized learning; however, that interpretation should be questioned. In current education systems, *what* [knowledge] needs to be learned is highlighted, and the beginning of the learner's journey, followed by *how* [methodology] this should be taught. From there the *why* [purpose] this knowledge needs to be learned is sometimes justified, and finally *who* [connections] will be learning what needs to be learned is considered (Parata, 2006, personal communication). Because the *what* and the *why* have already been decided, the question of *who* is automatically reduced to a collective of all the learners present in classrooms.

Personalized learning reverses this sequence and begins with the personal [connections], i.e., *who* is in front of us, *what* their learning needs are, and *how* their capabilities, gifts, and talents can be best amplified and supported. What the learners already understand must be considered in order to chart their future learning. The first task is to connect with learners, to find out who they are, and to understand their worldview and past learning achievements. Next is to move from the *who* into the *why* and see how the learners can meet the purpose of 'why they are in school'. To understand our learners, and why they have been given into our care, we must access and interpret the data that accompanies them. This data should provide insights into their past experiences which in turn generates a formative framework for how to achieve [methodology] the purpose of the school—the *how*. The final element to be considered is *what* knowledge the learners need to learn so that they can build knowledge into understanding and apply it across a range of increasingly challenging contexts.

Building understanding requires discipline and perseverance, as well as the ability to interrogate, manipulate, and apply knowledge through inquiry-learning processes. Inquiry learning allows the learner to develop the required understanding and apply it utilizing innovative, creative solutions and applications. Inquiry relies on both the learner and the educator being able to ask clever, rich, open, and higher order thinking questions to drive the interrogation of the knowledge and build the understanding that is required. In this process, the learner must be provided with as much opportunity as possible to work collaboratively within rich information and communication environments, challenging them to be innovative and creative


**Fig. 2.3** Understanding

in applying their ideas within their local, regional, national, and global communities (Fig. 2.3).

In order to be more efficient and effective in providing learning opportunities, educators must be strategic about the conceptual level of the work presented to learners. Too often learners are expected to understand concepts that are "out of their depth" in terms of their cognitive ability to understand these ideas. Providing appropriate concepts requires educators to have a much better understanding of "who is in the classroom" and determining their actual capacity for learning. Educators need access to accurate and reliable data in order to accomplish these goals.

To understand *who* is in front of them, educators need to know what learners know, what they understand, what competencies they have (and at what level), and their thinking in regards to principles and character. Accurate and reliable data comes in several forms:

- *Diagnostic Assessment*: provides an indication of a learner's aptitude and preparedness for a unit or program of study and identifies possible learning gaps that require remediation
- *Formative Assessment*: provides learners with feedback on progress and informs them on how they may develop their present knowledge and understanding
- *Summative Assessment*: provides a relative measure of achievement regarding a learner's performance in relation to the intended learning outcomes of the unit or program of study
- *Reflective Assessment*: by reflecting on their work and presenting those reflections to an audience, learners carry out a reflective inquiry into how they engage their thinking and learning processes, competencies, principles, and character

Presently the dominant assessment in most education systems is summative. Unfortunately, on its own, this approach provides historical data about what happened in the past and is not a good indication of what could or should happen next. It

also does not require learners to take ownership of their own learning, find their own learning solutions, or work in partnership with educators to find necessary solutions (where practical). Most schools already have summative data processes in place, but most have done little about making sure that data travels with the learner as they move from class to class and school to school. All schools should be implementing integrated online Student Management Systems and Learning Management Systems to manage this task.

Worldwide, several major initiatives are developing online diagnostic/formative data tools. In New Zealand, the University of Auckland has been developing a powerful diagnostic/formative tool known as AsTTle (*A*ssessment *T*ools for *T*eaching and *L*earning) (Hattie, 2008). AsTTle has been developed by a specialist team and is now an option for schools to use within New Zealand. It is hoped that most schools will take this opportunity over the next 2–3 years and start to use this diagnostic and summative data toolkit to better inform all stakeholders of each learners' learning process and how they can progress further.

The use of online electronic portfolios within Learning Management Systems (LMS) (Knowledge Net, n.d.) has been tested over the last few years by a number of countries. In this process, the learners reflect on their progress in each subject area and in each of the five New Zealand competencies (OECD, 2006; Eurydice, 2002), where the underlying concepts for the development of principles and character are embedded. Learners record personal reflections in an online journal within the LMS, and these are made available to the parents via an online gateway/portal. The ability to reflect on their own work prompts learners to think about how their learning is progressing and how they can continue to improve. Reflective portfolios also encourage learners to take greater control of their learning, developing the capacity to become a lifelong learner. The new purpose of education is to develop a capacity for lifelong learning, understand the process, and access the tools and resources to make it efficient and effective.

Before countries race off and start developing discrete individual systems to address each of these areas of assessment, strategic planning for how the data in each of these systems will be made interoperable and be made viewable by a range of different stakeholders in a format that is meaningful to them must occur. The stakeholders include the learners, parents, educators, administrators, and education policy makers/planners. Making each assessment system interoperable means that data can be viewed via a single online access point by a number of different stakeholders. The goal of the interoperability process is not to form league tables to compare one school against the other, as that forces schools into a competition for the best test score rather than provide the best learning opportunities for each learner. Data needs to be disaggregated so that the "league table" mentality does not creep into and take over the school system, becoming its new purpose.

There is value in learners being able to be compared to the national norm, but there is no value in comparing one school to another. Disaggregated data would provide all necessary data for schools to improve the teaching and learning programs. As the learning of each learner improves, so does the effectiveness of the entire school. Interoperability is critical. Unless stakeholders can see a "merged data set"

that is meaningful to them, the whole process is a waste of time. Likewise, if the data cannot be entered easily, and if the data and feedback and feed forward commentaries cannot be easily entered by different stakeholders, it becomes a waste of time. It is very important that an additional workload is not placed on educators. In almost every country in the world, educators are completely overwhelmed and the job of "teaching" has become unsustainable.

Michael Fullan (2006) describes three aspects that contribute toward a critical "breakthrough" required for educators to be as efficient and effective as possible. He believes that the moral purpose of school can only be achieved if three aspects are in place and in balance:

- *Personalization* of the education system
- *Precision* in the use of assessment to drive instruction
- *Professional learning* (focused and ongoing) for educators

The driver is the use of powerful and effective assessment techniques managed within intuitive Learning Management Systems. According to Fullan (2006), schools need to get assessment for learning out of the basement, cleaning it up, and creatively recombining it with personalization and continuous professional learning.

Many countries are attempting to provide every school with a Learning Management System to manage the process of effective assessment without realizing that each state or jurisdiction must work collaboratively to ensure that the data collected can follow the individual learner throughout their compulsory education through post-compulsory and workplace-learning programs. Not surprisingly, the most appropriate data repository and transport system is the Internet.

Classrooms should be full of young learners who are increasingly managing and leading their own learning journey (Davey, 2008, personal communication). Learning is a personal journey. If someone else plans the journey, the journey may not be appropriate or you may not enjoy the experience, but if you are involved in planning it yourself then you have a vested interest in making it work. This personal journey requires educators to acknowledge the uniqueness of the individuals they will assist on their journey.

## Thinking

Three distinct thinking approaches and brain processes (Treadwell, 2008a) are proposed for learning anything. What follows is a synthesis of ideas from researchers around the world. The science is developing fast and the jury is yet to pass a verdict, but this new model helps explain many human traits from our perchance for habit-forming activities to savant behavior.

1. *We can learn via rote*. This takes place via processes utilizing the genetic material in the nuclei of the neurons in our brains, and this is the basis of Epigenetics,

a characteristic resulting from changes in a chromosome without altering the DNA sequence. Molecules called histones allow this genetic material to expand, replicate some of this code, and host new memories. This happens by "trapping" chemicals produced as a response to an event, onto the surface the DNA in the nucleus. This only happens when we engage in repetitive practices, which can be tedious, but sometimes this type of learning is the only option. The upside of this process is that rote learning is relatively easy to teach, relies on current technology such as textbooks and summative assessments. Unfortunately memorization is a very inefficient learning process.

Gene expression is, after all, critical to memory formation. As a person learns and as memory takes shape, ebbs and flows in the activity of neurons incite the synthesis of new proteins, which help to cement or create connections between nerve cells. In this process, genes are first transcribed into RNA, which is then translated into protein .... Certain chemical changes to DNA or histones can loosen or tighten this chromosome structure and thereby enable or thwart the expression of memory genes (Levine, 2008).

2. *We can learn through the creation of conceptual frameworks.* It is being proposed that the formation of concepts happens between/around the synaptic regions of neurons. Crowded around the synaptic regions are the dominant group of brain cells called astrocytes, accounting for approximately 76% of all cells in the brain. In this hypothesis, astrocytes are constantly "looking" for patterns in neural activity and are able to map these patterns and subsequently turn them into nonconscious processes freeing up the neurons to engage in other conscious thinking processes while the nonconscious processes manage "predictable thinking processes." The capacity to automate predictable events increases our thinking efficiency as it is not possible to simultaneously think about more than one idea at a time, so by automating process it frees us up to consciously "think" about other ideas.

Astrocytes are covered with hormone receptors that are smaller and less complex than neurons but what they lack in complexity they make up in sheer numbers, outnumbering neurons 10:1 in the brain. During the thinking process, neural activity produces hormones around the synaptic regions. The stronger the hormone response registered by the astrocytes, the more interest the astrocytes show in what is happening around that neural pathway. In order to "map" a particular neural pathway, the existing astrocytes require additional astrocytes to complete the map. To accomplish this, astrocytes send chemical messengers to the gyrus or the cerebellum to activate stem cells located there. The stem cells return to the required location and develop into astrocytes in a short space of time (hours-days). The implication is that providing tasks requiring the forming of conceptual patterns, increases the brain's "intelligence." The more concepts available, the greater the brain's capacity to link them in new and unique ways.

New astrocytes allow a neural sequence to be mapped and subsequently managed and run by the astrocytes. Once mapped, astrocytes can "run" the neural sequence once the appropriate trigger is activated, allowing the neural sequence to be run nonconsciously by the astrocytes, freeing the neurons to focus on a conscious thinking

task. Astrocytic sequences are based on being able to predict what will happen and trigger neural processes automatically. The illusion of multitasking is explained by understanding that most thinking is being processed by astrocytes in a nonconscious manner. Examples of astrocytic assisted thinking include driving a car, sitting down, mixing ingredients when baking—all are predictable (Treadwell, 2008) and hence can be managed by the astrocytes without "conscious thinking processes" being required. Over 80% of our daily thinking activities are carried out in this way.

By predicting a series of neural connections and managing them in a nonconscious manner, astrocytes are able to replicate and enable active neural sequences (thinking patterns) that have been learned. Once the astrocytes complete the mapping process, an alternative way of processing ideas becomes available. Astrocytes can predict what will happen when a particular trigger is activated and initiate a nonconscious firing of the neurons mimicking conscious "thinking" processes. This capacity dramatically improves the efficiency and effectiveness of the human brain and provides considerable intellectual capacity in the conceptual realm.

For example, when walking into a room and sitting down, one does not consciously think about the process of sitting down. Once the decision is made to sit down (the trigger is activated), the astrocytes that mapped this pattern long ago engage and predict how the sitting down process should proceed. By releasing the neurons from having to map this predictable task, they are available for other conscious thinking processes and this dramatically increases the efficiency of the brain.

As one ages, the brain maps more and more patterns forming more and more ideas or concepts. This process is so efficient that a conversation can be carried on with someone (that requires conscious thinking via active neural management) while simultaneously driving a car. Although incredibly complex, the process of driving is largely predictable and can be managed by the astrocytes.

If people had to think about sitting down, they would not be able to carry on a conversation simultaneously. This is the case for children younger than 2 years old, who have yet to map the pattern of sitting down; they can engage in the sitting down process or speaking, but not both.

Astrocytes can only predict what should happen. If any of the predictions do not come true, they quickly release a hormone into the synaptic region that has the desired effect of quickly reengaging conscious processes to deal with the unpredicted outcome. During the preadolescence stage (8–13 years old), one experiences such an event and will probably "remember" this event. For example, you went to sit down on a chair, and as you were sitting down the astrocytes were processing when the seat should actually make contact with your body. In this particular case, the seat of the chair was a few millimeters lower than your astrocytes' prediction (due to your previous cumulative experiences of sitting down). Because the prediction did not come true, the astrocytes released hormones into your synaptic regions and you felt "startled" and quickly engaged conscious thinking processes to work out what was going on. The same experience also modifies the astrocytic expectation of how low a seat can be, refining the learned neural process. Going to sit down on a toilet seat when the seat is up has the same startling result (learning lesson for men here!).

The advantage of concepts, if learned appropriately, is that they are context free, allowing them to be applied to a yet un-experienced context. With rote learning, the learning is specific to a particular context/process and generally cannot be applied to another context. In this way, conceptual learning is adaptive, whereas rote learning is context specific and hence limited in application.

3. *Brain Waves*. The advantage of astrocytes mapping concepts is that concept maps can be quickly recalled and linked to other related concept maps. The only contender that seems reasonable for the role of linking concepts to other relevant concepts is the brain waves. Brain waves have always been seen as a by-product of thinking, but it is possible that the neurons/astrocytes might generate particular brain wave frequencies while setting up concept maps. The astrocytes may generate specific frequencies via interaction with the neurons and use them to resonate with other similar or slightly different concept maps.

It is possible that this is how we are able to synthesize a range of different concepts into a single overarching concept framework in an extremely short space of time. Thinking is the process whereby neurons are actively forced to produce a particular frequency in order to bring slightly different ideas together to form totally new ideas. If this is true, creativity and capacity for innovation could be substantially increased by learning more concepts and having them mapped by the astrocytes.

It is important not to demean the role of rote learning. Not everything needing to be learned has a conceptual base to it. One of the intriguing questions 10 years ago was "why does learning to read and write take so long?" The answer is remarkably straightforward. Learning to read and write is a largely rote-learned process because there is no overarching conceptual framework governing the foundation of words and structures of language. Each language has changed through random and unpredictable processes, having tens of thousands of new words added and each new word being invented at some point. New words are not invented based on a conceptual framework or set of rules. Shakespeare made up numerous words and by placing them in strong contexts, he clearly defined them, but he did not base these words on a conceptual framework; they were, in the words of my daughters, "totally random." Music on the other hand is based on a set of definable concepts and where notes are placed on a musical score is universal. Once the concept of writing music is understood, it can be applied to almost any type of musical instrument regardless of what language is spoken.

Understanding how the brain learns new ideas/concepts and stores factual information provides an architectural framework for the teaching and learning processes. Intuitively, administrators know that passionate teachers "make good teachers." Passionate teachers elicit a hormonal response in the brains of learners allowing astrocytes to learn the concept more quickly. The stronger the hormonal response, the more quickly astrocytes will attempt to map the pattern. For example, when a person injects himself/herself, a drug floods the brain with powerful hormones. Astrocytes rush in to map that pattern and identify the trigger. The next time the

trigger is hit, astrocytes inform the neurons they can run this pattern nonconsciously and quickly map the pattern, a process out of conscious control, resulting in a habit and addiction. The addiction is hard to break because the individual is not consciously in charge of the thinking process as it is being run unconsciously by the astrocytes.

Most bodily functions are astrocytically mapped processes, genetic and inherited, while others are learned. The beating of the heart, the way one stands, and emotional responses are all largely inherited astrocytic processes. Birds inherit a desire (concept) to fly south for the winter. These are unconscious processes. They do not form a committee to decide where they will go this winter and more importantly they lack the capacity to form new concepts on the fly (sic). They simply do not have sufficient astrocytes to begin with and furthermore do not have the store of stem cells to draw on and subsequently map the necessary neural pathways to learn it.

Human beings have two significant capacities that set them apart from every other species: (1) Humans can form concepts "on the fly," and (2) humans can think about their own thinking and look for causality via reflective processes.

Learning concepts is hugely powerful as they can be applied to numerous contexts as well as be linked to each other to form totally new ideas. Learned and rote-learned knowledge underpins the capacity to form concepts and as such is also critically important. If educators could identify the key concepts learners needed to learn, they could be taught much more efficiently and effectively using concepts to identify just what knowledge needs to be learned. Present curricula design focuses on a mixture of context, content, and concepts, and many concepts highlighted in curricula are inappropriate because some are too sophisticated for the learners at the age they are specified for, or the concepts are not mapped appropriately. As the brain matures, it becomes increasingly capable of comprehending more and more complex concepts. Concepts are learned sequentially and hence need to be sequenced appropriately and presented at a time when the brain is actually capable of building that concept, an idea that will be revisited later in the chapter.

## Competencies

Effective learning requires a set of competencies and subject precursory capabilities. In order to learn anything, it is necessary for learners to be able to manage themselves; work effectively with others; have a baseline of capacity around the use of language, symbols, and text; understand the nature of being human and how one thinks; as well as have appropriate dispositions and motivations to be engaged in the learning process. These capabilities are known as competencies.

In New Zealand, five key competencies have been distilled from the Organization for Economic Cooperation and Development (OECD, 2006) and the Information Network on Education in Europe (Eurydice, 2002) reports. These universal and historically unchanged competencies are:

1. Thinking
2. Using language, symbols, and texts
3. Managing self
4. Relating to others
5. Participating and contributing

Changing societal expectations regarding where culpability rests for the development of the competencies in learners, combined with the increasing complexity of competency itself, has led to the somewhat inevitable result that schools are now expected to shoulder the responsibility for developing core competencies. Competencies need to be taught in such an explicit manner that effective learning of subject areas can be achieved more efficiently. Learners possessing these five competencies will learn far more efficiently and effectively. The bottom line is that it is now up to educators to ensure that learners grasp the core competencies and are competent enough to engage in active learning.

The terms "skills" and "competencies" are not used synonymously. Skill designates an ability to perform complex motor and/or cognitive acts with ease, precision, and adaptability to changing conditions, while the term competence designates a complex action system encompassing cognitive skills, attitudes, and other noncognitive components (OECD, 2006).

The teaching of the competencies (Treadwell, Establishing Key Competencies, 2008) takes time and requires a significant amount of professional development for educators around the notion of competence. Competence as defined in the DeSeCo report is made up of seven elements as depicted in Fig. 2.4. The assumption that these competencies are already in place is unfortunately baseless. If educators were to videotape their class throughout the course of a teaching day, they would find that

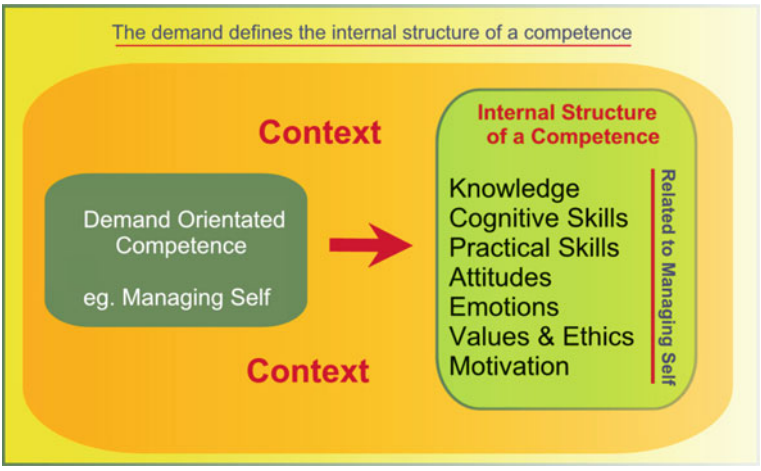


**Fig. 2.4** Seven elements of competence

between 65 and 80% of all discourse with learners was not about the subject or topic being taught but rather about the lack of the various competencies described above. If educators reflect on their classroom practices, what primarily frustrates them is the lack of competence of the learners in the classroom that significantly contributes to poor learner performance.

Imagine what it would be like to have a classroom of learners with high levels of competency around managing themselves, the use of all four modes of communication (written, visual, oral, and multimedia), and who understood thinking processes and could apply them as well as be highly motivated and able to work well with each other. What a difference it would make if learners were motivated and had the foundational capacity for effective learning!

Learning from a new understanding of how the brain works enables educators to unpack the competencies into their underlying concepts. This allows educators and learners to take advantage of the brain's capacity to develop new concepts quickly and efficiently and enable the learner to apply concepts within the competencies to a wide range of known and as yet un-experienced contexts. By focusing on concepts and identifying the underlying contexts and content, educators can obtain substantial gains in efficiency and effectiveness. When considering the competency of managing self, there are some clearly definable concepts underpinning this competency (Treadwell, 2008a). For example in the competency of Managing Self:

## Managing Self

*Managing My Future*
Planning increases effectiveness and efficiency and opens up opportunities

- Setting challenging goals tests commitment
- Understanding one's own worldview provides a guide to strengths and weaknesses
- Intellectual courage allows new ideas to challenge present understanding
- Lifelong learning is dependent on confidence, connection, and active involvement
- Effective time management ensures reliability and opportunity
- A wide range of experiences provides a stronger framework for decision making

*Managing My Gifts and Talents*

- Resourcefulness is more powerful than resources
- Intrigue and curiosity drives learning
- Developing physical and intellectual strengths and weaknesses is rewarding

- Having the confidence to be innovative and creative provides new opportunities
- Risk is almost always uncomfortable; not taking risk is debilitating

*Managing My Emotions*

- Awareness and management of conflict points is empowering
- There is a time for cooperation and a time for independence
- Love and respect are powerful emotions
- Success pivots around balancing certainty and uncertainty
- Emotion drives motivation
- Being comfortable in one's own skin
- Passionate people drive change
- Managing impulsivity is part of personal discipline

*Managing My Values and Principles*

- Moral courage builds character and influence
- Respect for others comes from respect for self
- Curiosity is the doorway to discovery
- Resilience comes from a belief in purpose
- Beliefs stem from worldview and can be changed
- Values can provide a baseline for actions

*Managing My Resources*

- Resources are limited
- Resourcefulness is more powerful than resources
- Investing (in) resources increases the value of the resource
- Marketing can make wants appear to be needs

The capability for conceptual understanding does not arise at a particular age and just because learners can understand one concept does not mean they have the capacity to understand other concepts at a similar level. It would not be uncommon for a learner to be operating at level three or four in a particular subject area and at level one in regard to a particular concept within the competency of managing self. For this reason, subject and competency concepts need to be taught at cognitively appropriate levels.

A sample scaffold for some of the concept frameworks in the competency of "managing self" are displayed in Fig. 2.5. The concept framework is provided in the first column (the column in black). Moving across to the right, the concept framework is unpacked into constituent concepts at the different levels. The levels represent cognitive developmental levels rather than age levels. Using the notion of personalized learning, it may be possible to have learners in a single class

| Managing My Future | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|---|---|---|---|---|---|
| **Planning increases effectiveness and efficiency and opens up opportunities** | Planning lets people know what will be happening | Planning causes organisers to think through the event or process in more detail | Planning helps predict and solve potential problems | Planning allows you to schedule time and resources . . or: Failing to Plan = Planning to Fail | Planning includes being flexible and adaptable as things change |
| **Learning Intention** | If we plan something, then we know what will probably happen | By making plans, it makes us think through what we will be doing and solve potential issues | By having a plan we can predict what we will need, how much time we will need, and who should be informed | When you plan, you have to think of what things you will need and who will do what needs to be done | Events rarely go strictly according to plan so expect changes to be made and be flexible when considering options |
| **Contexts** | | | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |
| **Setting challenging goals tests commitment** | Completing tasks takes perseverance | Deciding on goals makes you more committed | Setting goals which are challenging encourages extra effort | Developing strategies to meet goals makes them more attainable | It is sometimes necessary to adjust goals to meet new circumstances |
| **Learning Intention** | To finish a job we sometimes have to just keep working at it | Goals set us challenges which we want to achieve so we can see the reason for persevering and being committed | Challenging goals are goals that extend us beyond what we think we can achieve | Some goals are simple and others require us to devise strategies in order to meet them | Setting challenging goals means sometimes we should expect that the goal cannot be met and may have to be revised |
| **Contexts** | | | | Olympic athletes, scientists, researchers, Presidents, Prime Ministers, other leaders… | |
| **Content** | | | | | |
| **Sustainability** | | | | | |
| **Understanding my worldview is a guide to my strengths and weaknesses** | We all see the world differently | Not everyone sees you or your world the same as you do | Sometimes other people can see our strengths more clearly than we can | Sometimes other people can see our overall capability more clearly than we can | Knowing our strengths and weaknesses lets us develop a balanced intellectual and social personality |
| **Learning Intention** | How we see things is different to everyone else | How you see you and how others see you will be different | Sometimes we can see our weaknesses more clearly than our strengths | We need feedback on our strengths and weaknesses from friends | It is important to have a balanced life, in our school and social lives |
| **Contexts** | | | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |
| **Intellectual courage allows new ideas to challenge present understanding** | Where do ideas come from? | It is important to be critical of why you believe what you do | Trusting in your ideas requires good cause | Adapting ideas is required as new knowledge, experiences or ideas are discovered | Feeling confident helps challenge world view notions |
| **Learning Intention** | All ideas come from somewhere | Reflecting on what we believe and why we believe it reaffirms or challenges what we thought we knew | Before we trust in our own ideas or someone else's we need to be able to trust their thinking | To build courage around your ideas and thoughts they must be grounded in knowledge and experience | When you have confidence then you are more likely to challenge your own and others' thinking |
| **Contexts** | | | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |

**Fig. 2.5** Sample concept frameworks in the competency: managing self

working on three different levels of cognitive understanding and working at different cognitive levels in different subjects and competencies.

Once the concepts have been equated to a particular level, learning intention can be identified. The learning intention is defined as each concept written in a language the learner can understand and is made explicit to the learner at the beginning of the learning process. Once the learning intention is specified, the educator (sometimes in conjunction with the learner) can decide on the contexts the concept can be applied to. It is important that the concept is applied to more than one context. If learners only experience a concept applied to a singular context, they will not realize concepts can be applied to many different contexts, some of which learners may not have yet experienced. Using only one context to understand a concept would be the

equivalent of only letting someone learn to drive in a supermarket parking lot in the quiet of the evening and expecting them to pass the test!

In accordance with the personalized learning process, the "what" (the content) is not identified until the end of the process. Within these mapping scaffolds, educators are expected to just make brief comments regarding the content that will underpin learning the concept (4–5 bullet points only).

The final part of the process is to insert brief commentary on how each concept will be sustained between the learning of a previous concept and the concept that follows. Because of the continuous development of the brain opening up new understanding of more complex concepts as the learner ages, it may be some years between a concept at one level being understood and the time the learner is capable of understanding the next concept in the sequence.

## Synthesizing the Ideas

Not surprisingly, a large percentage of professional learning in business and education sectors is now focused on the development of competencies. The competencies underpin effective learning, self-management, ability to work in group situations, capacity to communicate appropriately, understand one's own motivation, and engage appropriate thinking strategies and processes.

In order to explicitly teach competencies, time must be found to do this. In an already crowded curriculum how is this possible? The rationale behind making the paradigm shift is that it opens up significant efficiency and effectiveness gains, efficiencies that can be applied to make room to teach and encourage the competencies, as well as principles and character traits, ideas that will be explored in more detail later.

Figure 2.6 demonstrates that by migrating to the new paradigm, a new set of efficiency and effectiveness gains can be achieved. What are these effectiveness and efficiency gains and how can they be achieved?

A curriculum with an endpoint focusing on remembering arcane facts and figures or exploring thematic topics without clearly defined specific learning intentions represent inefficient ways of teaching the underlying concepts.

As seen from the emerging understanding of how brains work and how individuals learn, rote learning and conceptual learning have been identified as two distinct learning approaches. Clearly identifying the concepts, for the learner to build an understanding around, allows for a clear identification of the content/knowledge that underpins those concepts. The identified content/knowledge has foundational value, as without it the concept cannot be learned. This knowledge identified must have purpose and must not be random or knowledge that learners learn just because "that's what they always have done."

As the brain develops, new concepts become capable of being understood. If a concept is introduced before the brain has developed the capacity to understand that concept, then only rote learning can take place, a very inefficient way of learning

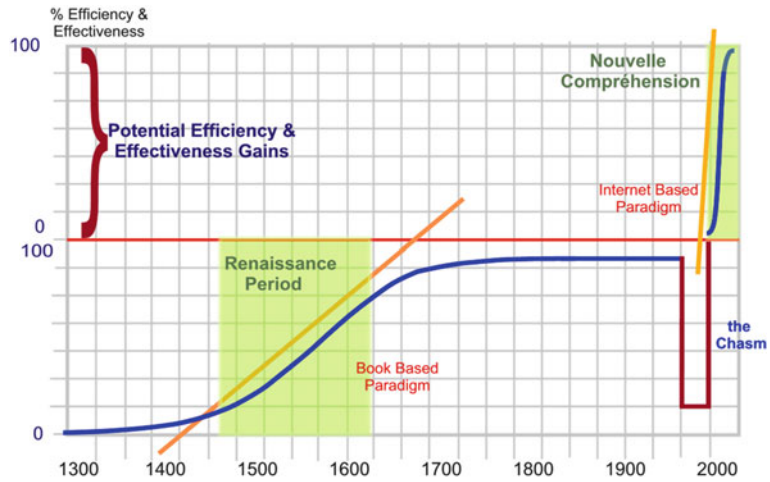


**Fig. 2.6** New set of efficiency and effectiveness gains

if the conceptual option is available some time later. Whenever possible, educators must wait until the learner has the capacity to learn the concept before introducing it, although educators should be always exploring this zone of proximal development (Vgotsky). Symptoms of an overreliance on rote learning include the dependence on textbooks, dominance of summative testing regimes, and comparative success of schools being measured by simplistic summative testing mechanisms. Teaching more does not equate to better learning; in fact it is quite the opposite. Setting standards and standardized testing also is not a good benchmarking process for improving learning.

What is being proposed is that curriculum frameworks need to be redesigned around the clear identification of the key concepts that underpin each of the subject areas, their precursory learning requirements and the competencies. Concepts need to be clearly articulated to learners as "learning intentions" so they are fully aware of what they need to understand at the conclusion of the program. By clearly identifying the concepts the content/knowledge bases that underpin that understanding can also be identified.

As we have seen, the power in learning a concept is that it can be applied to numerous different contexts. At the moment, much of the learning in schools is the reverse of this, tending to focus on particular thematic contexts underpinned with vast knowledge "vistas" that do not have the required depth or specificity to develop the underlying concepts, often having little purpose. For example, within the subject of social studies a learner might study a number of different cultures including Romans, Egyptians, the Aztecs, American Indians, Greeks, and early American colonists. Students may learn about social structures, government, business, religion, economy, and the technologies of that culture. In this process, learners may never be made aware of the fact that there are a number of key

developmental concepts which each culture has in common, including the development of technology, faith/religion, warfare, food supply/distribution, and culture. Each culture shares similar concepts framing their development. In fact if the concepts of community and cultural development are understood, we can begin to predict generic processes through which cultures grow and even start to predict how our own culture will unfold in the future. Understanding concepts allows for better prediction of what may happen in the future as well as a better understanding of the past.

An expansion of this notion would allow for the identification of all key concepts that need to be learned within the subject of social studies. While the following list may not be perfect, it provides a conceptual framework for the teaching of social studies. It also shows how few concepts actually need to be learned and how confusing the context/thematic approach can make the learning of social studies. The example applies to social studies instruction for the first 10 years of compulsory schooling.

## Understanding in Social Studies Concepts

*Citizenship: Identity, Culture, and Organization*

- There is a tension in communities between self-interest and community interest
- Having shared values, beliefs, and purpose help maintain stability within diverse groups
- Communities function around complex elected and nonelected leadership structures
- In communities there are tensions between rights and responsibilities
- Invasions, incursions by or amalgamations with external communities bring sudden transformations in identity, culture, and social structure

*Place and Environment*

- Individuals and groups make sense of the world via their worldview
- Tensions may exist between the environment and the needs and wants of a community
- People move from place to place to better self, family, and their communities
- The history of activity in a location/region is dependent on the environment
- Environments are constantly changing, and this requires human activities to adapt accordingly

*Time, Continuity, and Change*

- History is subjective—interpreted via the worldview of a community or an individual
- Communities and individuals react in different ways to changing circumstances
- Values, attitudes, and beliefs within communities and individuals change over time
- Globalization is resulting in greater interconnectedness
- We can learn from our past and the past of others

*The Economic World*

- Needs, wants, and opportunities drive commerce and trade
- Producers and consumers have rights and responsibilities
- Work takes on many roles and includes voluntary as well as paid work
- Creativity, enterprise, and innovation underpin the potential for new business
- Economic activity involves development, production, distribution, sales, and "consumption" processes

In 10 years of compulsory education, there are just 20 social studies concepts that need to be learned. By defining the concepts within each of the subject areas, these subjects could be taught far more efficiently and effectively. Even greater effectiveness and efficiency gains could be achieved if learners develop the competencies underpinning good learning described earlier.

Developing a concept-based curriculum has uncovered five curriculum-specific precursors to learning each subject effectively and efficiently in addition to the learning-specific competencies already addressed. The five "Learning (Subject) Area" competencies or "Learning Precursors" are as follows:

- Wonderment and awe in . . .
- Communicating in . . .
- The role of Information and Communication Technologies (ICTs) in . . .
- Participating and contributing in . . .
- Inquiry learning within . . .

Continuing with the social studies theme concepts within each of the Learning Area competencies can be identified.

*Wonderment and Awe in Social Studies*

- Humans taking high risks, with ingenuity and perseverance, have resulted in our living in diverse communities in almost every niche in the world

- Despite our predisposition for discrimination, societies can make compromises that allow a diversity of culture, ethnicity, and religion

*Communicating in Social Studies*

- Social Science is a mostly qualitative science, hence language is critical in communicating nuance and its subjective intonations
- Social Science is communicated via biased media throughout the world, then filtered by each participant's worldview, with inevitable distortions of reality

*ICTs in Social Studies*

- Technology makes nonfiltered news and research available to everyone; therefore the need for critical literacy is essential
- Technology helps history be interpreted more accurately, the present recorded for posterity and the future ever more tentative

*Participating and Contributing in Social Studies*

- It is important to take an active role within society, learning from one another, reflecting on one's actions, and building confidence to positively influence others
- Learners are participants and need to be aware of their role and ability, as well as their responsibility to contribute to society

*Inquiry (Investigating) Within Social Studies*

- Social inquiry draws on knowledge, understanding, and wisdom to investigate social issues
- Social inquiry relies on incisive qualitative observations and their interpretation within social settings
- Social attitudes, values, and beliefs form the basis for social decision making

Subject-specific competencies are present within all subject areas, and they have been mapped in the same way as in Social Studies (Treadwell, 2008a).

In New Zealand, the Ministry of Education provided a "curriculum framework" for schools in 2007. The entire document for the compulsory sector is less than 50 pages in length. The New Zealand curriculum framework is used by schools to construct their own unique curriculum to meet the specific needs of their community and allows for the implementation of a concept-based curriculum (Ministry of Education, n.d.).

Four tiers of concepts have been derived from the mission statement of encouraging the development of confident, connected, actively involved, lifelong learners.

1. The Key Competencies
2. The Learning Area (Subject) Precursors
3. The Learning Area (Subject) Specific Concepts
4. Principles and Character Formation

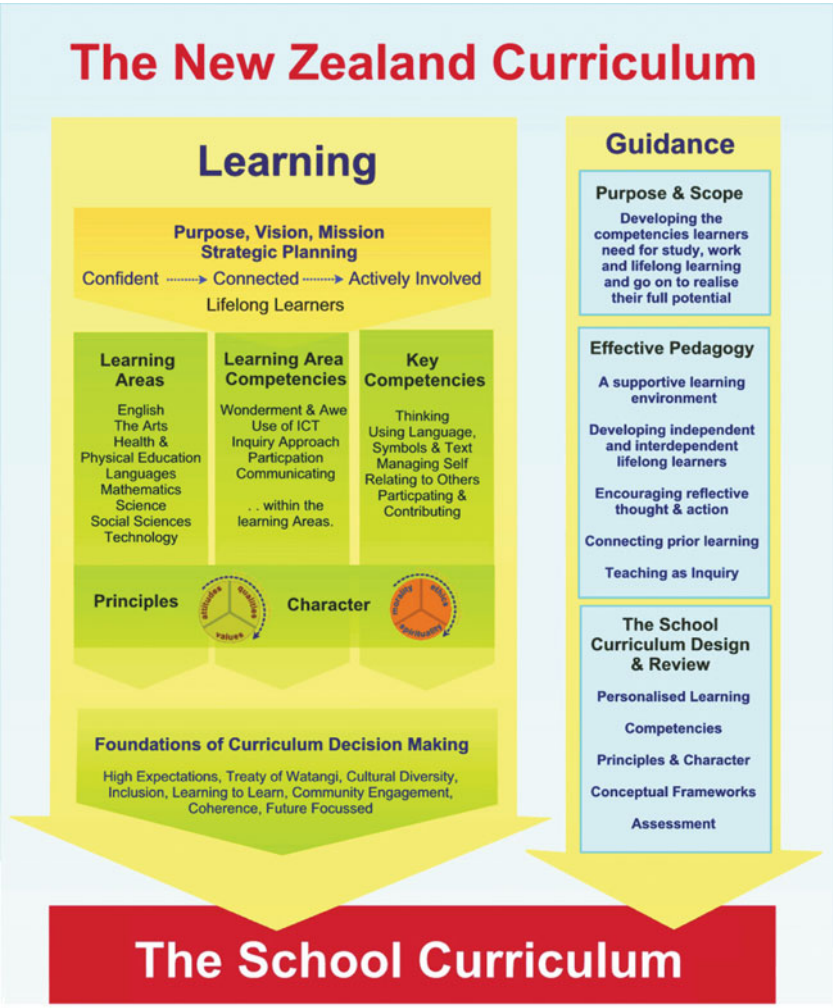


**Fig. 2.7** Concept-based curriculum of social science

The result of the synthesis of these ideas can be seen in Fig. 2.7: Concept-based Curriculum of Social Science. The mapping of all other subjects and competencies can be found in, *Whatever Next? The Global Conceptual Curriculum* (Treadwell, 2008a). The outer ring represents Learning Area (subject) Strands (e.g., place and environment) and Learning Area (subject) Concepts. The middle ring represents Learning Area (subject) Competencies and Learning Area (subject) Competency Concepts, and the inner ring represents the Key Competencies.

Figure 2.8 provides a sample of unpacked social studies concepts and the resultant learning intentions. Sample contexts, content, and sustainability ideas are also provided, but the final development of these is up to individual schools in order to reflect their community's local learning needs. The sequence of concepts for social studies has been developed and available in *Whatever Next: The Global Conceptual Curriculum* (Treadwell, 2008a).

| Wonderment & Awe in Social Science | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|---|---|---|---|---|---|
| Humans taking high risk with ingenuity and perseverance, has resulted in us living in diverse communities in almost every niche in the world | | People who leave home and move elsewhere take significant risk | All environments have advantages and disadvantages, so perseverance is needed to adapt to new ones | Generally, "discoverers" took high risks in exchange for potentially large financial rewards from their "discoveries" | Technology, such as guns, steel and germs, gave those who wished to conquer other civilisations huge advantages |
| **Learning Intention** | | People have reasons for changing where they live, but there are risks in moving | It takes time to adapt to a new place when we move from somewhere we know well | People may take risks if potential rewards are large, and there is a reasonable chance of survival | Technological advantage allows a small group to conquer a much larger group |
| **Contexts** | | | Advantages and disadvantages of climate, location, food supply, commerce, transport, social status | | |
| **Content** | | | | Famous explorers' biographies | |
| **Sustainability** | | | | Inquiry teams report to the class on their interpretation of the diaries of famous explorers | |
| Despite our predisposition for discrimination, societies can make compromises that allow a diversity of culture, ethnicity and religion | All people have similarities and differences | Populations within a country can be diverse and are often made up of different cultures | Diversity is increasingly common in many communities | People from different communities have different values, attitudes, beliefs and traditions | Increasingly, a person's identity and values are drawn from many cultures |
| **Learning Intention** | We are all different in some ways and similar in other ways | We live in communities made up of many different cultures, and this should be celebrated | Communities include people from different countries, with different ways of doing things | All cultures have different beliefs and ways of thinking, and they celebrate different events | Arrivals can both adapt to a new culture and retain their previous culture to enrich and influence their new community |
| **Contexts** | | Modern ad historical immigrants, immigrants, food, dance, faith, music stories | Our school community; local community, town; state/country; global | | |
| **Content** | | | Profiles of communities can be found at your country's government statistics website | | |
| **Sustainability** | | | Every three weeks, a cultural group gives a short news desk presentation on how their culture is different | | |

**Fig. 2.8** Sample social studies concepts and learning intentions

## Precursor to Learning Social Science (Example)

### *Inquiry Learning*

In order to take knowledge and build understanding, knowledge has to be interrogated, manipulated, re-presented in different media formats, and applied to different contexts in order for it to be understood and applied to new and novel contexts. Taking knowledge and building understanding may involve listening to a visiting speaker, doing an experiment, carrying out a practical application, visiting a particular location/environment, making a presentation, or carrying out an inquiry/investigation. There are numerous ways this process can take place, and increasingly inquiry learning (Treadwell, 2008f) is being seen as the overarching framework for this process that may involve any or all of the above experiences. Inquiry learning is a team approach to problem solving where clever, rich, open, fertile, or high-order thinking questions are proposed and a team of learners work

| Understanding Social Science | | | | | |
|---|---|---|---|---|---|
| **Citizenship: Identity, Culture & Organisation** | **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** |
| There is a tension in communities between self interest and community interest | Sometimes we can be selfish and sometimes we can be selfless | There is a natural human need for reward when our work is done | Communities rely on people contributing to them, via paid and unpaid work | We often benefit the most from our own kindness to and consideration of others | Our values, attitudes and qualities influence the relationship between how much we "take" and how much we "give" within our community |
| **Learning Intention** | Sometimes we share with other people and sometimes we keep things for ourselves | People like to help, and they also like to be thanked for the work they do | Communities work when people contribute via paid and unpaid work | Kindness is almost always returned ten-fold | Our generosity in helping others depends on our values, attitudes and qualities as an individual |
| **Contexts** | Food, pencils/paper, secrets | | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |
| Having shared attitudes, values, beliefs and purpose helps to maintain stability within diverse groups | | Shared values help give a group a common focus, purpose and vision | For values to be shared, they need to be acknowledged and agreed on by the group | It takes time for "head knowledge" (conscious) of a value to become a natural reaction (unconscious) | Shared values can be clarified through discussion, and this builds trust within a group or community |
| **Learning Intention** | | If a group all have the same "feeling" about a common task/goal, they will generally work well towards it | Talking about and comparing our attitudes towards an issue helps us find common interests to work on together | Sometimes knowing what we should feel and do about a social issue is different to how we react to that issue | For a group to work collaboratively around social issues it is vital that members trust and respect each other |
| **Contexts** | | Environmental issues | Sustainability | Globalisation | Citizenship |
| **Content** | | | Language development for values and beliefs | | |
| **Sustainability** | | Reflecting on our attitudes and values | | | |
| Communities function around complex elected and non-elected leadership structures | | Some leaders are elected and others lead naturally without a mandate | There are a range of personal qualities and competencies that contribute towards effective leadership | Part of good leadership means establishing positive shared values and rules to guide behaviours | Effective leadership is based on a desire to serve, rather than self-interest |
| **Learning Intention** | | Some people have natural leadership qualities | Leadership is a combination of many different abilities and attitudes | Leaders can direct their group towards either positive or negative outcomes | Effective leadership is about serving a community, not manipulating it |
| **Contexts** | | Team captain, educator, parent, friendship group | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |
| In communities there are tensions between rights and responsibilities | People living in communities enjoy many privileges "as of right" | Rules can help us know what our responsibilities to others are | Some rules are exact and some are guidelines | As we age we should want to contribute to our community | Wisdom is understanding and appreciating both our rights and our responsibilities |
| **Learning Intention** | The community we live in takes care of us | Rules tell us what to do to keep safe and be helpful to others | Some rules are allowed to be interpreted and some are not | We have always had many privileges and now we can choose to contribute back to our community by taking responsibilities | Making wise decisions requires us understand our rights and responsibilities |
| **Contexts** | Classroom rules | | | | |
| **Content** | | | | | |
| **Sustainability** | | | | | |

**Fig. 2.8** Further sample for social studies concepts and learning in tensions

on the development of a solution. Inquiry learning develops through a number of stages with increasing complexity introduced as the learner is able to work with and understand the required concepts.

Unfortunately the process of inquiry learning is often not fully understood by educators. From a cognitive developmental perspective, too much is frequently expected too early from the learners in terms of the inquiry process. It is important that in order for learners to understand inquiry processes a developmental pathway must be provided for the inquiry process for the same reasons a developmental

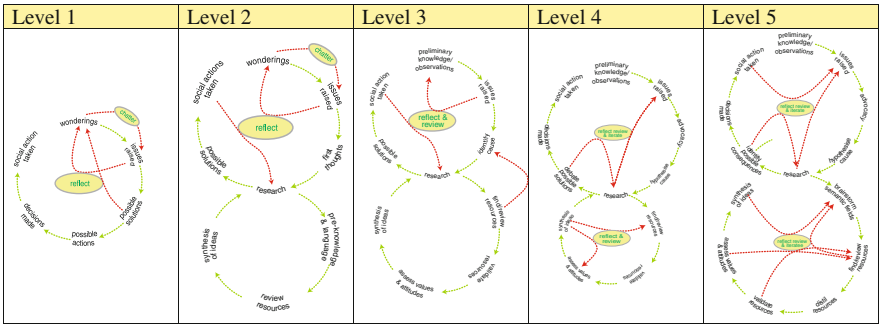


**Fig. 2.9** A developmental pathway for inquiry

pathway for the competencies, subject areas, learner's principles, and character development were needed Fig. 2.9.

Each subject has its own unique inquiry learning process, as social inquiry is a very different process from scientific inquiry which differs from technological or artistic inquiry. Figure 2.8 indicates a progression of increasing conceptual understanding around Social Inquiry. Inquiry learning requires a balance of direct instruction (pedagogy) and coaching (andragogy). The tensions within this balancing act are dependent upon the purpose and culture of the school, combined with the personality of the individual educator. Inquiry learning allows individuals or groups of learners to develop "learning to learn" capabilities through a guided research process, where the learner is given increasing independence to develop "real-life" research and learning capabilities.

## *Principles and Character*

The development of appropriate principles and character becomes more important as the purpose of school focuses on developing the capability for creative and innovative thinking. Applying creative and innovative thinking to the creation and application of new ideas has the potential to be hugely beneficial to a community or they can be applied in ways that can destroy and undermine a community. It all depends on whether the creative and innovative thinking is applied for good or for ill Gardner (***).

The notion of citizenship provides a framework for the development of principles and character. As communities increasingly become multiethnic, multicultural, and global in nature, the notion of principles, character, virtues, and wisdom take on increased importance as we seek to solve global problems from an ethical perspective and with wisdom. These solutions will require sacrifice from everyone, and the driver for this is a moral and ethical one, not just an economic one.

Principles are drawn from our attitudes, qualities, and values. A 5-year old can have a positive attitude, but not necessarily qualities and values, as qualities and values require an increased cognitive capacity.

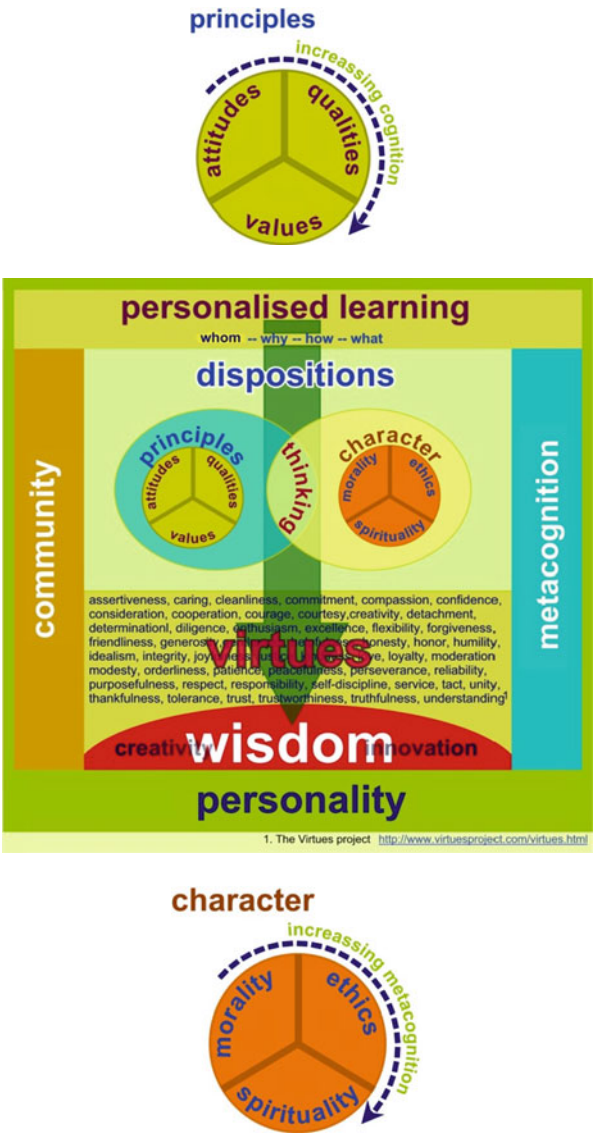


**Fig. 2.10** Principles and character

Character is derived from morality, ethics, and spirituality (Fig. 2.10). Once again a 5-year old can have morality; a sense of right and wrong, especially when applied to how others should behave rather than self. Ethics develop to become a rule book for self and others, even if we do break the rules now and then. These capabilities may develop over time with increased metacognition. Neither the notion of character nor the notion of principles will form in a consistent manner, unless the learner

purposefully thinks and reflects on these personal ideals. Many people assume they have principles and character traits but would be hard pressed to tell you what they are. In essence, principles only form when a person thinks through and deeply reflects on his/her attitudes, qualities, and values. The two pillars supporting this emerging framework are the notions of community and the capacity to reflect on one's thinking (metacognition). Once an understanding of our principles and character have developed, a person can begin to express these notions in a practical day-to-day manner via what are termed virtues. People can display virtues simply based on attitudes and morality without necessarily having developed an integrated set of ethics or a deep spirituality. Wisdom is the creative application of virtues to the decision-making processes. Wisdom requires a significant capacity to creatively and innovatively apply virtues within the framework of an individual's personality.

## Technology Making It Happen

All these ideas require a substantive investment in high-speed broadband connectivity and the provision of Learning Management Systems (LMSs) that are interoperable (in terms of data transport/sharing) with all other school data systems. Interoperability is absolutely critical so the data collected can follow the learner from school to school and institution to institution (actually the data stays in the same place and the learner moves) and be made available to the learner for life as a virtual online "curriculum vitae." The data must be available to all stakeholders at anytime and anywhere.

## Summary

One of the greatest concerns within education is the ad hoc manner in which governments and schools implement new initiatives, continuously attaching them to existing structures while disregarding the inherent philosophical contradictions and implications for practice. The development of this proposed new framework is no exception. Figure 2.11 shows how the described notions integrate into a single "structure" (Treadwell, 2008a). This structure identifies the critical relationships between each of the structural elements. It is important that schools understand the integrated nature of the curriculum and how the elements relate to others within the structure.

This structure provides a framework for schools to develop a professional learning program that recognizes the "big picture of education" and integrates each of the elements into what can become a seamless process of teacher professional development and a resulting new paradigm around teaching and learning practices.

So what are the implications? I would argue that the implications are profound because at the moment, we are seeing a global education predisposition for a

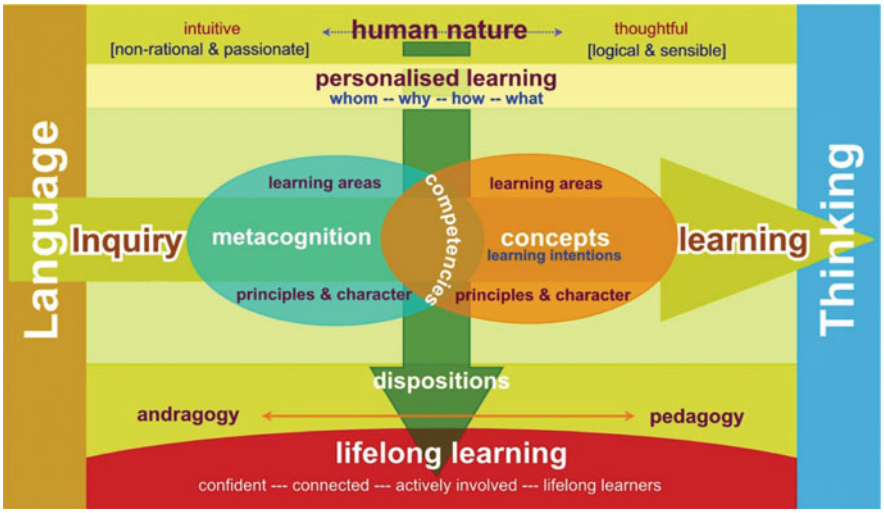


**Fig. 2.11** A framework for Lifelong Learning

"return to basics," an expected response by most people to the threat of change. Returning to the past is what people do when they do not know what to do. However, having the ultimate goal of education being the learning of fixed bodies of knowledge in order to recall them at a later point in time is becoming increasingly pointless with the advent of tools such as Google. With knowledge increasing exponentially, it is also impossible to predict what slice of the knowledge pie young people, or anyone for that matter, will be required to know in 5 years, let alone in 25 years.

Education, just like any other social institution must focus on increasing its effectiveness and efficiency. Learning must be built around the development of conceptual frameworks, as they are precursors to creativity. Creativity is the capacity to bring together different ideas to form totally new ideas, a process we refer to as "being imaginative." Being imaginative is applying a thinking process that brings together slightly, and occasionally very different concepts, through a process called synthesis, all the while being conscious of how it is being done. To develop this capability, we must integrate a number of ideas and systems. This is framed up in Fig. 2.12.

It will be the creative and innovative countries that will be the main players in the 21st century! In fact, countries that make the necessary changes to curriculum, teaching and learning practices, and culture, in addition to supporting this paradigm shift, will dominate the 21st century. The most likely candidates at this point in time are not the large and currently financially affluent countries, but rather the "tier two" countries that are smaller, more agile, technologically capable, and open to new ideas. Turning around education systems in countries such as these is far more easily accomplished than in complex, politically charged, larger, and (currently) more affluent countries.

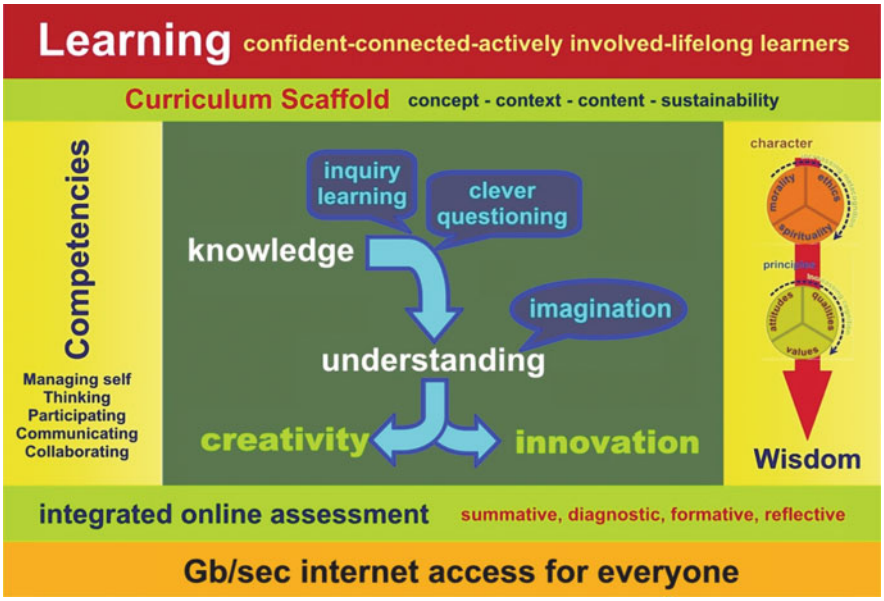


**Fig. 2.12** The 21st Century Learning Environment

## Size and Population Won't Matter . . . Really!

A paradigm shift on this scale is not without its downside. Whenever systems are reengineered and restructured on this scale, there is a period of insecurity and uncertainty as the deck of cards is reshuffled and the hands are re-dealt. As in most card games, the end result of this paradigm shift depends not just on what cards were dealt but what risks the players take. A country may have the resources, location, workforce, technology, and political strength, but it is the risks they take combined with their ability to be innovative and be agile in regard to change and managing that change which will determine the final strength of their hand. Education has a critical role to play in this process. The final element of the curriculum is to encourage future-focused thinking (The Ministry of Education, 2007a): the notions of globalization, enterprise, sustainability, and citizenship. These overarching thematic contexts provide a flavor to the curriculum, directing it toward thinking ahead and looking to see how these ideas can encourage a new cultural focus, imagining numerous possible futures.

This is by no means a given. The first 8 years of the 21st century built expectations across the world of wealth and prosperity. Unrealized expectations have set the seeds of disappointment that almost always quickly grows to become frustration and anger. As these new systems bed in, a period of time of considerable and global social disharmony can be expected.

At present a period of insecurity and uncertainty of 5–7 years is predicted, and furthermore that it began somewhere around 2005–2006 is probably not a

coincidence. If humankind survives this period of instability, then (1) the reshaping and reforming of financial systems, (2) the end of the industrial era, (3) the emergence of the creative era, (4) the second wave and the institutionalization of globalization, (5) the transparent integration of the technology of the Internet, (6) an integrated approach to environmental sustainability, (7) a realignment between science and faith, and importantly (8) the establishment of a new conception around learning and the role of education within community can be anticipated.

In the paradigm shift currently occurring, new systems have to be invented and implemented, ensuring that they are integrated so that the resonance effect created by each system can be fully exploited and provide substantive effectiveness and efficiency gains in every aspect. Effective policy and planning within government to facilitate this is critical. So how does this paradigm shift translate into practice?

This paradigm shift is represented by Fig. 2.13. The first sigmoid curve is an indication of the *potential* effectiveness and efficiency gains on offer. The first Renaissance was built on the back of the new technology of the printed book, the reformation, the shifting of power between the aristocracy, increased trade, and the increased value of intellectual capital. The printed book became the new key to learning (replacing oral language) that lit the fuse of the first Renaissance. In between the book-based paradigm and the second "Internet" paradigm there is a gap. We refer to this as "the chasm."

We expect the sigmoid curve for the Internet-based paradigm to mature by 2020. At that point, 75–90% of the world's inhabitants will likely have daily access to the Internet at minimum cost and the other "paradigm drivers" will have matured. This

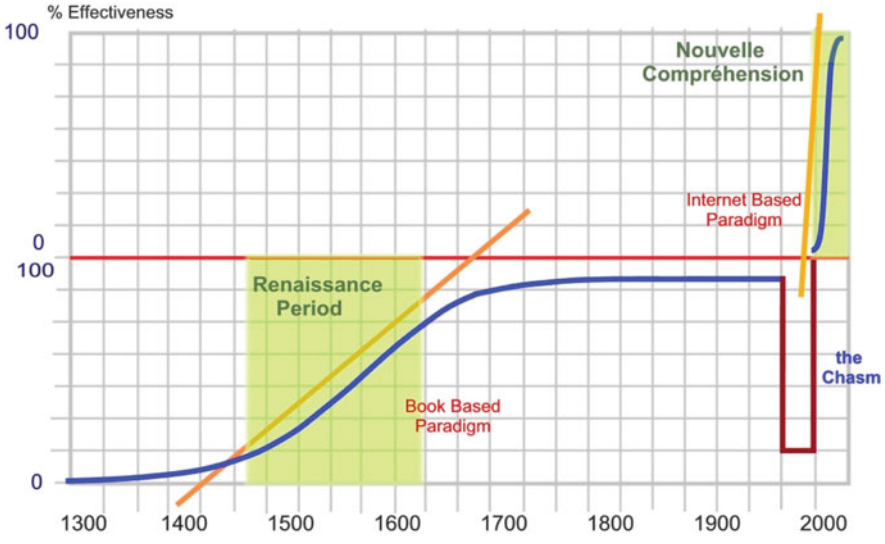


**Fig. 2.13** Two paradigm shifts

will have a major effect on the nature of business, technology development, how we interact/communicate with each other, the way we navigate our world and form our worldview, and especially from the perspective of this text, the way we learn.

An important aspect of Fig. 2.12 is the chasm that separates the two paradigms. The notion of crossing the chasm comes from the work of Geoffrey Moore (2002), who investigated the way we adopt technology and how business needs to be cognizant of the different approaches each of us has to managing change in technological environments. Moore contends that people fall into five classifications when approaching the adoption of technological change. The *innovators* cross the chasm first and most do so successfully because they are persistent and they are good problem solvers. The *early adopters* follow the lead of the innovators when they see some strategic advantage in adopting a new paradigm. The early adopters are convinced to cross the chasm when the technology is made relatively simple and fashionable, even though it may still be relatively expensive. The *late majority* crosses the chasm when they see the early adopters gaining success and when the crossing is relatively simple, cheap, and any costs can be offset against the financial or social advantages of making the crossing. The *laggards* will likely never make the crossing and take a doomsayer/purist viewpoint to mask their fears.

Crossing the chasm requires individuals to take significant risks. The main risk is falling into the chasm! People who are at the greatest risk are those who have experienced the greatest success within the existing paradigm. Educators are at the top of that list! An educator's status is based on their success in the book-based paradigm, and herein lies one of the greatest education challenges of all times. The very people who need to lead the crossing of the chasm into this new paradigm are the very people who have the most to lose by taking that risk to leave their high status position in the book-based paradigm and move to the new paradigm where their status potential is unknown! The kids have leapt over the chasm but largely they do not know how to use the Internet to improve their learning capability; this is the domain of educators. Hence we need educators to jump over the chasm and assist these learners who are still at the very bottom of the curve (on the other side of the chasm) and show them how to learn more efficiently and effectively using this vast resource.

The upside of this equation is that educators are largely benevolent and are primarily led by "the heart." If the messages above can be communicated effectively to them, they will take the risk of crossing the chasm and lead the charge. Education now needs to be seen in a much broader light, not just the compulsory or tertiary sector. We need to consider ongoing, lifelong education as essential for absolutely everybody. Education has to become a national, focused obsession that drives entire countries.

Countries that make lifelong learning their obsession across all age groups and focus learning on building and applying understanding in creative and innovative ways, and combine that capacity with the competencies and the range of personal principles and character traits that are now required, will dominate the 21st century. Do you live somewhere where this is happening?

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# Chapter 3
# Twenty-First Century Students Need 21st Century Skills

**Ken Kay and Valerie Greenhill**

"What are 21st Century Skills? Why are they important?" These are questions often raised among those working in education circles today. As leaders in the movement to accelerate 21st century skills into our nation's schools, we have assembled a basic primer in the form of this chapter that

- Details the economic and cultural shifts that are unique to the 21st century
- Describes and defines the skills in the 21st century framework for learning
- Provides examples of these skills as they are being taught and learned in today's classrooms

## What Has Changed?

As a nation, we are facing economic uncertainty unlike anything we have seen in generations. The threats to our education system seem pretty clear—and the biggest challenge is *not* funding. The challenge rather is how our education system will produce citizens who can succeed.

- In an economy driven by innovation and knowledge,
- In marketplaces engaged in intense competition and constant renewal,
- In a world of tremendous opportunities and risks,
- In a society facing complex business, political, scientific, technological, health, and environmental challenges, and
- In diverse workplaces and communities that hinge on collaborative relationships and social networking.

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This chapter was derived from previous publications by the Partnership for 21st Century Skills (www.p21.org). The authors would like to acknowledge Martha Vockley, Susan Saltrick, P21 board members, and P21 staff for their contributions.

G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_3,

With all these factors at play, the ingenuity, agility, and skills of the American people will be crucial to maintaining and strengthening the quality of life we hold dear. We all should demand a fresh approach to public education. We must recognize that a 21st century education forms the bedrock of our society and serves as the critical engine of our nation's success. As former West Virginia Governor Bob Wise has (wisely) said, "education is the new currency" for our economic recovery.

We need to act accordingly: Every aspect of our education system—standards, assessments, professional development, curriculum and instruction, and learning environments—must be aligned to prepare citizens with the 21st century skills needed to succeed in work and life. Skills like critical thinking, problem solving, communication, collaboration, creativity, and innovation should be integrated more explicitly into *every* child's education in this nation.

Across the country, there is a refreshing and growing movement to improve our education system by incorporating 21st century skills into the outcomes we expect of our students. However, to achieve the vision of an educational system that truly improves student learning, achievement, and success demands a clear understanding of the knowledge, skills, and attributes that are increasingly important for every student today. Unfortunately, our schools and the systems that support them—standards, assessments, professional development, curriculum, instruction, and learning environments—are not currently focused on teaching the skills that matter most in the 21st century. While our traditional metrics of student success—performance on standardized tests, graduation, and college matriculation rates, to name a few—are important, they are no longer sufficient indicators of student preparedness.

Three significant realities underscore why our education system is due for dramatic change:

1. Fundamental changes in the economy and society have reshaped the way we work and live.

Over the last several decades, the industrial economy based on manufacturing has shifted to a service economy driven by information, knowledge, innovation, and creativity. Jobs also have shifted from manufacturing to services, particularly in higher paid information services. Today, more than 80% of jobs are in the service sector, which includes high-growth, high-wage, and high-skilled occupations in new and emerging industries.

In this new, globally interconnected economy, companies have changed how they are organized and the way they do business. Technology has supported these changes, which include flatter management structures, decentralized decision making, information sharing, and the use of task teams, cross-organizational networking, just-in-time inventory, and flexible work arrangements. Tellingly, technology displaces workers with low-level skills who perform routine tasks but complements workers with higher level skills, empowering them to be more creative, productive, and valuable in the workplace.

Research at the UCLA Anderson School of Management (Apte, Karmarkar, & Nath, 2008; Karmarkar & Apte, 2007) documents the rise of the service economy:

- In 1967, the production of material goods (such as automobiles, chemicals, and industrial equipment) and delivery of material services (such as transportation, construction, and retailing) accounted for nearly 54% of the country's economic output.
- By 1997, the production of information products (such as computers, books, televisions, and software) and the provision of information services (such as telecommunications, financial and broadcast services, and education) accounted for 63% of the country's output.
- Information services alone grew from 36 to 56% of the economy during that 30-year period.

Jobs also have shifted from manufacturing to services, particularly in higher paid information services:

- Between 1995 and 2005, the United States lost 3 million manufacturing jobs, according to the U.S. Bureau of Labor Statistics (2006). In that same 10-year period, 17 million service-sector jobs were created.
- In 1999, the largest sector of the labor force, 45%, was still in material services, but the proportion of the workforce in information services was not far behind, at 41%—and this sector has been growing at a much faster rate (Karmarkar & Apte, 2007; Apte, Karmarkar, & Nath, 2008).
- In terms of wages, information services accounted for the largest portion of the nation's wage bill, 48%, compared to 38% for other workers. Generally, information workers earn more than those in material products and services. There is more than a $10,000 difference between information and material service providers, while the wage gap between workers in the information products sector and those in the material goods sector is more than $20,000 (Council on Competitiveness, 2008).

Many of the fastest growing jobs in the service sector are high-end occupations, including doctors, lawyers, engineers, and sales and marketing professionals. More than three-quarters of all jobs in the United States are in the service economy, yet many policy makers view them as low-skill, low-wage options (Council on Competitiveness, 2008).

2. U.S. students are not keeping up with their international peers, and global competition is fierce.

By the time they are ready to leave high school, U.S. students should be well prepared for citizenship, work, and postsecondary education. Instead, they fare poorly on national assessments and international comparisons of academic performance, such as the National Assessment of Educational Progress (NAEP), the Trends in International Mathematics and Science Study (TIMSS), and the Programme for International Student Assessment (PISA)—clear indications that our young people may struggle to thrive in an increasingly interdependent and competitive global economy. Further, students are not acquiring the skills they

need to keep the nation competitive. The skills of the workforce will increasingly be the defining characteristic that determines the extent to which an economy can develop and exploit new technologies and compete in the global marketplace (Karoly & Panis, 2004). Knowledge workers in every industry—from nanoscientists to package deliverers—require high-level cognitive skills for managing, interpreting, validating, transforming, communicating, and acting on information. Valued skills include such nonroutine analytic skills as abstract reasoning, problem solving, communication, and collaboration (Bransford, Brown, & Cocking, 2000).

Even in terms of U.S.-centric measures of student success, the results are not encouraging. Consider a few indicators:

- Nearly 40% of high school graduates feel inadequately prepared for college or the workplace, according to a 2004 report by the American Diploma Project (America Diploma Project, 2004).
- About one-third of students do not graduate after 4 years of high school, according to a 2005 report by the Educational Testing Service (ETS) (Barton, 2005, p. 8).
- Up to 55% of college freshmen entering 2- and 4-year institutions are underprepared for college-credit coursework and must enroll in remedial courses in reading, writing, and mathematics, according to a 2004 report by the National Commission on the NAEP 12th Grade Assessment and Reporting (p. 2).
- Because they are not well prepared in high school, first-year college students are dropping out of school in alarming numbers: One in four freshmen at 4-year institutions and one in two freshmen at 2-year institutions fail to return for a sophomore year, according to a 2004 report by ACT.
- Among the many barriers that limit high school students' readiness for college, the Association of American Colleges & Universities (AAC&U) cites "limited interpretations of learning" (p. 12). "Learning is more than the simple acquisition of discrete facts," according to an AAC&U report, *Greater Expectations: A New Vision for Learning as a Nation Goes to College* (National Panel, 2002, p. 12). "As students progress through their education, the need for analysis and integration, as well as factual recall, increases. In high school and college, students need to know facts, but even more importantly how to interpret and what to do with those facts. Information is transformed into internal knowledge as students apply their understandings to new situations, new problems, and new environments, thereby using their previous learning in challenging ways" (National Panel Report, 2002, p. 12).
- 84% of employers say K-12 schools are not doing a good job of preparing students for the workplace, according to a 2005 survey for the National Association of Manufacturers: 55% say schools are deficient in preparing students with basic employability skills (such as attendance, timeliness, and work ethic); 51% cite math and science deficiencies; and 38% cite reading and comprehension deficiencies (Eisen, Jasinowski, & Kleinert, 2005).

Although the United States historically has been a world leader in offering broad access to higher education, many other countries now provide comparable

access—and results. The graduates in these countries are in direct competition for jobs with U.S. graduates. The United States no longer holds a corner on the market for highly qualified workers. For example, the proportion of the college-age population that earned degrees in science and engineering fields, which are indispensable to economic growth, were substantially larger in more than 16 countries in Asia and Europe than in the United States in 2000, according to the National Science Foundation's 2004 *Science & Engineering Indicators* (National Science Board, 2004). Americans tend to dismiss such indicators with the notion that the United States remains the prime innovator in the world. Yet 48% of the U.S. patents granted in 2004 were of foreign origin, according to the U.S. Patent and Trademark Office. That share has been increasing steadily for years—from 18% in 1964 to 33% in 1974. . . to 42% in 1984. . . to 43% in 1994 (National Science Board, 2004, p. 0–8). The United States is no longer alone in understanding and capitalizing on the direct relationship between innovation and economic growth. Many countries now are focusing aggressively on turning their schools and industries into hotbeds of creativity, imagination and innovation—the areas in which economies will win or lose.

3. Technological and economic changes mean that companies have changed how they are organized and the way they do business. Workers have more responsibility and contribute more to productivity and innovation.

In response to economic changes, industries and firms have made significant organizational and behavioral shifts, such as flatter management structures, decentralized decision making, information sharing, and the use of task teams, cross-organizational networking, just-in-time inventory, and flexible work arrangements, according to several studies that have documented these changes. These shifts often are associated with increased productivity and innovation.

- A U.S. Census Bureau study (Black & Lynch, 2004) found significant firm-level productivity increases associated with changes in business practices, including reengineering, regular employee meetings, self-managed teams, upskilling of workers, and computer use by frontline workers.
- A U.S. Department of Labor study (Zoghi, Mohr, & Meyer, 2007) found a strong positive relationship between both information sharing and decentralized decision making, and a company's innovativeness.

Information and communications technologies (ICT) often have supported changes in organizational structures and practices for communication, information sharing, analysis, and simulation of business processes. Early studies of ICT use showed little productivity gain from technology investments. However, later studies found significant productivity gains associated with specific ways technology is used. For example, reviews of firm-level studies (Gera & Gu, 2004; Pilat, 2004) found that the greatest benefits are realized when ICT investments are accompanied by other organizational changes that ICT use makes possible, such as new strategies, business processes and practices, and organizational structures.

## What Are 21st Century Skills?

Given the economic and cultural changes we have just described, what should be done? The focus of our work is to advocate for the intentional integration of "21st century skills" into our nation's K-12 educational system. We believe the United States needs to do a much better job teaching and measuring advanced, 21st century skills that are the indispensible currency for participation, achievement, and competitiveness in the global community.

*All* Americans, not just an elite few, need 21st century skills that will increase their marketability, employability, and readiness for citizenship, such as the following:

- Thinking critically and making judgments about the barrage of information that comes their way every day—on the Web, in the media, in homes, workplaces, and everywhere else. Critical thinking empowers Americans to assess the credibility, accuracy, and value of information, analyze and evaluate information, make reasoned decisions, and take purposeful action.
- Solving complex, multidisciplinary, open-ended problems that all workers, in every kind of workplace, routinely encounter. The challenges workers face do not come in a multiple-choice format and typically do not have a single right answer nor can they be neatly categorized as "math problems," for example, or passed off to someone at a higher pay grade. Businesses expect employees at all levels to identify problems, think through solutions and alternatives, and explore new options if their approaches do not pan out. Often, this work involves groups of people with different knowledge and skills who, collectively, add value to their organizations.
- Creativity and entrepreneurial thinking—a skill set highly associated with job creation (Pink, 2005; Robinson, 2006; Sternberg, 1996). Many of the fastest growing jobs and emerging industries rely on workers' creative capacity—the ability to think unconventionally, question the herd, imagine new scenarios, and produce astonishing work. Likewise, Americans can create jobs for themselves and others with an entrepreneurial mindset—for example, the ability to recognize and act on opportunities and the willingness to embrace risk and responsibility.
- Communicating and collaborating with teams of people across cultural, geographic, and language boundaries—a necessity in diverse and multinational workplaces and communities. Mutually beneficial relationships are a central undercurrent to accomplishments in businesses—and it is not only top managers who represent companies anymore. All Americans must be skilled at interacting competently and respectfully with others.
- Making innovative use of knowledge, information, and opportunities to create new services, processes, and products. The global marketplace rewards organizations that rapidly and routinely find better ways of doing things. Companies want workers who can contribute in this environment.
- Taking charge of financial, health, and civic responsibilities, and making wise choices. From deciding how to invest their savings to choosing a health care

plan, Americans need more specialized skills—simply because the options are increasingly complex and the consequences of poor decisions could be dire.

These skills, comprehensively articulated by the Partnership for 21st Century Skills and highlighted on the following pages, will withstand the test of time, fluctuations in the economy and the marketplace, and the dynamic social and cultural demands facing our young people.

## A Shared Vision of a 21st Century Education System

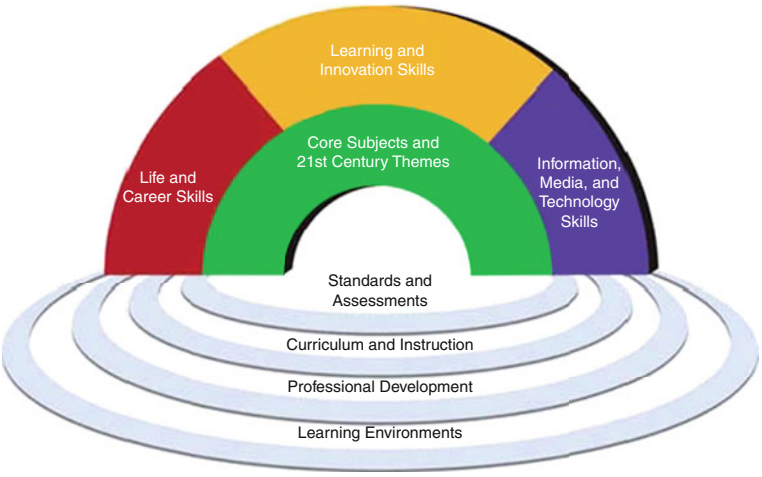
The Partnership for 21st Century Skills has developed a unified, collective vision for 21st century learning and education support systems that can be used to prepare young people for a global economy. This vision is the result of a multi-year, comprehensive effort to create a shared understanding and common vision for education. This effort included extensive research on 21st century skills, a National Forum on 21st Century Skills, and outreach sessions with educators, employers, parents, community members, and students.

For students, proficiency in 21st century skills—the skills, knowledge and expertise students must master to succeed in college, work, and life—should be the outcome of a 21st century education. To be "educated" today requires mastery of core subjects, 21st century themes, and 21st century skills. To help students achieve proficiency in 21st century skills, teachers and administrators need education support systems that strengthen their instructional, leadership and management capacity. And both students and educators need learning environments that are conducive to results.

Since the Partnership introduced this vision in 2002, many other advocates of young people and American workers, including youth development and after-school groups, library and media specialists, educational technology experts, and adult education and workforce development professionals, have found that it can be used as a guiding framework for their work.

## Framework for 21st Century Learning

The Partnership's framework for 21st Century Learning focuses on 21st century student outcomes (a blending of specific skills, content knowledge, expertise, and literacies) with the necessary support systems that must be present to help students acquire these critical skills. The key elements of 21st century learning are represented in the graphic and descriptions. The graphic represents both 21st century skills student outcomes (as represented by the arches of the rainbow) and 21st century skills support systems (as represented by the pools at the bottom). While the graphic represents each element distinctly for descriptive purposes, the Partnership




views all the components as fully interconnected in the process of 21st century teaching and learning.

## *Definitions—21st Century Student Outcomes*

The elements described in this section as "21st century student outcomes" (represented by the rainbow) are the skills, knowledge, and expertise students should master to succeed in work and life in the 21st century.

### Core Subjects and 21st Century Themes

Mastery of core subjects and 21st century themes are essential for students in the 21st century. Core subjects include the following:

- English, reading or language arts
- World languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and Civics

In addition to these subjects, we believe schools must move beyond a focus on basic competency in core subjects to promoting understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects, including the following:

Global Awareness

- Using 21st century skills to understand and address global issues
- Learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work, and community contexts
- Understanding other nations and cultures, including the use of non-English languages

Financial, Economic, Business, and Entrepreneurial Literacy

- Knowing how to make appropriate personal economic choices
- Understanding the role of the economy in society
- Using entrepreneurial skills to enhance workplace productivity and career options

Civic Literacy

- Participating effectively in civic life through knowing how to stay informed and understanding governmental processes
- Exercising the rights and obligations of citizenship at local, state, national, and global levels
- Understanding the local and global implications of civic decisions

Health Literacy

- Obtaining, interpreting and understanding basic health information and services and using such information and services in ways that enhance health
- Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance, and stress reduction
- Using available information to make appropriate health-related decisions
- Establishing and monitoring personal and family health goals
- Understanding national and international public health and safety issues

**Learning and Innovation Skills**

Learning and innovation skills increasingly are being recognized as those that separate students who are prepared for a more and more complex life and work environments in the 21st century, and those who are not. A focus on creativity, critical thinking, communication, and collaboration is essential to prepare students for the future.

Creativity and Innovation
Think Creatively

- Use a wide range of idea creation techniques (such as brainstorming)
- Create new and worthwhile ideas (both incremental and radical concepts)
- Elaborate, refine, analyze, and evaluate their own ideas in order to improve and maximize creative efforts

Work Creatively with Others

- Develop, implement, and communicate new ideas to others effectively
- Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work
- Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes Implement Innovations
- Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur

Critical Thinking and Problem Solving
Reason Effectively

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation

Use Systems Thinking

- Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems

Make Judgments and Decisions

- Effectively analyze and evaluate evidence, arguments, claims, and beliefs
- Analyze and evaluate major alternative points of view
- Synthesize and make connections between information and arguments
- Interpret information and draw conclusions based on the best analysis
- Reflect critically on learning experiences and processes

Solve Problems

- Solve different kinds of non-familiar problems in both conventional and innovative ways
- Identify and ask significant questions that clarify various points of view and lead to better solutions

Communication and Collaboration
Communicate Clearly

- Articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts
- Listen effectively to decipher meaning, including knowledge, values, attitudes, and intentions
- Use communication for a range of purposes (e.g., to inform, instruct, motivate, and persuade)
- Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact
- Communicate effectively in diverse environments (including multilingual)

Collaborate with Others

- Demonstrate ability to work effectively and respectfully with diverse teams
- Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assume shared responsibility for collaborative work and value the individual contributions made by each team member.

## *Core Subjects and 21st Century Themes*

The core subjects are the keystone of the 21st century skills framework. The Partnership believes that a 21st century education must be founded on the solid ground of content knowledge. But content knowledge doesn't mean storing up a pile of facts. As noted psychologist, Jerome Bruner wrote, "We teach a subject not to produce little living libraries on that subject, but rather to get a student to think mathematically for himself, to consider matters as an historian does, to take part in the process of knowledge-getting. Knowing is a process, not a product" (Bruner, 1966, p. 72).

Advances in cognitive science suggest that students master core subjects best when their instruction emphasizes depth over breadth of coverage (Bransford et al., 2000). In his latest book, Howard Gardner (2006), the psychologist renowned for his theory of multiple intelligences, stresses the importance of "the disciplined mind," the mastery of at least one scholarly discipline, craft, or profession. Mastery at this level requires a deep understanding of and extensive time studying the fundamental concepts within a discipline (Bransford et al., 2000).Yet many of today's content standards emphasize topical coverage, rather than deep understanding of a subject. Bransford et al. (2000) in their highly regarded review of learning science, *How People Learn*, state that trying to cover too many topics may actually prevent sustained engagement with a discipline's core ideas—and it is that depth of engagement on which true subject mastery depends.

Too often, the 21st century skills movement is drawn into a "content vs. skills" debate as if the two are mutually exclusive. In response, we stress the importance of developing deep mastery in the core subjects, *as long as those subjects are being*

*mastered alongside an explicit emphasis on 21st century skills.* We do not, in other words, advocate for a class on "critical thinking"; we often state that you cannot be an effective critical thinker *without something to think critically about*. At the same time, the most successful scientists, mathematicians, and historians all must be able to solve problems, think critically, communicate effectively, and collaborate on cross-disciplinary teams. This is the nature of our society and our workplaces today—less emphasis on silos of knowledge, and more reliance on 21st century skills.

In addition to the traditional core subjects, we believe schools must move beyond a focus on basic competency in core subjects to promoting understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects. In 1899, John Dewey wrote about the importance of relating school to life and the interrelationship of studies, (Dewey, 1899). Over 100 years ago, Dewey was perhaps ahead of his time in understanding the value of interdisciplinary themes. In the interconnected 21st century, though, we know that we must draw on multiple knowledge domains to find solutions for many of today's problems. This ability to span multiple domain boundaries is highly valued in today's competitive workplace. Harvard Business School professor Dorothy Barton Leonard (1998) found that people with "T-shaped skills," that is, those who speak two or more "professional languages" and can "see the world from two or more different perspectives" have the cognitive diversity needed to formulate innovative solutions to complex problems (p. 75).

The Partnership's Framework stresses interdisciplinary topics focused on four themes with special relevance to modern life: Global Awareness; Financial, Economic, Business, and Entrepreneurial Literacy; Civic Literacy; and Health Literacy. These themes are not entirely new, as professional education groups have advocated their introduction into the curriculum over recent decades to better prepare students for the demands of adult life. The Partnership believes that interdisciplinary topics are best approached through the core subjects listed above, as their effectiveness, according to curriculum expert Heidi Hayes Jacobs (1989), depends on a solid grounding in the same core disciplines linked by these interdisciplinary themes.

## *Learning and Innovation Skills*

Learning and innovation skills increasingly are being recognized as the skills that separate students who are prepared for increasingly complex life and work environments in the 21st century, and those who are not. A focus on creativity, critical thinking, communication, and collaboration is essential to prepare students for the future. These skills are often considered the "heart and soul" of our framework for learning.

### Critical Thinking and Problem Solving

The Partnership, as most educators do, uses the term critical thinking to describe the capacity of active investigative thinking. Scholar Diane Halpern (1996) has come up

with a useful definition "... thinking that is purposeful, reasoned, and goal directed" (p. 3). She notes "critical thinking also involves "evaluating the thinking process—the reasoning that went into the conclusion we've arrived at and the kinds of factors considered in making a decision" (p. 3). Other leading experts in the area of critical thinking stress its connection to creative thought. According to philosophers Richard Paul and Linda Elder (2006), "... sound thinking requires both imagination and intellectual standards" (p. 34). When we engage in high-quality thinking, we function both critically and creatively—we produce and assess, generate and judge the products of our thought.

Problem solving is generally understood to be the process of applying scientific and engineering methods of defining and describing a problem, generating potential solutions, and implementing, monitoring, and evaluating the effectiveness of the selected intervention (Canter, 2004). In the context of the 21st Century Framework, we might productively think of problem solving as the application of learning and innovation skills to a specific area of inquiry. Modern-day problems demand the full range of critical thinking, innovation, and creativity described above. We can no longer afford, as Daniel Pink (2005) says, to think with just half our brain. We must approach today's complex boundary-spanning problems with right-brain logical and analytical skills, *and* the creative, spontaneous, and metaphorical capacities that characterize left-brain thinking.

### Creativity and Innovation

Sir Kenneth Robinson (2006), a leading thinker and speaker on creativity, has said, "We do not grow into creativity, we grow out of it—or rather, we are educated out of it." For ages, traditional education, with its emphasis on rote learning and memorization of static facts, has valued conformity over novelty of thought. But in today's world of global competition and task automation, innovative capacity and a creative spirit are fast becoming requirements for personal and professional success. Robinson (2006) says, in fact, humanity's future depends on our ability to "reconstitute our conception of human capacity" and place creativity and innovation in the forefront of our educational systems.

Creativity thrives on freedom and friction and diversity to spark new ideas and gain new perspectives. Innovation keeps the creative spark alive and makes it useful to the wider world by drawing on practical sorts of expertise, such as replication and distribution and dissemination of information about the object of creation.

### Communication and Collaboration

The power of modern media and the ubiquity of communication technologies in all spheres of life suggest a renewed emphasis on the teaching of communication and collaboration skills. While education has always emphasized fluent reading, correct speech, and clear writing, there's evidence that students are not mastering even these basic skills. In the recent report, *Are They Really Ready to Work?* employers say that although Oral and Written Communication are among the top four skills they

seek in new hires, *all* graduates are lacking in these areas (The Conference Board, Partnership for 21st Century Skills & Corporate Voices for Working Families & The Society for Human Resource Management, 2006). High school graduates fare the worst, with 72% of employers citing this group's deficiency in Writing in English, and 81% citing their deficiency in Written Communications. For 2-year graduates, those figures, respectively, almost half of the employer said their skills in these two areas are lacking, while over a quarter of employers felt 4-year graduates lacked these skills.

## *Information, Media, and Technology Skills*

People in the 21st century live in a technology and media-suffused environment, marked by access to an abundance of information, rapid changes in technology tools, and the ability to collaborate and make individual contributions on an unprecedented scale. To be effective in the 21st century, citizens and workers must be able to exhibit a range of functional and critical thinking skills related to information, media, and technology.

Information literacy enables them to give meaning and value to the facts, figures, messages, and texts that fill our lives. When they know how to *access* data, they are better able to navigate the vast data ocean that surrounds our world. When they know how to *evaluate* that data, they can make sense of it, thus turning it into information. And by knowing how to effectively *use* information, they are able to convert it into useful knowledge. Thus, information literacy has a truly transformative effect, one that makes possible the acquisition of other skills necessary for 21st century life.

## *Life and Career Skills*

Today's life and work environments require far more than thinking skills and content knowledge. The ability to navigate the complex life and work environments in the globally competitive information age requires students to pay rigorous attention to developing adequate life and career skills.

The skills listed under the Life and Career Skills heading reflect the view that academic and cognitive skills, essential as they are, are not all that is necessary for a successful life. In our global technological age, young people also need to work with and learn from diverse groups, be flexible in a variety of work and social settings, and be adaptable to changing times. They need to demonstrate leadership and take responsibility for results, show initiative and resourcefulness, and be productive and accountable for their actions. Indeed, Howard Gardner (2006) allots two places to the "the respectful mind"—one that is culturally competent—and "the ethical mind"—one that is responsible and trustworthy—among his five minds for the future.

## *Twenty First Century Support Systems*

A key focus of the P21 framework involves 21st century support systems. While 21st century skills student outcomes represent the critical skills that every student should master, 21st century support systems—as described in this section—are equally important. These support systems make 21st century skills student outcomes possible. Twenty-first century standards, assessments, curriculum, instruction, professional development, and learning environments must be aligned to support 21st century outcomes for today's students.

## *Twenty First Century Standards*

Standards are an attempt to answer an essential educational question: what knowledge and skills do we want our children to learn? Not surprisingly, standards often engender debate, even conflict. Yet few people would dispute the need to better prepare children to meet the demands of modern life, making the guidance that standards provide very relevant.

Standards drive the critical elements of the American educational system—the curricula that schools follow, the textbooks students read, and the tests they take. Similarly, standards establish the levels of performance that students, teachers, and schools are expected to meet. Over the past two decades, state agencies and educational groups have paid considerable attention to describing what students need to know but without addressing the more complex thinking and technical skills that will govern 21st century life. Today's standards privilege fact-based learning and a few areas of study and have the following limitations:

- Cover only core subjects, when they should also include the life and career, learning and innovation, and information, media, and technology skills students need in the 21st century.
- Cover too many superficial topics; they do not promote deep understanding that represent true subject mastery.
- Focus on short-lived memorization of facts, rather than skills of analysis and synthesis that enable lifelong learning.
- Compartmentalize knowledge into subject-specific silos, and discourage students from achieving rich interdisciplinary perspectives and 21st century themes.
- Are measured by standardized high-stakes tests that assess only a small portion of the skills and themes defined in the Partnership for 21st Century Skills' Framework.

Standards set priorities that determine the overall direction of our nation's public schools. But while all states have them, because public education in the United States is chartered at the state level, every state determines its own. Thus, educational standards differ from state to state. Created by state agencies, and often

consisting of hundreds of pages of detail, actual standards documents are rarely seen by the general public. But because they function as a guidance system for schools, standards drive decisions about other, more visible, and often controversial educational components, such as curricula, textbooks, and assessments.

While standards typically define essential content knowledge, the Partnership for 21st Century Skills believes standards should go further and also define the skills that contribute to success in modern life, such as life skills, learning and innovation skills, and information, media, and technology skills. Therefore, 21st century skills standards should do the following:

- Focus on 21st century skills, content knowledge, and expertise
- Build understanding across and among core subjects as well as 21st century interdisciplinary themes
- Emphasize deep understanding rather than shallow knowledge
- Engage students with the real-world data, tools, and experts they will encounter in college, on the job, and in life–students learn best when actively engaged in solving meaningful problems
- Allow for multiple measures of mastery

## *Assessment of 21st Century Skills*

Student assessment, whether by standardized tests or classroom-based measures, is a cornerstone of effective teaching and learning. Taken as a whole, good assessments cannot only provide a reliable and valid measure of a student's learning and understanding but also help guide both teachers and students on a day-to-day basis.

Over the past two decades, assessment has played a central role in education policy in the United States, as it has in other countries for many decades. Large-scale, summative assessments, for example, are viewed as powerful levers for influencing what happens in schools and classrooms, and as such, assessment studies are routinely carried out to gauge the strengths and weaknesses of students. Furthermore, with the passage of the No Child Left Behind Act of 2001, testing has become not only more routine but also increasingly influential and focused on core content domains. Results from large-scale summative assessments, along with other measures of achievement, are regularly used to determine whether students can advance to the next grade and to judge the quality of schools and the educators who work in them.

In recent years, educators, business leaders, and policy makers in the United States have questioned whether the current design of assessment systems focuses too much on measuring students' ability to recall discrete facts using multiple choice tests at the cost of not adequately measuring a student's ability to engage in and complete complex thinking and problem-solving tasks. Outside observers of the U.S. school system have been quick to note potential shortcomings, claiming that narrowly focused high-stakes assessment systems produce at best only illusory student gains (Ridgeway, McCusker, & Pead, 2004). The end result is a widening

gap between the knowledge and skills students are acquiring in schools and the knowledge and skills needed to succeed in the increasingly global, technology-infused 21st century workplace. While the current assessment landscape is replete with assessments that measure knowledge of core content areas such as language arts, mathematics, science, and social studies, there is a comparative lack of assessments and analyses focused on 21st century skills. Current tests fall short in several key ways:

- The tests are not designed to gauge how well students apply what they know to new situations or evaluate how students might use technologies to solve problems or communicate ideas.
- While teachers and schools are being asked to modify their practice based on standardized test data, the tests are not designed to help teachers make decisions about how to target their daily instruction.
- Current testing systems are rarely designed to measure a school or district's contribution to learning from a student's first day until his or her last day.

Meeting the demands of today's world requires a shift in assessment strategies to measure the skills now prized in a complex global environment. The Partnership for 21st Century Skills believes that such a shift is vital to the widespread adoption of 21st century skills in our schools. We must move from primarily measuring discrete knowledge to measuring students' ability to think critically, examine problems, gather information, and make informed, reasoned decisions while using technology. In addition to posing real-world challenges, such assessments should accept a range of solutions to a task. For example, one possible assessment of 21st century skills would focus more on a student's operational skills, such as her expertise in using multiple sources appropriately and efficiently, rather than on whether or not a correct response was submitted.

With spending on assessment development in the United States alone is expected to grow into billions of dollars this decade, it is vital that our investment focuses not merely on fulfilling federal requirements but on preparing today's children to face the challenges of tomorrow's complex communities and workplaces. A balanced assessment system that measures 21st century skills should do the following:

- Support a balance of assessments, including high-quality standardized testing along with effective classroom formative and summative assessments
- Emphasize useful feedback on student performance that is embedded into everyday learning
- Require a balance of technology-enhanced, formative and summative assessments that measure student mastery of 21st century skills
- Enable development of portfolios of student work that demonstrate mastery of 21st century skills to educators and prospective employers
- Enable a balanced portfolio of measures to assess the educational system's effectiveness at reaching high levels of student competency in 21st century skills

## *Twenty First Century Curriculum and Instruction*

The relationship between curriculum and instruction is obviously a very close one. Curriculum is essentially a design, or roadmap for learning, and as such, focuses on knowledge and skills that are judged important to learn. Instruction is the means by which that learning will be achieved. To meet the needs of the 21st century learner and achieve the student outcomes described in its Framework, the Partnership calls on schools

- to adopt a 21st century curriculum that blends thinking and innovation skills; information, media, and Information and Communication Technology (ICT) literacy; and life and career skills in the context of core academic subjects and across interdisciplinary themes, and
- to employ methods of 21st century instruction that integrate innovative and research-proven teaching strategies, modern learning technologies, and real-world resources and contexts.

An effective 21st century skills approach to curriculum and instruction:

- Teaches 21st century skills discretely in the context of core subjects and 21st century interdisciplinary themes
- Focuses on providing opportunities for applying 21st century skills across content areas and for a competency-based approach to learning
- Enables innovative learning methods that integrate the use of supportive technologies, inquiry- and problem-based approaches and higher order thinking skills
- Encourages the integration of community resources beyond school walls

There is no one best approach for teaching 21st century skills. Each school system must determine what makes the most sense given their unique circumstances. As this chapter demonstrates, the Partnership's call for the integration of cognitive and social skills with content knowledge is not new to this century. There are, however, a few critical components that 21st century schools should make part of their curricula.

Perhaps foremost, and most obvious, is that the curriculum must go beyond content knowledge to include a strong emphasis on 21st century skills development. Research shows that when schools employ a curriculum that balances knowledge and skills, students may cover fewer topics, but they generally learn more than with a content-only curriculum. "The illusion of covering less is just that—an illusion" (Perkins, 1989, p. 87). "Perhaps fewer pages have been read, but the knowledge gains are almost always about the same or better. The topper, of course, is that gains in understanding and insight are often much greater. . ." (p. 87).

John Bransford (2000) observed that many people mistakenly feel students cannot be asked to master what are sometimes called "higher-level skills" unless they first learn basic content like that tested on standardized tests. But actually, he states,

"people are built to be learners who inquire and interrogate and get feedback as they learn to solve complex problems. So learning-to-learn and inquiry skills, guided by the ability to ask relevant questions due to knowledge of the 'big ideas' of various disciplines, are actually the fundamental skills that we need to emphasize" (p. 49).

## *Twenty First Century Professional Development*

The rapid pace of globalization, the shift from an industrial to an innovation economy, and the explosion of networked communications, have all created the need to work and interact in new ways and to gain fluency in new tools and paradigms. All young people today need to be critical thinkers and good problem solvers no matter what life path they choose. They also will need to be creative, innovative, and show aptitude in evolving skill areas, such as information, media, and technology skills. In addition, showing global awareness as well as knowledge in areas such as finance and civic literacy is increasingly necessary to navigate in today's world.

If students are to be prepared for these future challenges, schools and districts must recognize that teachers need to expand their skill set and receive training and support to infuse those new skills into the classroom. Teachers not only have to teach traditional subjects in new ways that acknowledge our digital future, but they also have to introduce topics that they may not be familiar with and have never taught before. Likewise, district and state administrators must recognize that teacher professional development should be a part of a comprehensive emphasis on 21st century skills, including updates to standards and assessments.

Twenty-first century skills professional development prepares teachers and principals to integrate 21st century skills into their classrooms and schools. It should be a part of a comprehensive emphasis on these skills, including an alignment with standards, curriculum, and assessments. Successful 21st century professional development programs share several common characteristics:

- Ensure educators understand the importance of 21st century skills and how to integrate them into daily instruction
- Enable collaboration among all participants
- Allow teachers and principals to construct their own learning communities
- Tap the expertise within a school or school district through coaching, mentoring, and team teaching
- Support educators in their role of facilitators of learning
- Use 21st century tools

More specifically, 21st century professional development includes the following:

- Highlights ways teachers can seize opportunities for integrating 21st century skills, tools and teaching strategies into their classroom practice—and help them identify what activities they can replace/de-emphasize

- Balances direct instruction with project-oriented teaching methods
- Illustrates how a deeper understanding of subject matter can actually enhance problem-solving, critical thinking, and other 21st century skills
- Enables 21st century professional learning communities for teachers that models the kinds of classroom learning that best promotes 21st century skills for students
- Cultivates teachers' ability to identify students' particular learning styles, intelligences, strengths and weaknesses
- Helps teachers develop their abilities to use various strategies (such as formative assessments) to reach diverse students and to create environments that support differentiated teaching and learning
- Supports the continuous evaluation of students' 21st century skills development
- Encourages knowledge sharing among communities of practitioners, using face-to-face, virtual, and blended communications
- Uses a scaleable and sustainable model of professional development

There are many ways in which educators can acquire 21st century skills training. Pre-service teachers should undertake programs of study that include 21st century skills instruction, especially in emerging fields, such as Information and Communication Technology (ICT). It is also recommended that teacher education institutions add 21st century skills competency to the accreditation criteria for teacher education programs.

For in-service teachers, "just-in-time" preparation that includes coaching and identification of new pedagogical tools and approaches to weave 21st century skills into content areas should be made available. Ideally, teaching academies, or other special initiatives, should exist so teachers can develop and renew 21st century skills and pedagogy in structured programs.

## *Tewenty First Century Learning Environments*

The term "learning environment" suggests place and space—a school, a classroom, a library. Indeed, much 21st century learning takes place in physical locations like these. But in today's interconnected and technology-driven world, a learning environment can be virtual, online, and remote; in other words, it does not have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that organize the condition in which humans learn best—systems that accommodate the unique learning needs of every learner, and support the positive human relationships needed for effective learning. Learning environments are the structures, tools, and communities that inspire students and educators to attain the knowledge and skills the 21st century demands of us all.

At first glance, a 21st century learning environment may appear to be one of several support systems in the Framework, but in fact, it is itself an integrated system of multiple supports. Thus, the Partnership views a 21st century learning environment as an aligned and synergistic *system of systems* that

- Creates learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes
- Supports professional learning communities that enable educators to collaborate, share best practices, and integrate 21st century skills into classroom practice
- Enables students to learn in relevant, real-world 21st century contexts (e.g., through project-based or other applied work)
- Allows equitable access to quality learning tools, technologies, and resources
- Provides 21st century architectural and interior designs for group, team, and individual learning.
- Supports expanded community and international involvement in learning, both face-to-face and online

Such an environment fosters learning tailored to the needs and wants of the individual. This sort of learning occurs anytime and anyplace, when and where the learner desires. It takes place in a context of relevance, *just in time*, rather than *just in case*. And such learning offers *just what I need*—that is, the opportunity to acquire knowledge and skills through learning strategies that are personalized and adapted to the learner's own learning styles and preferences.

## Conclusion

Over the past 7 years, the Partnership for 21st Century Skills has worked strenuously to advance this vision for teaching and learning across the country. It has gained broad support for education in 21st Century skills. An overwhelming 80% of American voters say the kinds of skills students need to learn to be prepared for the jobs of the 21st century is different from what they needed 20 years ago. Additionally, 88% of voters believe that the nation's schools can—and should—play a vital role in teaching 21st century skills (Partnership for 21st Century Skills, 2007); Employers across the United States cited professionalism/work ethic, oral and written communications, teamwork and collaboration, and critical thinking and problem solving as the most important skills that recently hired graduates from high school and 2- and 4-year postsecondary institutions need (Conley, 2007), according to a survey of 400 employers (the Conference Board, Partnership for 21st Century Skills, Corporate Voices for Working Families & the Society for Human Resource Professionals, 2006); and K-12 and Postsecondary Educators support it wholeheartedly. The 'components of college readiness' cited in a report prepared for the Bill & Melinda Gates Foundation—key cognitive strategies, key content, academic behaviors, and contextual skills and awareness— align well with the K-12 vision for a 21st century education (Conley, 2007). Likewise, "essential learning outcomes" for higher education—knowledge of human cultures and the natural world, intellectual and practical skills, personal and social responsibilities, and integrative learning—cite similar skills (Association of American Colleges and Universities, 2007).

The Partnership for 21st Century Skills includes members who represent K-12 education. Already, 10 Leadership States—Arizona, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Nevada, New Jersey, North Carolina, Ohio, South Dakota, West Virginia, and Wisconsin—have committed to infusing 21st century skills into their education and workforce development systems. Many more states and organizations are using the Partnership's *Framework for 21st Century Learning* to improve their education and workforce development policies and programs as well. States are using the *Framework for 21st Century Learning* to meet the unique academic, educational, economic, and workforce challenges they face. For example:

Arizona plans to align teacher preparation to 21st century skills and incorporate 21st century skills into statewide youth development programs.

Iowa is building 21st century skills into the Iowa Core Curriculum.

Kansas is improving workforce development by adopting career and technical education policies that strengthen the focus on 21st century skills.

Massachusetts is developing a Pathways to Success 21 Initiative to improve prospects of young people who drop out of education and employment systems and reconnect them to a pathway to success. The state also is embedding 21st century skills into its workforce development system.

Maine is addressing 21st century skills statewide through its newly formed 21st Century Skills Advisory Council, which brings together educators, business, and government.

New Jersey is revising its state standards in every subject to reflect 21st century skills student outcomes.

North Carolina's New Literacies Collaborative and Student STEM Symposium are multidisciplinary initiatives to build 21st century skills into literacy, media, technology, and STEM (science, technology, engineering, and mathematics) instructional programs.

South Dakota is convening business leaders, legislators, state education leaders, and educators to examine its education system and make comprehensive plans for 21st century learning.

West Virginia is developing internationally rigorous standards, assessments, and teacher preparation programs. The state also has created a Teacher Leadership Institute and a Teach 21Web site to help educators learn about 21st century skills and work collaboratively to plan and deliver 21st century instruction.

Wisconsin is coupling its 21st Century Skills Initiative with its participation in Achieve's American Diploma Project to revise its academic standards. The state also has committed to bringing international perspectives and skills to pre-K-16 education, including global literacy and world languages for all students and global training for all educators.

The Partnership brings together the business community, education leaders, and policy makers who believe that our education system can—and must—equip students with rigorous academic coursework *and* new kinds of knowledge and 21st century skills that will position them to meet life's challenges. For students, proficiency in 21st century skills—the skills, knowledge, and expertise they must

master to succeed in college, work and life—should be the outcome of a 21st century education. To be "educated" today requires mastery of core subjects, 21st century themes, and 21st century skills. To help students achieve proficiency in 21st century skills, teachers and administrators need education support systems that strengthen their instructional, leadership, and management capacity. And both students and educators need learning environments that are conducive to results.

Every aspect of our education system pre-K-12, postsecondary and adult education, after-school and youth development, workforce development and training, and teacher preparation programs—must be aligned to prepare citizens with the 21st century skills they need. We urge you to join us in moving education forward by making proficiency in 21st century skills the outcome of a 21st century education.

States: Join our State Leadership Initiative and prepare young people to thrive.

Businesses and organizations: Become a Member and join more than three dozen leading companies and organizations committed to 21st century skills.

Educators: Explore 21st century skills on Route 21, the go-to Web site dedicated to 21st century teaching and learning (http://www.p21.org/route21/).

Individuals: Learn more about 21st century skills and engage with local schools, businesses and afterschool organizations to advocate for the integration of these skills into educational programs. Visit our Web site (http://www.p21.org) to learn what you can do now and to subscribe to our updates.

## About the Partnership for 21st Century Skills

The Partnership for 21st Century Skills has emerged as the leading advocacy organization focused on infusing 21st century skills into education. The organization brings together the business community, education leaders, and policy makers to define a powerful vision for 21st century education to ensure every child's success as citizens and workers in the 21st century. The Partnership encourages schools, districts and states to advocate for the infusion of 21st century skills into education and provides tools and resources to help facilitate and drive change.

To learn more about 21st century learning and state actions to date, visit www.p21.org.

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# Chapter 4
# Educational Reform: What Have Federal and State Policy Makers Done?

**Rosalyn Anstine Templeton, Karen Huffman, and Celia E. Johnson**

## Introduction

Reforming education to ultimately develop 21st century learners is a worldwide central theme of our time. To be a productive citizen in the current century, one has to acquire a deeper understanding of international affairs, science, mathematics, and foreign languages (Stewart, 2005, 2008). Additionally, academic achievement will need to include learning to use inventive thinking, effective communication, technological literacy, and high productivity skills. Many have seen this reality and in the last few years, state agencies, communities, and schools have been examining how to redesign education so that students are able to compete globally in a diverse society (Stewart, 2008). The notion that redesigned schools can save society is what some (Parker, 2008) call magical thinking, since schools are embedded in and are a product of society. Nevertheless, in the United States, promoting educational reform has been the strategy used at the beginning of the 20th century to promote vocational education, in the 1950s to endorse rigorous math and science education, and in 1983 with the results of *A Nation At Risk* published by the National Commission on Excellence in Education that highlighted student underachievement compared to achievement scores of students in other countries.

With the current reform effort, a great deal of focus has been on international education. It is hoped that these globally savvy students will be equipped to build a strong worldwide economy, politically negotiate, and rid the world of terrorism (Parker, 2008). In order to accomplish these goals, Mike Bottery (2006) promotes that students (our future leaders) will have to be knowledgeable in seven types of globalization: economic, political, cultural, demographic, technological, linguistic, and environmental. He also suggests that these "different types of globalization interact and influence one another in diverse ways, producing a complex and difficult world" to understand (p. 14). Economic globalization, defined as the economic integration between countries, is considered the most influential globalization.

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_4,

Economic globalization can be measured in different ways, from goods and services, labor, and capital to technology and education. There has been a rapid increase in economic globalization in the past two decades and these linkages have made the world more accessible (Bottery, 2006; Parker, 2008; Stewart, 2008, 2005). There is a need for students to be able to succeed in a global society and teachers to facilitate the necessary learning environments.

Political and economic globalizations are closely connected and both are strongly intertwined into cultural globalization (Bottery, 2006; Cerny, 2007). Political globalization involves negotiated interactions between people on state, economic, and cultural levels (Cerny, 2007). The results of these interactions affect educators in a number of ways—from the proposed curricula teachers are expected to teach to the alignment of national standards to the integration of "globalness" (Bottery, 2006).

Cultural globalization can be defined as the extent to which values and ideas influence individuals in other countries (Kluver & Fu, 2004). [Cultural] globalization increases one's freedom and revitalizes cultures and its artifacts through influence, technologies, and the market economy. Another benefit is that cultural globalization frees people from being place-bound (Legrain, 2003). For example, the Fulbright program encourages international exchanges of students and scholars (Feigenbaum, 2001). The United States, as a country, has had a large cultural impact on other developed and developing countries. This U.S. influence can be seen in many areas such as political influence, military power, and impact on issues brought before the annual G8+5 Summits (the G8 nations include Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States, plus the five leading emerging economies, Brazil, China, India, Mexico, and South Africa) to name a few. American consumer culture is also vibrant in many parts of the world and individuals can drink Coke and eat at McDonald's, as well as listen to pop music, or wear Nike and Gap (Bottery, 2006; Legrain, 2003). However, other developed and developing nations are also crossing borders to share their culinary treats, clothing, music, dance, art, and movies. For example, Britain's favorite take-out is curry rather than hamburgers (Legrain, 2003). Educators will have to engage learners in ways that will make them skilled and astute consumers.

Demographic globalization, and more specifically the aging population, has been recognized as a major challenge in most developed and developing countries. As birth rates decrease and life expectancy increases, the issue of aging becomes a multidimensional process that influences economic, political, and cultural planes (Bottery, 2006; Magnus, 2009; Neilson, 2003). One concern is that as longevity and reduced fertility of younger populations increase, it equates to a decreased percentage of the population working and contributing to institutions like education. Another worry is that as the aging population increases, it will have more political power to support its own needs to the detriment of funding services for the young (Bottery, 2006), including education.

Technological globalization can be described as the enormous increase in the ability to interact and share ideas across the globe because of technological innovations (Bottery, 2006). Rycroft and Kash (1999) noted that the processes of technological innovation and globalization seem to be in a symbiotic relationship.

As a result, innovation networks (relationships between universities, firms, federal and state agencies, and other organizations) have formed. For educators, the opportunities to provide innovative learning experiences have been greatly expanded. The teacher now becomes a facilitator of students gaining knowledge rather than being a disseminator of new information (Bottery, 2006). With the benefits come some downfalls—most notable is the downward spiral of exclusion and creation of inequity (Castells, 2004). More specifically, the benefits of technological globalization will only come to those who can afford them; therefore widening the gap between the rich and the poor (Bottery, 2006). Teachers and students of the current century will have the burden of discovering and implementing ways to close this gap.

Currently linguistic globalization comes about in the number of countries promoting English. It is believed that by 2050, half of the world's population will be able to communicate with some level of proficiency in English (Legrain, 2003). The English language has its origin in the spread of the British Empire and appears to be the global standard. So whether the language is adopted from Britain, America, or develops into a new version of English, educators will be responsible for teaching its formal use (Bottery, 2006), as well as its conversational style.

With environmental globalization, one comes to understand how intertwined global environmental challenges are with globalization. Furthermore, these environmental challenges cannot be addressed without understanding the dynamics of globalization (Panayotou, 2000). Protecting the environment can be considered the one challenge that pulls all mankind together in an attempt to find solutions; while, at the same time, allowing globalization to continue (Baslar, 1998). Environmental globalization is a prominent topic on the agendas of the G8 Summits, and educators will have the responsibility of helping students learn how to become better protectors of our natural resources (Bottery, 2006).

Taking globalization into consideration, this chapter will highlight for readers the movement to redesign the educational system with a look at current global reform efforts, U.S. educational policies, successful state and federally initiated programs, and what educational reformers see as the future of education.

## Twenty First Century Learning in a Global Society

Learning in a globally connected atmosphere requires individuals to operate and succeed in an integrated, international environment. Therefore, understanding the subtle characteristics and specific norms of each culture is a must. Walter C. Parker (2008) noted that the "international education" movement surfaced for many reasons but most notably for national security and school reform. What does school reform look like globally? Many, if not most countries around the world have embarked on recreating their educational systems. Many of these reform efforts started at the beginning of the new century. A brief summary of these educational systems and their change efforts are listed below by selected countries.

## *Australia*

Education in Australia begins with pre-kindergarten for all children at age four. School education includes years K-12 and post-school education (higher or vocational education) beginning after year 12 (Australian Government, 2009). Australia's reform efforts look similar to the educational redesign movement in the United States in a number of ways (Karvelas, 2008). First, there has been a strong call for greater transparency of its K-12 education coming mainly from parents who want to have information about their children's schools, including their performance ratings (Gillard, 2009).

Second, Australia's governmental system is making education of its citizens a priority by implementing universal pre-kindergarten programming and building primary schools for the 21st century. All 4-year-olds will be able to attend school by 2013 (Karvelas, 2008). The Council of Australian Governments (COAG) endorsed major changes to its early childhood education system at its July 2009 meeting. These reform efforts include having a national system overseeing quality assurance and licensing, creating a national set of standards that integrate care and education, adopting a national curriculum framework, and developing an assessment system so parents can be informed. In addition to creating a universal pre-K system, Australia has committed $12.4 billion to creating 21st century primary schools that ensure students will have the needed skills to compete in a global society (Australian Government, 2009).

Additionally, as part of Prime Minister Kevin Rudd's "education revolution," there has been more interest and funding given to vocational education. The Australian Government (2009) oversees vocational education to ensure quality programming that meets the needs of society and obtains proven successful outcomes. Furthermore, there has been an increased interest in articulating Vocational Education Training (VET) programs with higher education programs (Moodie, 2009). According to couriermail.com.au, the number of students in vocational training in 2008 was at an all-time high—up by 1.9% compared to the previous year (July 7, 2009). In addition to implementing pre-K programs, the federal government has committed $12.4 billion to creating a number of primary schools for the 21st century that include community centers (Australian Government, 2009).

Looking to higher education, the Australian Government has made funding available to qualifying students (those coming from disadvantaged backgrounds) who want to study science and mathematics (Ferrari, 2008; McDougall, 2009). In 2009, an initiative to transform Australia's Higher Education was launched ensuring high quality education, more equitable access, and creating a 10-year reform agenda that addresses future challenges (Australian Government, 2009). Other education reform efforts that Australia is undertaking are standardized testing for students in grades three, five, seven, and nine; outcome-based assessments for postsecondary students; and improving the preparation of teachers through the creation of national teaching standards (Gillard, 2009).

## *Brazil*

The Brazilian Educational System is overseen by the federal government and is divided into four levels: infant, fundamental, intermediate, and higher education (undergraduate and graduate). Infant education supports all aspects of child development—psychomotor, cognitive, socio-affective, and linguistic. Assistance is provided for parents with young children in day nurseries (birth to 2), kindergartens (ages 2–3), and preschools (ages 4–6). Fundamental school is compulsory for students aged 7–14 years old. The curriculum for fundamental level students consists of a common core (Portuguese, Social Studies, Physics, Biology, and Mathematics) and a diversified part (defined by the needs of each educational system). Intermediate schooling takes a minimum of 3 years and 2,200 hours of school studies. If a program includes professional training, it may take 4 or 5 years to finish and is required to enter higher education. In addition, students must pass a classifying entrance exam, specific to each program (Brazil—Education, 2009).

Brazil has struggled with reforming its educational system. Educational reform initiatives have examined how students are assessed. With the 2000 Program for International Student Assessment (PISA, n.d.) results, Brazilian students scored the lowest of all participating countries (Guimaraes de Castro, 2002). Reform in Brazil appears to be isolated to projects in reading and science and implemented in specific cities, with the initiatives being supported locally rather than on the federal level. To improve literacy education, the Reading Circles Project was launched in 2000 by the Fernand Braudel Institute of World Economics. The goal of the project is to provide literacy learning opportunities to youth 13–17 years old. The Reading Circles are facilitated by individuals who are 20 years old and often have gone through the Reading Circles program when they were younger and are called educators. Additionally, each Reading Circle has a "multiplier" or a participant in the group assisting the educator. Both the educator and multiplier are paid for their duties. Participants in the Reading Circles Project learn how to read by studying the classics (Pompeu de Toledo, 2006).

Founded in 2006 by the Fernand Braudel Institute of World Economics, the Science Academy is after- and in-school programming that promotes interest in scientific topics by using an interactive, inquiry-based approach. The Science Academy is offered in high-need communities. Funding for the pilot project comes from the GE Foundation and Sangari Institute. Currently existing in three schools, the Science Academic has a strong peer leadership component (Instituto Fernand Braudel of World Economics, 2008).

## *China*

In China, Junior Secondary, and Senior Secondary education lasts for 12 years, with the first 9 years being compulsory and requiring passing end-of-term and yearly examinations in Chinese language and mathematics. Additionally, students in China

participate in after-school education programs, where content focuses on cultural, scientific, and recreational activities that have been organized and delivered by children's organizations or clubs. Therefore, art, music, sport, and physical movement are considered activities for after-school programs (Ministry of Education of the People's Republic of China, n.d.).

China has had many reform efforts. One of the largest and continuing efforts began in the 1990s, after adult illiteracy totaled 22% of the population ages 15–45. The effort to eradicate adult illiteracy has been enacted and implemented mainly in the rural areas of the country. Improvement has been made in the adult population; yet, the illiterate population continues to grow, so reform has been implemented in all primary and secondary schools. Additional improvement efforts focus on educating females, developing curricula and assessments, improving governmental leadership, researching illiteracy eradication strategies, and creating an overall evaluation mechanism (Ministry of Education of the People's Republic of China, Basic education, n.d.).

In 1999, an action plan was ratified that implemented strategies to improve science, technology, and quality education. Preschool education is considered universal in medium-sized and large urban areas and has a variety of configurations—from 1, 2, or 3 years and delivered hourly, part-time, full-time, or in a boarding environment. For rural areas, preschool often becomes nursery school, with seasonal kindergartens. Since 2002, regulations and rules guide both the operation of kindergarten programs and the education of its teachers.

## *England*

In England, education departments fund schools through a Local Education Authority. All children mandatorily start school at the age of 5, and receive full-time education in public schools using the National Curriculum adopted in 1992. Students are required to attend school from ages 5 to 16. Primary schools consist of 1 year of foundation at the age of 4, 2 years of key stage I and 4 years of key stage II. It takes students 5 years to complete secondary education. Students then take up to ten General Certificate of Secondary Education (GCSE) examinations in different subjects and can decide to either move up to vocational or technical colleges or take higher levels of secondary school exams—AS-Level after 1 year of study and A-Level after 2 years of study. Higher education usually begins at age 18, with approximately one-third (33%) of England's population attending universities or colleges. Currently, the government seeks an increase in the number of students who attend higher education and wants to increase attendance of those 18–30 years of age to 50% by 2010 (British Council, n.d.).

In England, educational reform efforts are focused on learning outside the classroom and issued a City Challenge to London, Black Country, and Manchester. The Learning Outside the Classroom (LOtC) manifesto was launched in November 2006 and is supported by the government with a purpose of promoting the widespread use of educational opportunities that lie outside the conventional classroom walls.

LOtC encourages schools and organizations to collaborate and support high-quality learning experiences for all young people up to the age of 19. This out-of-classroom learning focuses on environments that include adventurous education (climbing, water sports, trekking, caving, etc.), farming and countryside, natural environment, built environment, sacred space, school grounds, arts and creativity, and heritage (Learning Outside the Classroom, n.d.). Led by the Minister and Chief Advisor for London Schools, the City Challenge began in 2003 and has been extended to 2011. It is designed to achieve the following goals: (1) improving English and mathematics of underperforming schools; (2) increasing the number of high performing schools; (3) narrowing the achievement gap between children who are at a disadvantage and their peers; and (4) increasing the number of students going on to higher education (Department for Children & Schools and Families, 2009).

## *South Africa*

In South Africa the national Department of Education is responsible for providing an education framework. The nine provinces have their own education departments and oversee the administrative responsibilities of educating their learners. Additionally, elected school-governing bodies have significant input in how schools are managed. Schooling falls into three broad categories: general education and training, further education and training, and higher education and training. General education includes grades 0–9 and further education includes grades 10 through 12 for a total of 13 years. Higher education is overseen by the national Department of Education, with each institution of higher education (IHE) having a good deal of autonomy. In 2005, South Africa's 36 IHEs were consolidated into 22 universities (Education in South Africa, n.d.).

For South Africa, educational reform efforts began in 2008, with the launching of the Quality Learning and Teaching Campaign, which seeks commitments from department officials, teachers, students, parents, and communities to be dedicated to creating high-quality learning environments. A year later (October 2009), the Minister of Basic Education addressed the business community and asked them to commit support for and involvement in the Quality Learning and Teaching Campaign, in order for educational improvement to become the goal of the African society (Motshekga, 2009).

## *United States*

Education in the United States is funded by the U.S. Department of Education, State Departments of Education, and Local Education Agencies. It is a decentralized education system, which oversees education to the states, local authorities, public schools, and higher education. Ages of compulsory education vary from state to state but usually begin between the ages of 5 and 8 and end with ages 14–18. Education in the United States begins with early childhood education, which is

optional and fee-based. Some states have adopted public pre-K programs for 4-year-olds. Low-income families can qualify for Head Start, a federally funded preschool program. Preschool is followed by elementary school (ages 5–11), middle school (ages 12–14) and high school or secondary school (ages 15–18). After high school, students can attend postsecondary school or college (U.S. Department of Education, 2007).

Major reform efforts in the United States are federally mandated and include the No Child Left Behind (NCLB) Act of 2001 and the American Recovery and Reinvestment Act of 2009 (ARRA). NCLB was enacted in January of 2002 and began in 2003. Reform efforts are focused in four areas: accountability, more state freedom, proven methods, and parental choice (U.S. Department of Education, 2004). ARRA will infuse 100 billion dollars into education through direct competitive awards ending in September 2010 (U.S. Department of Education, 2009). Both NCLB and ARRA will be examined further in the next section.

## Educational Policy in the United States

In the United States, most education policies are set at the state and local levels. The federal government establishes broad policies to guide state and local policy alignment. The federal government established the Department of Education (ED) in 1980, combining several federal agencies. The ED budget is intended for the following:

- Establishing policies for regulating, distributing, and monitoring federal funding for education;
- Collecting and disseminating research data for the purpose of improving U.S. education;
- Supporting the efforts of state, local, public, and private entities seeking to improve U.S. education;
- Raising public awareness of key educational issues and promoting involvement in federally supported education programs;
- Ensuring equal access to education; and
- Increasing the coordination, management, and accountability of federally funded education programs and activities (U.S. Department of Education, n.d.)

The Elementary and Secondary Education Act (ESEA) of 1965 focused on improving education of children living in poverty. The ESEA laid the foundation for later educational reform policies emphasizing equal opportunity for quality education to all children from preschool through higher education. During the 1970s additional policies, such as the Education of All Handicapped Children Act of 1975, were passed increasing support for equal access to quality public education (Danns & Span, 2008). In 1994, the ESEA was reauthorized as the Improving America's Schools Act (IASA). Unfortunately, these policies were not

the comprehensive answer hoped for, as they did not address many challenges and complexities facing U.S. education, and U.S. students continued to lag behind in reading and mathematics.

By the turn of the 21st century, U.S. education was met with new challenges in a rapidly changing world. Amendments to the ESEA led to the current NCLB Act of 2002 giving the U.S. government a stronger role in education than ever before in its history. NCLB laid the foundation for standards-based education emphasizing four areas: accountability assessments for reading and mathematics, school choice, site-based decision making, and research-based practices (Stevenson, Schertzer, & Ham, 2008; U.S. Department of Education, 2002a, 2002b). Under the NCLB Act, each state sets individual standards for achievement and determines what and how those standards will be assessed. The research outcomes on student achievement following the implementation of NCLB are inconclusive with mixed results. Because of the complexities that exist in U.S. education (e.g., teaching to the test, implementation of a variety of programs and strategies, variation in teaching materials and teaching styles, quality of professional development), it is difficult to control variables to determine which changes in achievement can be attributed to NCLB (Center on Education Policy, 2008; Nichols, 2008; Stevenson et al., 2008). Beyond that, some of the benefits resulting from NCLB include the vast amount of data that is now available to help better understand student achievement. All 50 states now have standards for learning, assessing learning, and contributing data for analysis and interpretation. Since 2002, the Center on Education Policy (2008), an independent organization supporting public education advocating for effective schools, has conducted comprehensive research studies to determine trends in student achievement. Their research results concur with the U.S. Department of Education's (2008) report on progress in education showing the following two trends: (1) most state reading and mathematics achievement scores have gone up as well as scores on the National Assessment of Educational Progress (NAEP), and (2) data indicate that the achievement gap has narrowed on state and NAEP test scores. As with many policies, it has been difficult to determine the benefits of NCLB. The intentions of the policy are good; yet, the very thing hoped for is undermined possibly by aspects of the policy itself, and/or how the policy is being implemented.

Today, the federal government has taken unprecedented action to invest funding in K-12 education. The most recent federal legislation impacting educational policy is the American Recovery and Reinvestment Act (ARRA) signed by President Obama in February 2009. The ARRA earmarks $787 billion as a stimulus to create jobs in critical areas such as energy, health care, infrastructure, and education. An unparalleled $100 billion is allocated for education, providing an opportunity for significant change in 21st century education (Association for Supervision and Curriculum Development, 2010; Congress of the United States of America, 2009; U.S. Department of Education, 2009). This is an opportunity for policy makers in each state to evaluate the state of affairs as they apply for funding and design plans for change that would bring U.S. education into the 21st century. With ARRA stimulus money, policy makers have the power to create the necessary changes recommended by educational leaders (i.e., Linda Darling-Hammond, The National

Education Association, and the Partnership for 21st Century Skills). Necessary changes in the areas of instruction, licensure, teacher preparation, teacher recruitment and retention, educational research, and accountability will lead the way for establishing a U.S. educational system that is top-notch and globally competitive. Many states have implemented successful reform efforts in recent years. One state's success story is shared below.

## A State Success Story

The West Virginia Department of Education (WVDE, n.d.) has granted the authors' permission to reprint information for Section V: Programmatic Initiatives which comes from *A Chronicle of West Virginia's 21st Century Learning Initiative (2004–2008)*, a report written by the WVDE and Edvantia (2008).

## Birth of 21st Century Initiative in West Virginia

### *How the Idea Was Born*

In November 2004, Dr. Steven Paine, then West Virginia's Deputy State Superintendent of Schools, attended the Council of Chief State School Officers (CCSSO) conference at Kiawah Island, South Carolina, where he experienced his first substantive contact with the concept of developing 21st century skills. The conference included a session on the Partnership for 21st Century Skills (P21), led by P21 President Ken Kay (2004), who highlighted the key aspects of the Partnership and its intentions. After officially becoming State Superintendent of Schools on July 1, 2005, Dr. Paine realized the value of joining the Partnership (P21).

In August 2005, the West Virginia Board of Education stressed the urgency and need for change in West Virginia's educational system. After the release of the state's disappointing scores on the National Assessment of Educational Progress (NAEP), the West Virginia Department of Education (WVDE) began to assess the current curriculum, determining that the state's content standards met the minimal mastery level defined in NCLB and needed to become more rigorous to truly prepare students for a global society. Dr. Paine began building consensus among constituents for joining the P21 network, as a way to reform education in West Virginia (p. 1).

### *Joining the Partnership*

Dr. Paine, joined by Governor Joe Manchin, state legislators, educators, school systems, and businesses, signed onto the Partnership in November 2005 at a statewide event. West Virginia became the second state in the nation to join the Partnership for 21st Century Skills. P21, an advocacy organization that includes members from

the business community, education leaders, and policy makers, was developed to "define a powerful vision for 21st century education to ensure every child's success as a citizen and worker in the 21st century" (P21, 2004). Highlighted by four core learning outcomes, the unified vision of the Partnership is to develop teaching and learning for the 21st century in order to strengthen education in America. Joining this Partnership, the WVDE collaborated with leaders from business, government, and education, who committed themselves to systemic change that would prepare the youth of West Virginia to be productive and successful citizens globally, both now and in the future.

## The State Implementation of 21st Century Initiative in West Virginia

Building on existing innovative initiatives, the WVDE implemented a systematic plan to bring the concept of 21st century instruction and learning to scale. Given the size and demographic characteristics of the state, its educational system was perfectly poised to implement a total initiative. With just 703 public schools (plus 34 institutional schools, 41 vocational schools, and 3 schools for the deaf and blind), 281,711 students, 2,109 of whom are English language learners, and a student population that is 93.8% White, West Virginia was uniquely positioned to pilot this comprehensive initiative to transform a statewide educational system into a strong and rigorous 21st century teaching and learning environment (p. 1).

The WVDE, with guidance from the visionary work of P21, instituted a comprehensive framework of policies, strategies, and resources to implement 21st century learning and instruction. Prior to implementation of the P21 initiative, members of the WVDE, representatives of higher education, regional education service agencies (RESAs), the WV Center for Professional Development (WV CPD), and the WV Office of Educational Performance Audits (OEPA) engaged in approximately 100 hours of professional development. This instruction was designed to orient stakeholders to the P21 philosophy and begin to transform their thinking in terms of policy making and general approaches to education, as well as change the way state leaders think and work so as to model the kind of organizational change needed statewide.

As noted in a report developed in 2008 by WVDE and Edvantia, Inc., West Virginia implemented its 21st century teaching and learning initiative, now referred to as Global21, using the P21 process for building momentum and strategies for a successful statewide initiative outlined in publications from *Learning for the 21st Century: A Report and MILE Guide for 21st Century Skills* (2002) and A State Leader's Action Guide to 21st Century Skills: A New Vision for Education (2006). The process for building momentum included the following steps: establishment of vision; data analysis, planning, and process design; management and organization; standards and curriculum alignment; programmatic initiatives; technology integration; 21st century assessment; professional development; and collaboration with outside partners. The nine steps are examined in the following pages.

## Global 21 Shared Vision and Consensus

State education leaders made the case for 21st century learning by educating stakeholders at all levels to promote the importance of 21st century skills. Establishing and supporting legislation (3 senate bills and 2 House bills) and state and local policies (17 revised and 9 adopted), funding the integration of 21st century skills and core subjects, and reviewing existing technological infrastructures to determine and provide needed investments described actions taken to create consensus for a shared vision for educational reform. West Virginia developed and created a comprehensive communication strategy that included an active coalition of businesses, educators, organizations, and parents. Enlisting the support of educators, employers, and community groups and providing ongoing advice during the planning and implementation of the Global 21 initiative has resulted in broad consensus on the state's shared vision. The intent of disseminating a strong Global 21 vision is to keep everyone focused on the goals of the initiative that is guided by a set of core documents (21st Century Learning in WV, 21st Century Learning for WV Students, and a set of frameworks) and 39 critical implementation elements located at http://wvde.state.wv.us/dci/StrategicGoals.htm addressing all aspects and levels of the system.

### *Data Analysis, Planning, and Process Design*

The state engaged in comprehensive analyses of data in order to strategically plan the implementation of the Global 21 initiative and to design the processes that would move the state educational system toward the initiative's goals. Data analyses are ongoing and serve several purposes, including input for the design of the initiative, feedback on the progress of the initiative, and information on the success of the initiative.

### *Management and Organization*

The WVDE reorganized its divisions and offices to optimally support the initiative by reviewing the allocation of resources and making determinations as how best to allocate, or reallocate, resources to further Global 21 goals. One example of this reorganization is the creation of a new division entitled Educator Quality and System Support. The Division of Educator Quality and System Support focused work around the quality of teachers needed to deliver 21st century instruction, as well as the leadership needed for these Global 21 schools. Professional development was designed and delivered to core groups of district leaders, building leaders, and teacher leaders using the state's 21st Century School System Leadership Team Conference, the 21st Century Institute for Principals, and the 21st Century Teacher Leadership Institute. These core groups who received professional development replicated and extended their training in districts, schools, and classrooms each year.

In addition to this professional development, the WVDE formed a state system of support (SSOS) team approach to provide technical assistance to schools and districts in need of technical assistance and support. The SSOS team approach defined characteristics of under-performing schools, grouped these schools into tiers, and defined the level/duration of intervention needed for each tier.

### *Standards and Curriculum Aligned with 21st Century Skills*

WVDE's work to revise its curriculum and assessment standards ensured that curriculum standards incorporate 21st century skills, have the appropriate levels of rigor and relevance, and align with national and international standards. In addition, the WVDE has revised policies to ensure more rigorous graduation requirements for course completion, technology proficiency, and the integration of 21st century learning skills across the curriculum. The WVDE reviewed and revised all programs to support the 21st century learning needs of the state's students, ensuring a comprehensive array of programs that are available to support all aspects of curriculum, instruction, assessment, professional development, and the needs of diverse learners (http://wvde.state.wv.us/teach21/).

### *Programmatic Initiatives to Support Rigorous Content and Student Achievement*

Currently, the WVDE has 11 ongoing program initiatives that include universal pre-K, reading first expansion, phonemic awareness, response to intervention, online IEPs, No Label pilot, closing the achievement gap, special education monitoring system, NCLB monitoring system, cognitive tutor, math/science partnerships, state art emphasis and art alive, financial literacy, global awareness, model for school climate, coordinated school health, LINKS, model high schools, Project Lead the Way, high schools of business, and careers in education. Many of these programs existed prior to the launch of the Global21 initiative, so objectives had to be realigned and expanded to meet today's and future needs of students. One of the most notable programs is the WV Universal Pre-K initiative. Universal Pre-K programs in the state are nationally recognized as being one of five states to have mandated access for 4-year olds. The success of pre-K programming in the state lies with the strong partnerships it forms with Head Start, faith-based programs, and community programs.

### *Technology Integration to Support Rigorous Content and Student Achievement*

Given the critical importance of technology in the 21st century, WVDE has modeled the comprehensive and innovative uses of technology by embedding technology

integration across the entire Global21 initiative, including professional development, instruction, assessment, and instructional resources. The graphic used by the WVDE to illustrate the integration of technology to support rigorous content that leads to student achievement is a triangle with each side representing 21st century content, 21st century technology tools, and 21st century learning skills with student achievement in the center of the triangle. The WVDE provides a Web site that features standards-based units, lesson plans, instructional guides, and project-based learning designs. These instructional materials help teachers with integrating content, learning skills, and technology standards, research-based instructional strategies, differentiated instruction, and rich classroom assessments into their learning environments. Each unit of instruction includes a culminating performance, product, or project with an accompanying rubric (http://wvde.state.wv.us/teach21/).

## *Twenty First Century Assessments*

The WVDE has reformed student assessments to include summative assessment, benchmark assessment, and classroom assessment based on rigorous content standards and objectives that integrate learning skills and technology tools. The comprehensive assessment program is designed to measure a full range of knowledge and skills, explore multiple approaches to student accountability, improve record keeping on crucial learning outcomes, and develop an accreditation and accountability process focused on 21st century learning. Assessments are aligned to the content, context, and learning tools of the 21st century, as defined by P21 (http://wvde.state.wv.us/oaa/).

## *Ongoing Professional Development in 21st Century Skills*

WVDE has developed a comprehensive professional development (PD) initiative that focuses on building the capacity of district-level leadership teams, principals, and teacher leaders. The state supports administrators and teachers with ongoing professional development in 21st century skills, promotes the inclusion of 21st century skills in teacher education programs, and includes competency in 21st century skills in the accreditation criteria of educator preparation programs and the requirements for educator licensure. The number of PD days are listed below.

- WVDE staff members receive comprehensive knowledge of 21st century components through 11 days of required professional development. (Representatives of the 20 institutions of higher education (IHEs) that have approved educator preparation programs participated in this professional development).
- School district superintendents and district leadership staff receive comprehensive knowledge of 21st century components through six 3-day leadership conferences.

- All principals receive comprehensive knowledge of leadership skills necessary to create 21st century elementary, middle, and high schools through attendance at a 10-day 21st century leadership institute.
- Teachers receive comprehensive knowledge of 21st century content and pedagogy to create 21st century classrooms through the process of establishing 600 master teachers trained to support building-level professional development.
- Directors of the RESAs and support staff receive comprehensive knowledge of 21st century components through six 3-day leadership conferences.

### *Collaboration with Outside Partners*

The state has strategically involved a broad array of partners to support all aspects of the initiative, drawing on the best and most innovative programs and organizations to ensure that West Virginia's students receive the highest quality 21st century education. West Virginia's process for implementing its Global21 Learning Initiative includes targeted stakeholders receiving focused professional development to support successful implementation through the achievement of the following objectives delineated by P21 as student learning outcomes: (1) core subjects and 21st century themes; (2) information, media, and technology skills; (3) learning and innovation skills; and (4) life and career skills.

As of June 2008, there were approximately 35 reform initiatives taking place between the WVDE and local, state, and national level organizations. The following partnerships began in 2008:

- Buck Institute for Education located in Novato, CA provides training for educators to create high quality problem-based learning (PBL) environments.
- Center for Disease Control, Division of Adolescent and School Health—5 year project promotes healthy lifestyle behaviors.
- The Delaware Science Coalition (DSC) led a new science initiative for WV that provides teaching with inquiry modules and assessment rubrics.
- The Environment Systems Research Institute (ERSI) provides GIS software to middle and high schools.
- NASA Challenger Center provides interactive space simulation instruction.
- NASA IV and V Education Research Center (ERC) provides professional development for teachers.
- Parent and Community Involvement created a strategic plan and focuses efforts on promoting parent and community involvement.

The next steps for WVDE and its Global21 initiative include a recent submission for the Race to the Top grant that focuses on literacy and numeracy leading to increased student achievement, improved high school graduation rates, college readiness, and ensuring students have 21st century performance skills (http://wvde.state.wv.us/news/2023/).

Many states, including West Virginia, have made progress in their school reform efforts. At the national level, there have been many successful educational initiatives in the United States. An example of such a comprehensive program is shared in the following section.

## A Success Story from the United States

One successful educational program (Caputo, 2003) has been and continues to be Head Start that promotes school readiness by enhancing the social and cognitive development of children through the offering of educational, health, nutritional, social, and emotional services to enrolled children and families (U.S. Department of Health and Human Services, 2009). Head Start began in 1965 under the Office of Economic Opportunity, and in 1969 its organizational operation was transferred to the Department of Health, Education, and Welfare, where it resides today. Head Start provides services for children aged 4 and 5 from low-income families (USA.gov, 2009). Early Head Start began in 1995, as an extension of the Head Start program (Olsen & DeBoise, 2007) and offers services for children aged 0–3 (Gray & Francis, 2007). Head Start and Early Head Start's main purpose is to provide children living in disadvantaged situations opportunities for learning that meet their emotional, social, health, and psychological needs prior to beginning compulsory education (Gray & Francis, 2007) and therefore increases their chances of success in school (Ayoub et al., 2009; Olsen & DeBoise, 2007).

This federally funded program has experienced several changes over the years. The most notable change has come with the passage of the Improving Head Start Act of 2007 (2007) (H.R. 1429). This bill authorized $7.35 billion for fiscal year 2008 and the same amount for years 2009–2012. Additionally, this bill initiated several changes to improve services provided to children and their families. First, it increased the quality of programs and personnel. All new teachers hired after 2008 are required to hold an associate degree in early education or be working on the completion of that degree. Although Head Start teachers can currently work with an associate degree, by 2013 at least 50% must have earned a baccalaureate degree in early education or a related field. Teach for America teachers are eligible to teach in Head Start programs, as long as they pass a rigorous early education content exam and take part in continual professional development. Second, mandates were set into place to examine and update the existing early learning standards and to adopt rigorous assessments in the emerging literacy and vocabulary growth areas. Third, H.R. 1429 increases the amount of funding designated for training and technical assistance to ensure young children have the opportunity to learn 21st century skills. Also, more of the allocated funds will be earmarked for Early Head Start programming—from 12% (2008) to 20% (2012). Fourth, the current bill mandates the creation of a new program assessment system to identify high quality comprehensive programs that will be able to apply for a grant award for a period of 5 years. Underperforming programs will lose funding. Fifth, H.R. 1429 requires early identification of mental and physical health issues in children and families, such as

toxic stress, depression, obesity, and air quality. Sixth, the Improving Head Start Act of 2007 requires better coordination between Head Start and state-funded pre-kindergarten programs through the development of memoranda of understanding. Grants are available to State Early Education Councils for the purpose of creating a coordinated delivery system of services. Finally, H.R. 1429 requires a refocus on providing services for underrepresented children, including homeless children, limited English speakers, migrant or seasonal children, American Indian and Alaska native Head Start children, and families suffering from a disaster.

## A Look Ahead

Many educational reform experts (Christensen, Horn, & Johnson, 2008; Darling-Hammond, 2009; Kohn, 2009; Wagner, 2009) have recommended their method for curing the ills of education. However, they share similar beliefs in their reform efforts, with ideas such as teaching in-depth content, practicing critical thinking and problem solving, creating engaged and project-based learning environments, and building global awareness and technological capabilities to name a few.

Clayton Christensen and colleagues (2008) in *Disrupting Class* note that educational reform in existing schools is nearly impossible due to structural, political, and cultural barriers. The authors posit that school improvement comes through the disruption of an existing educational system and creation of a new organization—one that meets the needs of students' different learning styles and interests. The authors believe that demand and popularity of technology-based learning will be the catalyst to creating the necessary disruption to reform entire schools (Christensen et al., 2008).

In *The Global Achievement Gap*, Tony Wagner (2009) feels it is crucial for students to learn the following seven survival skills (core competencies): problem solving and critical thinking, collaboration across networks, adaptability, initiative, effective oral and written communication, analyzing information, and developing curiosity and imagination. The author's grave concern is that teachers are teaching for examinations, rather than creating environments where students are engaged in learning. Wagner noted that other developing countries such as China, Singapore, and India are refocusing their educational systems so that students remain motivated to experiment, innovate, and take risks. However, the United States is doing the opposite by requiring more alignment to standards, increasing testing, and analyzing data results to determine the achievement of students and success level of schools.

Alfie Kohn (2009), spoofing the hype educators are giving the 21stcentury school reform efforts, suggests that educational reformers needed to begin implementing learning and skills for 22nd century education. He believes that if individuals are confident enough to understand what education should look like over the next 90 years, it should not be difficult to reach into the 22nd century. Kohn makes four points that are vital to the success of our school system: (1) students will need to be able to understand and use critical thinking skills, (2) a serious focus on mathematics

and technology needs to occur, (3) curricula needs to be strictly aligned to state standards, and (4) merit pay should be used to ensure that teachers are providing environments where students are learning necessary skills (p. 39).

Linda Darling-Hammond a long-time promoter of educational reform focuses her efforts on teacher preparation and mentorships or professional development following degree completion. Her desire is to give educators an elevated image—from trade workers to professionals with the same status as doctors and lawyers, as well as increased salaries. Darling-Hammond formed her views based on systems in other countries, such as Finland, China, and Canada. With this new image comes extensive training and accountability through reward systems such as merit pay (Green, 2009). A good teacher education program, according to Darling-Hammond (2009) is coherent, where all course work and clinical experiences are organized around a theoretical vision and connected to practice. Student teachers are placed in expert, master teachers' classrooms. In such classrooms, co-planning and co-teaching takes place, with the teacher candidate assuming more and more responsibility and discussions centering on student learning.

Some reform experts have put their theories into practice through the creation of schools in which to practice their educational paradigms. The following will highlight three such organizations: Partnership for 21st Century Skills (P21), New Tech Network (n.d.), and The Key Schools. As noted earlier in Section V: Programmatic Initiatives, P21 is an initiative that requires states' top officials (governor and state superintendent) to commit to promoting statewide change by aligning curricula standards to include 21st century skills. Using this model to guide education, students learn the following skills: (1) core subjects (at mastery level) and 21st century themes (global awareness); (2) learning and innovation skills; (3) information, media, and technology skills; and (4) life and career skills (Partnership for 21st Century Skills, 2004). Currently, there are 14 states in the United States that have adopted P21 for reforming their educational systems. For more details on P21, see http://www.21stcenturyskills.org/

New Tech Network is an organization that works with schools and communities to develop high schools that are student-centered, technology-based, and innovative. Currently, New Tech is made up of 41 schools located in nine states. A systems approach is used to create learning environments where students and teachers are equally responsible for success. There are three guiding principles for New Tech High Schools: engaged learners, empowered students and teachers, and integrated technology use. Project-based learning (PBL) is vital to instruction because it uses technology, inquiry, issues, and questions to engage student teams in their own learning. Teachers become facilitators or coaches and students take charge of their own learning, find solutions to issues, and learn to manage their own actions. Next, students are empowered to take responsibility for themselves and their team members. This level of responsibility is similar to what would be expected in a professional work environment—allocation of time, roles of team members, collaboration, and exercising a voice. Finally, students become self-directed learners through the use of technologies and especially with a web-based system that allows learners to share projects, create new knowledge, track projects, and collaborate.

For more detailed information on New Tech Network access the following link: http://www.newtechnetwork.org/

There are a variety of types and educational levels of Key Schools. Key Schools in the United States often use project-based learning (PBL) and an experiential learning format to engage curiosity and develop creativity in students. The subsequent paragraphs give examples of a few Key Schools.

Incorporated almost 30 years ago, the Fluid Power Educational Foundation (FPEF) provides funding for the network of Key Schools. Its purpose is to make possible the education of individuals in the sciences and technologies of hydraulics, pneumatics, and associated technologies. The FPEF Key Schools are at the high school, college, and university levels. With approximately 20 schools across the USA, membership in this network is by application and a site visit. Each school site is reviewed every 3 years (FPEF Key Schools, 2010).

Founded in 1958 by several college professors, The Key School located in Annapolis, Maryland, is an independent institution. The school's academic curriculum is experientially designed and encourages intellectual rigor, independence of thought, and innovativeness. The mission at The Key School is to develop the whole person and students' intellectual curiosity. Their rigorous academic program emphasizes experiential learning, interdisciplinary studies, and a focus on global awareness (The Key School, n.d.).

Key School in Fort Worth, Texas, was founded in 1966 and serves children in first through twelfth grade with language, hearing, learning, ADD/ADHD, or other special learning needs and has an association with the Scottish Rite Hospital. Diverse teaching methodologies are used, and each student has small group and individualized instruction. Students attend Key School on a short- or long-term basis, with the goal of each returning to his or her regular school. Instruction is provided with a 9-month term and summer school(Key School, Inc., n.d.).

Initially opening in 1987, The Key Learning Community (n.d.) in Indianapolis is a public school for elementary (Key Elementary) and middle school (Key Renaissance) students that uses project-based learning and Howard Gardner's theory of multiple intelligences. It began as a program for gifted students in a regular school, but educators believed that this theory would work for all students and so began the creation of the Key School. The Key Renaissance (middle school) opened in 1993. Both schools place equal emphasis on the seven areas of intelligence, theme-based integrated curriculum, multiaged classes, projects, video portfolios, authentic assessments, and exit performance standards. There are future plans to create the Key Renaissance High School (Key School, Inc., n.d.).

## Conclusion

Each country has the responsibility of educating its people to ensure they will be able to live and work in a global society. Success has been defined by many countries as producing technology savvy citizens that can work globally, think critically,

solve problems, and be innovative (Stewart, 2008). To this end, developed and developing countries are taking steps at the local, state, and national levels to reform their educational systems. In the United States, there are various views on how to reform education. Some believe there has been an overemphasis on testing, creating a situation where teachers are teaching students how to take exams rather than creating learning environments where students can develop global awareness, practice thinking critically, solve problems, and be innovative (Wagner, 2009). Others think that reform of existing schools is impossible—new strategies dumped into old schools and left to be implemented by existing teachers will not work. It would be like rebuilding a ship on open seas. Change efforts must begin in a new environment with a different set of educators and, therefore, will be disruptive (Christensen et al., 2008). Still others believe that a total redesign of education should take place where there is no longer the need for traditional classrooms or schools. Learning can take place outside classrooms, via online instruction, in community centers, or businesses (Christensen et al., 2008; Learning Outside the Classroom, n.d.). Although the how and why of reform may take many shapes and forms, one thing is certain, U.S. educators have the rare opportunity to massively reform schools with the support of federal government funding.

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# Chapter 5
# A Needs Assessment: Reforming the U.S. School Curriculum

**Guofang Wan**

> *The future of our economy, the strength of our democracy, and even the health of our planet's ecosystems all depend on our educating future generations in ways that are very different from how the vast majority of us were schooled and how most schools function today*
>
> (Academy 21's Chief Executive Officer, Robert Witt).

> *What year are you preparing your students for? 1973? 1995? Can you honestly say that your school's curriculum and the program you use are preparing your students for 2015 or 2020? Are you even preparing them for today?*
>
> (Heidi Hayes Jacobs, 2010).

## Introduction

Shift happens—emerging technologies and globalization result in political, social, economic, educational, and cultural changes. These changes are having a profound impact on all aspects of human life including education. A nationwide poll of registered voters reveals a majority of Americans report that the kind of skills students need to be prepared for the jobs of the twenty-first century are different from those needed 20 years ago (P21, 2006). The world has changed, but school stays the same. There is an urgent need to transform the educational system to keep up with the challenges of the new era. Fundamental reform of school curriculum has been called for by people at all levels to make the education system more robust, rigorous, and relevant for students and to better prepare them to live, learn, work, and serve the public in a digital and global society.

However, how and where should we start this change process in the school curriculum? Guided by Tyler's classic model of curriculum development (1949), the study presented in this chapter intends to start the process of curriculum

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_5,

transformation by gathering information from participants of American education, contemporary life outside of school, and the subject matter. A needs assessment was conducted among school administrators, teachers, preservice teachers, students, and parents for the purpose of gaining feedback from these constituents of American education about the needs of the changing world, the current American school curriculum, and suggested directions for school curriculum reform.

## Theoretical Framework

Before tackling the issues related to American school curriculum, it is helpful to look at the various interpretations of the term curriculum. Some specialists conceive it in a narrow way as a set of subjects to be taught while others look at it in a broad way as all the experiences of learners both inside and outside of schools. Oliva (2009) provides some examples:

- Curriculum is that which is taught in school
- Curriculum is a program of studies
- Curriculum is a sequence of courses
- Curriculum is a series of experiences undergone by learners in school
- Curriculum is that which an individual learner experiences as a result of schooling

The author regards curriculum in a broad way as "that reconstruction of knowledge and experiences that enables the learners to grow in exercising intelligent control of subsequent knowledge and experience" (Tanner & Tanner, 2007, p. 99); and ". . . the formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations and values under the auspices of that school" (Doll, 1996, p. 15). This conception provides a framework for viewing the learning opportunities that school provides learners in developing knowledge, skills, and dispositions that are necessary for them to be successful in the twenty-first century.

Ten generally accepted guidelines may be used to guide continuous curriculum development (Oliva, 2009, p. 38):

- Curriculum change is inevitable and describable
- The curriculum is a product of its time
- Curriculum changes of earlier periods often coexist and overlap curriculum changes of later periods
- Curriculum changes result only as people are changed
- Curriculum development is a cooperative group activity
- Curriculum development is basically a process of making choices from among alternatives
- Curriculum development never ends
- Curriculum development is more effective if it is a comprehensive, not piecemeal, process

- Curriculum development is more effective when it follows a systematic process
- Curriculum development starts where the curriculum is

The example Oliva (2009) gives to show the need for curriculum update is that of the technique for coping with woolly mammoths, once paramount to prehistoric man, but no longer relevant, as woolly mammoths have disappeared. Today, the human race must learn to face other anxieties and problems like poverty, crime, drug addiction, job insecurities, homelessness, environmental problems, health problems, natural disasters, decreasing natural resources, intercultural and international conflicts, the military and industrial hazards of nuclear power and learn to use technological tools that are proliferating in both number and complexity at an astronomical rate. Schools "woolly mammoth" children when they offer outdated curriculum that ill equips children with unnecessary knowledge and skills (Oliva, 2009).

One of the best known models for curriculum development, the process of making curriculum decisions and reforming existing curriculum, is Ralph W. Tyler's classic model (1949). This model (Tyler, 1949) proceeds from the general (e.g., examining the needs of society and students) to the specific (e.g., educational objectives), representing a deductive process. He recommends deriving general and broad educational objectives by conducting a needs assessment, analyzing data relevant to student educational, social, occupational, physical, psychological, and recreational needs and interests, by analyzing the needs of contemporary life (such as health, family recreation, vocation, religion, consumption and civic roles) in the local community and in society at large, and by examining the subject matter itself (Tyler, 1949). Once this array of potential objectives is established, Tyler (1949) suggests a screening process through the lenses of the school's educational philosophy and educational psychology of learning to eliminate unimportant, irrelevant, and contradictory objectives. After establishing educational objectives, Tyler (1949) describes the process of curriculum development as the selection, organization, and evaluation of learning experiences. He defines learning experiences as "the interaction between the learner and the external conditions in the environment to which he can react" (Tyler, 1949, p. 63). He advises teachers to focus teaching on developing student skills in thinking and in acquiring information, and on developing social attitudes and interests (Tyler, 1949).

Another aspect of curriculum development relevant to this study is the multilevel and multisector nature of curriculum development: classroom, team/grade/department, individual school, school district, state, regional, national, and international sectors with each level contributing to curriculum decisions (Oliva, 2009).

## Related Studies

Recognizing the fact that a shift has happened and has impacted every aspect of human life including how people teach and learn, many concerned global citizens,

educators, and researchers have been asking a variety of relevant questions about the current school curriculum (AACTE & P21, 2010; Academy 21, n.d.a&b; Darling-Hammond, 2010; Jacobs, 2010; Treadwell, 2008a, 2008b). In this ever-changing world, are we providing our youth with the skills and agility necessary to succeed? Are we preparing our school leaders and teachers to effectively tackle and teach twenty-first century skills? How should we address the needs of diverse students? Wagner (2008b) asks specifically that in the new global economy, with many jobs being either automated or "off-shored," what skills will students need to build successful careers? What skills will they need to be good citizens?

European countries have called for redesigning ways of teaching and learning:

> In a world in which the stock of factual knowledge is created, distributed and accessed ever more rapidly, people's need to memorize such knowledge is declining. Instead, they need the appropriate tools for selecting, processing and applying the knowledge required to cope with changing employment, leisure and family patterns. This accounts for the growing tendency in education to develop competencies rather than teach factual knowledge. (Eurydice, 2002, p. 13)

There also have been heated discussions on the topic that our world has changed but our schools have not, and there are urgent calls from various sectors of the society to change and update school curriculum (AACTE & P21, 2010; Academy 21, n.d.a; NCSAW, 2007; Treadwell, 2008a; Wagner, 2008a, 2008b). The New Commission on the Skills of American Workforce (2007) urges revamping our nation's workforce education and training systems—and that it is done without delay.

> The core problem is that our education and training systems were built for another era . . . in which most workers needed only a rudimentary education. It is not possible to get where we have to go by patching that system . . . We must get where we must go only by changing the system itself. (p. 8)

Marc Tucker, president of the National Center on Education and the Economy and vice chairman of the private, nonpartisan commission provides a blunt message:

> Either we do a much better job of giving our young people the world-class skills and knowledge they need to compete in a swiftly integrating world economy, or we condemn them to working ever longer hours for ever lower pay. (Tucker, n.d., para. 1)

Academy 21 (n.d.a&b), a Hawaii-based leadership group for twenty-first century education states that the information-generating age makes it impossible to keep up with new developments and content-based knowledge. Rather than continue to push more and more content onto our youth, we need our youth to master the "skills of a living curriculum" necessary to succeed in an environment that is constantly shifting.

Tony Wagner (2008a), co-director of the Change Leadership Group (CLG) from the Harvard Graduate School of Education, asks why even our best schools do not teach the new survival skills our children need, and schools too must change if the United States is to remain a strong economic and intellectual leader in the world.

The American Association of Colleges of Teacher Education (AACTE) & Partnership for 21st Century Skills (P21) (2010) names three significant competitive realities that underscore why our education systems are due for dramatic change: the

United States faces two student achievement gaps (global and national gaps); fundamental changes in the economy, jobs, and businesses have reshaped workplaces; and the nature of work and the fundamental changes in the economy, jobs, and businesses are driving new, different skill demands.

The one general consensus coming out of discussions among the public on current school education in America is that American education systems are failing to adequately prepare all students with the essential skills—twenty-first century knowledge and skills—necessary to succeed in life, career, and citizenship (AACTE & P21, 2010). Wagner (2008b), through conversations with several hundred businesses, nonprofit, philanthropic, and education leaders and classroom observations in some of the most highly regarded schools in the nation, finds that "Even our 'best' schools are failing to prepare students for twenty-first century careers and citizenship" (p. 20).

A nationwide poll of registered voters by the Public Opinion Strategies and Peter D. Hart Research Associates in 2007 (Partnership for 21st Century Skills, 2007) reveals that Americans are deeply concerned that the United States is not preparing young people with the skills they need to compete in the global economy. The findings indicate that Americans understand that the economy has changed and that, without skills that reflect today's workforce demands, young people may face tougher challenges earning a living wage and maintaining U.S. competitiveness than previous generations did. A near universal 99% of voters surveyed agree that teaching twenty-first century skills is important to our country's future economic success, and 6 in 10 voters say our schools are not keeping pace with changing educational needs.

Bridgeland, Dilulio, Streeter, and Mason (2008) investigated parents' opinions about American education. Parents shared a desire for an engaging and challenging curriculum for their children. Parents want schools to push their children, to present lessons that are interesting, and to provide a curriculum that students will embrace. The study also reveals that parents hold different views on how well schools are helping their children in terms of the following: preparation for college; development of confidence, maturity, and personal skills; development of a special talent; and preparation for a good job. While 50% of parents with students in high-performing schools believe their children's high schools are doing a very good job, less than 20% of parents with students in low-performing schools say their children's schools are doing a very good job in each of these four categories.

Policy makers, educators, and education organizations worldwide have been working hard to identify the most important skills students will need for twenty-first century life, and have been advocating for the infusion of twenty-first century skills into the school curriculum. Similar definitions from several different sources have emerged (AACTE & P21, 2010; Academy 21, n.d.a; Eurydice, 2002; Ministry of Education, 2007; NCREL/Metiri 2002; NWRC, 2010; NCSAW, 2007; Treadwell, 2008a; Trilling, 2009; Wagner, 2008a&b). All these efforts point to the importance of teaching traditional core subjects, putting an emphasis on learning skills (information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills), and adding twenty-first century content (global awareness, financial, economic and business literacy, and civic literacy).

The New Commission on the Skills of American Workforce (NCSAW, 2007) states that strong skills in English, mathematics, technology, and science, as well as literature, history, and the arts will be essential for many; beyond this, candidates will have to be comfortable with ideas and abstractions, good at both analysis and synthesis, be creative and innovative, self-disciplined and well-organized, able to learn very quickly, work well as a member of a team, and have the flexibility to adapt quickly to frequent changes in the labor market as the shifts in the economy happen ever faster and more dramatically.

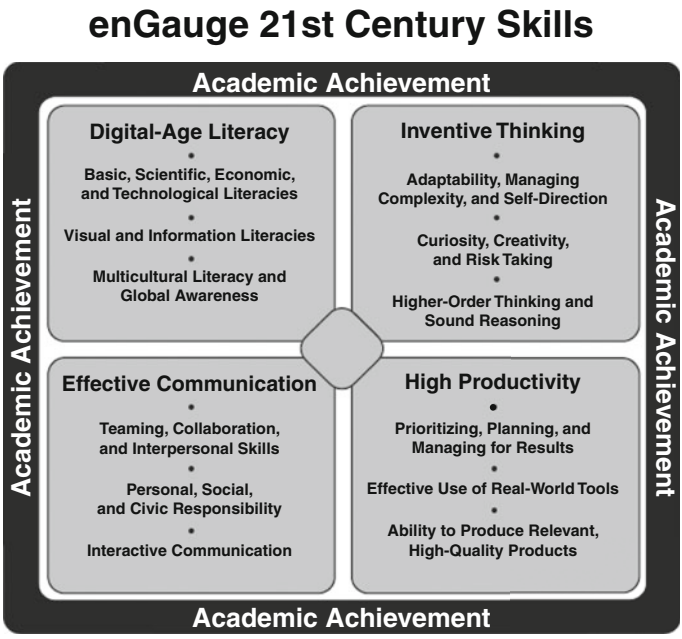
Partnership for 21st Century Skills (http://www.p21.org/) provides a framework for twenty-first century learning to help the American education system keep up by fusing the three Rs (reading, writing and arithmetic) and the four Cs (critical thinking and problem solving, communication, collaboration, and creativity and innovation). Its core academic subjects include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government, and civics; and its twenty-first century interdisciplinary themes/content include global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; environmental literacy.

The key competencies that European countries have reached consensus on include literacy and numeracy as the precondition for other learning; generic skills such as problem solving, reasoning, leadership, metacognition, and the ability to learn; attitudes or personal competencies such as curiosity, motivation, creativity, skepticism, honesty, enthusiasm, self-esteem, reliability, responsibility, initiative, and perseverance; social and interpersonal competencies such as effective communication, team work, language skills, and awareness of and respect for other cultures and traditions; and foreign language and basic concepts of science and technology (Eurydice, 2002).

*The New Zealand Curriculum* (Ministry of Education, 2007) encourages its students to value excellence; innovation, inquiry, and curiosity; diversity; equity; community and participation; ecological sustainability; integrity and respect. *The New Zealand Curriculum* identifies five key competencies for people to live, learn, and work: thinking; using language, symbols, and texts; managing self; relating to others; and participating and contributing. It specifies eight broad and general learning areas: English, the arts, health and physical education, learning languages, mathematics and statistics, science, social sciences, and technology. Principles underlying all school curriculum decisions include high expectations, Treaty of Waitangi, cultural diversity, inclusion, learning to learn, community engagement, coherence, and future focus.

The enGauge framework (NCREL & Metiri, 2002) describes a set of twenty-first century skills that will be increasingly important to students entering the workforce. It also states that these skills are not at odds with traditional educational skills but are extensions of those skills, adapted to new technologies and new work environments. The educational system will be challenged to encourage the development of these twenty-first century skills in relevant and meaningful ways.

The National Work Readiness Council and U.S. Chamber of Commerce (NWRC, 2010) publishes the skills that managers, supervisors, and workers across industries






deem critical for entry-level workers to succeed in today's workplace and global economy: "Listen actively; read with understanding; use math to solve problems; solve problems and make decisions; cooperate with others; resolve conflict and negotiate; observe critically; and take responsibility for learning" (p. 4).

Previous studies indicate that tremendous grassroots efforts have been made to raise awareness among the public, educators, policy makers, and private organizations about the urgent need to transform the current American education system. To meet society's challenges educational excellence is required; to reinvigorate the economy, and to achieve energy independence require us to prepare children well; to succeed in life and careers in the twenty-first century world, students need solid knowledge of traditional core subjects, plus twenty-first century content, and twenty-first century learning skills. However, a widespread consensus has been reached that the U.S. education system is slow in responding to the changing world and fails to adequately prepare all students with the essential twenty-first century knowledge and skills necessary for a successful life in the twenty-first century. The task of transforming the nation's educational system is extraordinarily difficult and complex. One aspect that the literature does not reveal is specific studies that gather opinions from actual participants (school administrators, teachers, preservice teachers, students, and parents) in public education about the current school curriculum and the need for change.

This study, a needs assessment for curriculum decisions, represents a systemic and data-driven research effort for the transformation of American school

curriculum to meet the needs of the twenty-first century. It is the first step in the curriculum development model described by Tyler (1949)—using students, society, and subject matter as sources to determine the needs of curriculum development. It strives to make responsive and informed decisions about curriculum change for the twenty-first century.

## Research Design

### *Research Questions*

This study aims to seek and explore answers to these questions:

1. Do stakeholders of schools see a need for change?
2. What do stakeholders of schools think about the current school curriculum?
3. What skills do they value/recommend for students?
4. What can schools do to better prepare students for a changing and challenging world?
5. How can school curriculum be changed to meet the needs of the twenty-first century?

### *Method*

This may be described as a mixed-method research because the survey collected both quantitative (questions 3–13) and qualitative (questions 14–16) data. It is believed that qualitative data complement, clarify, and illustrate quantitative results, and thus enhance and enrich the findings (Greene, Caracelli, & Graham, 1989); it also helps to test the consistency of the findings obtained through the quantitative survey questions in this case by way of triangulation.

This study, guided by Ralph Tyler's (1949) model of needs assessment for curriculum design, uses society, students, and subject matter as resources to determine educational goals. The role of a needs assessment is to collect information necessary to identify the strategies and actions required to improve current and future practice (Jiang, 2001). Built on the context of the changing new world, the study solicited opinions/ideas/suggestions from the education community—school administrators, teachers, preservice teachers, students, and parents who are active participants in public education on the issues of concern.

### *Data Collection and Participants*

First, a survey with 16 questions was created on Survey Monkey (a web-based survey software). It contained two demographic questions, 11 questions rated

on a 3-point Likert scale (agree, disagree, or neither agree/disagree), and three open-ended questions inviting free responses. The survey was piloted with 35 pre-service teachers and revised for clarification before data collection. Data were collected using a purposive selection of subjects who are all constituents of public education. This is a type of non-probability sampling, characterized by the use of judgment and a deliberate effort to obtain representative samples by including typical areas or groups in the sample. The limitation is possible errors (Kerlinger, 1986).

Permissions from relevant professional organizations' websites were obtained by email and phone calls to website monitors before posting the survey link on their social networks (Facebook, Ning, or blogs). The author also joined some relevant Facebook groups to reach a wider audience. Also, an invitation for participation was sent through e-mail to teachers and school administrators in the Coalition of Rural and Appalachian Schools (CORAS) consisting of 136 school districts in a 32-county region of Ohio designated as Appalachia. A description of the nature and confidentiality of the study was posted with the link to help potential respondents make an informed decision. Voluntary and anonymous participation was invited. All participants were 18 years old or above.

The survey link was posted on the social networks of these groups and e-mailed to CORAS schools to reach school personnel, teachers, preservice teachers, parents, and students:

- National Council of Teachers of English (NCTE);
- National Council of Teachers of Math (NCTM);
- National Science Teachers Association (NSTA);
- Making Curriculum Pop (http://mcpopmb.ning.com/)
- ASCA-American School Counselor Association
- Ohio Foreign Language Association Beginning Teachers
- Mathematics Teacher Education
- Idaho School Counselor Association Concordia Pre-Service Teachers
- American School
- Jordan Vocational High School
- Art Teachers
- High School Teachers
- High School Social Studies Teachers
- Chicago Teaching Fellows
- Wyoming Foreign Language Teachers' Association (WFLTA)
- The Paulo and Nita Freire International Project for Critical Pedagogy
- Parents of Victory School Children
- Parent Teacher Association (PTA)
- High School Football Parents
- Parents of children attending school
- Blackville School Parent's "Home & School Association"
- Shawnee Football Parents Fans
- National Merit Scholars

## *Data Analysis*

Data collected from this survey were analyzed quantitatively and qualitatively to determine whether the educational community perceived a need for school curriculum change, and if so, what changes the educational community suggested. Responses to questions 3 through 13 were analyzed to determine frequencies and percentages of agreement and disagreement to the questions. Responses to questions 14 through 16 were read and analyzed for emerging themes and interpretation.

## *Results*

A total of 153 responses were received from school personnel, administrators, teachers, parents, and students on the social networks listed earlier and from the CORAS school districts. Figures 5.1 and 5.2 indicate the demographics of the participants. The higher rates of participation belong to teachers (38.6%) and school administrators (34%) while the lower ones are students (7.2%) and parents (5.2%). Nearly 62% of the participants are from the Midwest and 18.4% are from the Northeast while only 2% are from the Southwest and 0.7% are from the West.

Setting the stage for further discussion, the goals of questions 4, 5, and 7 were to find out whether or not participants believe that technology and globalization have

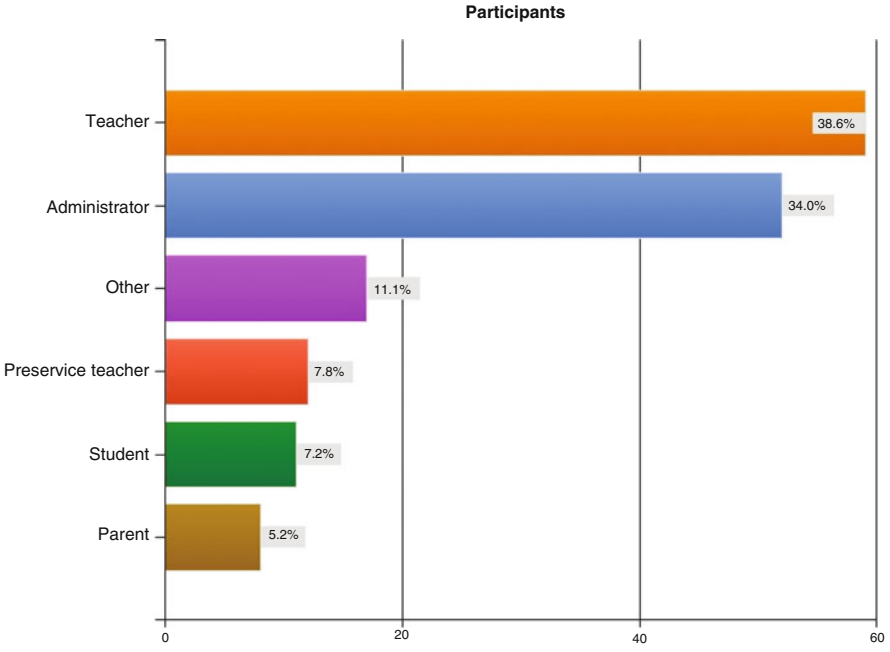



**Fig. 5.1** Participants

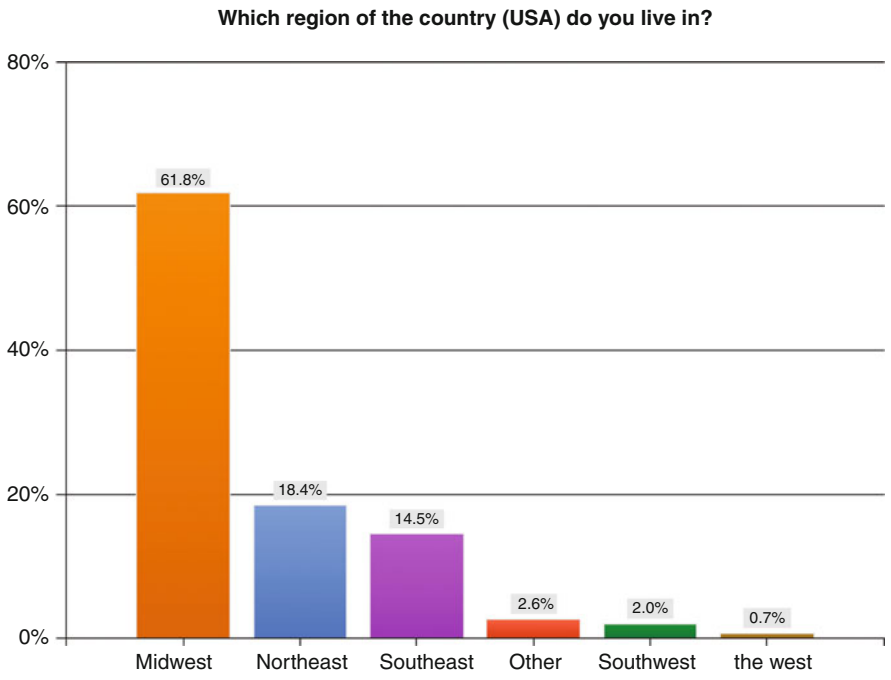



**Fig. 5.2** Region of the country

changed the context of education, skills required to live successfully in the new century are different from before, and the school curriculum needs to be updated accordingly. Overwhelming positive responses were received with 92.5, 91.7, and 94.0% agreement rates for questions 4, 5, and 7, respectively.

Questions 6, 8, and 9 sought participants' opinions about current American school curriculum and whether or not they believe that American education is slow to respond to the challenges (Q6) as well as whether American schools teach children outdated skills (Q8) while neglecting relevant twenty-first century skills (Q9). Table 5.1 shows that over half (62.7 and 57.5%) of respondents agree that American education is lagging behind the times and teaching with an outdated curriculum, and a majority (91.7%) believe that important twenty-first century skills

**Table 5.1** Questions 6, 8, and 9

| | Agree | | Disagree | | Neither | |
|---|---|---|---|---|---|---|
| Questions | % Freq. | | % Freq. | | % Freq. | |
| Q 6. | 62.7 | 84 | 26.9 | 36 | 10.4 | 14 |
| Q 8. | 57.5 | 77 | 22.4 | 30 | 20.1 | 27 |
| Q 9. | 91.7 | 122 | 4.5 | 6 | 3.8 | 5 |

are not emphasized enough in American schools. Questions 6 and 8, respectively, receive comparatively high disagreement rates (26.9 and 22.4%) on this survey than other questions.

Questions 3, 10, and 11 asked participants to express their opinions about some fundamental questions of education such as the purpose and goals of education and the impact of values of education recognized by society on student learning, and how someone views the purpose of education influences their views of how and what should be taught.

A majority of respondents agree that the purposes of education are as follows:

- Prepare students to succeed in postsecondary education (87.1%)
- Produce literate, educated citizens who participate in a democracy (96.2%)
- Prepare workers who can succeed in the modern global economy (92.5%)
- Teach the basics in reading, writing, math, and in building strong character (88.6%)
- Vocational education is as important as college-bond programs for the training of a globally competitive workforce (88.1%)
- Over 93% of the participants say that student learning is affected by how society and community view education.

Questions 12 and 13 sought participants' opinions on some specific areas of knowledge and skills that have been identified by professional organizations and companies as important for twenty-first century education. Figures 5.3 and 5.4 indicate that the majority of respondents embrace these areas of content knowledge and skills. With English, reading, and writing (99.3%), and math and sciences (97.8%) being the two higher rated areas of content knowledge, world languages (85.8%) and global awareness (87.2%) are comparatively lower than other areas. With critical thinking and problem solving (97.8%) and communication and collaboration (97%) being two higher rated skills, global awareness (88.8%) and morality and compassion (85.8%) receive relatively lower scores.

Questions 14, 15, and 16 were three open-ended questions asking participants to illustrate and clarify what knowledge and skills they see as pivotal for students to learn, and what changes and how the change process should start for American school curriculum. The following themes emerged as prominent.

For Question 14, in terms of knowledge, skills, and dispositions, a strong support indicates the need for a rigorous and adaptive core academic curriculum including the three Rs, sciences, social studies, and foreign languages, plus financial, health and media literacies, career education, and global cultural awareness. As respondents said, "American students need to be literate, first and foremost. They need to have a solid foundation in mathematics, the sciences, the social sciences, and technology."

> They need to know how to write to different audiences. They need knowledge of technology. They need to acquaint themselves with cultures in other countries, learn foreign languages, and develop tolerance of others . . .

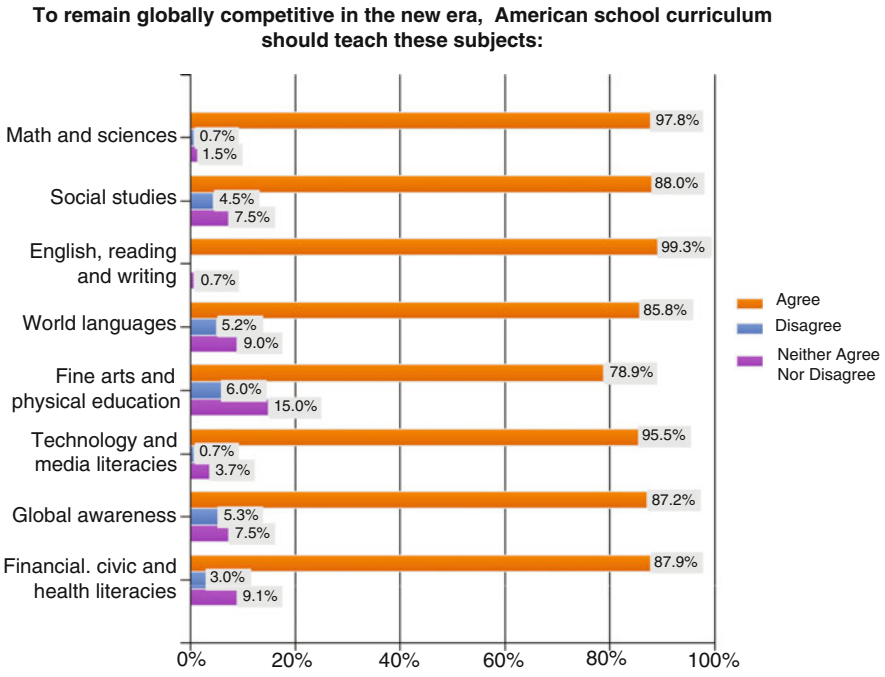



**Fig. 5.3** Subjects to teach

> I think the thing that is most glaring in terms of being left out of most schools in America is personal financial literacy and teaching students to weed through all the information that is out there. Students need to understand that just because they read it or hear it on the Internet does not necessarily make it true.

A strong suggestion was the need for building a well-rounded education including art, music, and physical education. One participant commented, "I also would like to see gym everyday—talking about an obesity epidemic is silly and tragic when the kids often have gym once or twice a week and no recess. I would like to see music and art taught seriously and not marginalized. I would like to see a foreign language introduced early, and dramatic methods included."

The list of recommended skills includes technology, leadership, flexibility, adaptability, collaboration, creative and critical thinking, innovation, communication, problem solving, research, and lifelong learning. In their words:

> Students need to be creative, adaptable, and inquisitive above traditional competencies in the academic disciplines.

> They need to develop support systems and collaborative efforts to accomplish team goals. [They need t]he ability to get along with others that have different points of view.

> Students need to be taught how to think critically. Additionally, they need to be able to use the resources available and be creative.

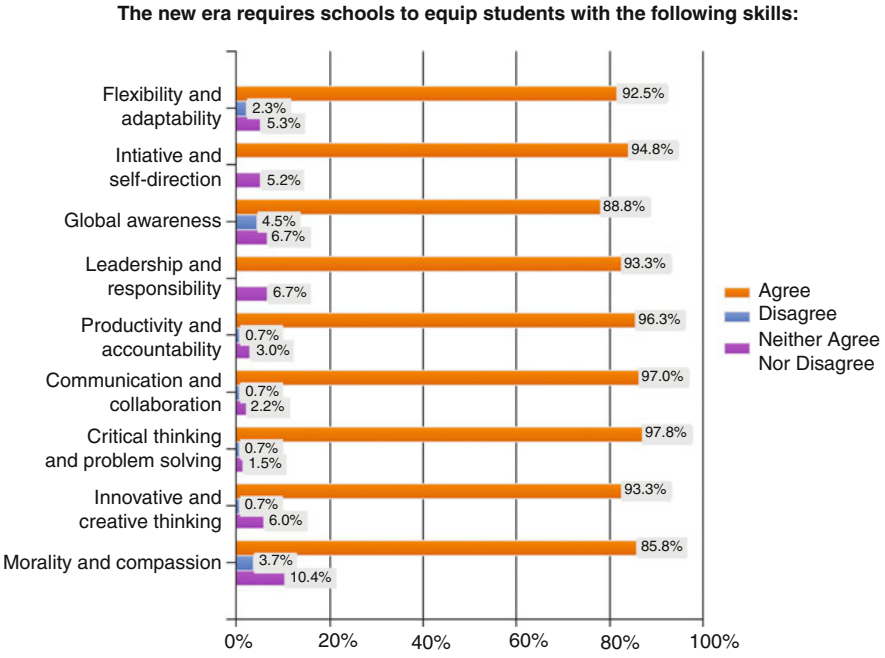



**Fig. 5.4** Skills to teach

Dispositions appearing as prominent include strong values that support individual freedom, respect for others, caring and compassion, goal-setting, strong work ethic and desire to learn, self-monitoring and self-discipline, and a sense of responsibility. Some comments that demonstrate these themes are as follows:

> . . . But more importantly they need to know how to take responsibility for their own learning and developing knowledge . . .. They need to be taught goal-setting and self-monitoring to stay on track to achieve their goals.
>
> Students need to have values and want to learn.
>
> [They need the] understanding and appreciation for the reasons why we attend school and why it should be valued.
>
> . . . Caring and compassion for others, multicultural education, and critical thinking skills would be a great start.

For question 15 respondents were passionate about putting their recommendations forward for American school curriculum reform. A major change suggested was to re-contextualize curriculum to make it more relevant to everyday life and the real world, rigorous and challenging in terms of updating content, and teaching should allow students to discover and learn and make connections to the outside world through appropriate instructional methods.

> America needs a more flexible and rigorous curriculum. Flexible to be interesting, challenging, relevant, and authentic. Rigorous so that students feel that curriculum is worthwhile . . .

> Creative and critical thinking encouraged – not rote learning. Working on real life problems.
>
> The American school curriculum must begin to move quickly into the media/technological world. . . . [M]ore experience-based learning opportunities – field trips, school gardens, etc.
>
> . . . Foreign language offered at an early age.
>
> Engage students in many art-related activities that are known to enhance cognitive abilities. P.E. classes that teach students how to be active and healthy.
>
> More emphasis should be on educating the student on everyday financial issues, i.e., finance charges on credit cards, importance of a good credit rating, banking . . .
>
> American high school students are still reading classic novels while competitive countries are educating students in the understanding of technical manuals and real-life application of math and science content . . . .
>
> As a physics and geometry teacher, I am a big fan of inquiry learning. I could have them memorize Side-Angle-Side rules for triangles, or they could figure it out themselves. If they do the second, then the next time they come upon a challenge, they will be more prepared to work on their own rather than wait for someone to give them an answer to memorize.

There are also calls for re-focusing on basic competencies of math and literacy:

> Also refocus on basic competencies, multiplication tables, solid writing skills.
>
> The American school curriculum is lacking in Math Skills. Please get rid of "Fuzzy Math" and the spiral theory and return to a standard of mastery of a skill the first time around with the correct answer not a guesstimate.
>
> Quit teaching facts for students to regurgitate on the high-stakes tests and start teaching kids how to think abstractly, independently problem solve, and creative/innovative, and be able to generalize learning information into other related subjects.

The idea that "less is more" is another important theme in terms of the depth and breadth of school curriculum.

> Paring down what we teach at each level; learning for deeper understanding. More technology integration.
>
> A narrower but in-depth curriculum instead of a wide swath of performance indicators with little or no depth of learning. Level of expectation needs to be increased (level of rigor-Bloom's Taxonomy)

Better vocational and life skills education for students who are not going to college is called for. "More hands-on living skills for those not attending college. Plumbers, electricians, carpenters, etc. Those not going to college should have vocational choices of these classes."

Many responses address the issue of standards and standardized testing. There is agreement that some standards are needed, but accountability could be measured differently. The current standardized testing is counterproductive to learning.

> The number of standards needs to be simplified. Teaching 85 state standards is ridiculous.
>
> Children are tested too much right now. When testing time is added together, our children are missing weeks of education.
>
> Eliminate standardized testing that doesn't test what teachers are encouraged to teach.

> . . . I think we have far too great an emphasis on standardized tests in the U.S. – those tests do not authentically assess knowledge and force teachers to teach to the test. These tests do not prepare students for the real world and de-emphasize critical thinking and problem-solving skills. Many other countries with far more successful educational systems do not rely so heavily on standardized tests.

Respondents also believe in collaboration between school, family, and community and think they should be the core to any curriculum.

> I (believe) that students need to come to education prepared by their parents to learn and with the value of education instilled in them by their parents. Schools cannot and should not teach everything. Parents need to continue their jobs at home of educating their children and preparing them for school. For example, parents need to instill a love of reading in their children, the ability of children to entertain themselves in other ways than to watch TV or play video games, etc.

> Parent training is needed to support school personnel in the process of educating our children in a global setting.

Question 16 asked respondents where and how they would implement the curriculum changes indicated. Two main trends emerged as to where to begin the change. One group supported grassroots change starting with local communities, classroom teachers, and students while the other group would like to see guidance and support from the state and federal government with a nationwide effort. Their opinions are expressed below.

> It should start in the classroom with the students and the instructor. . . . State and districts' input should be based on the community-businesses, industries, medicine, etc. . . . Getting students more involved would help to stimulate interests.

> Local school districts should play a major role in what their school district needs to prepare students for the next level . . . be it higher education or the basic skills for the workplace. . . .

> Curriculum changes have to start with more collaboration between educators and other community leaders from the business community.

A top down approach for curriculum change proposed by others argued that

> Some of the major changes need to occur at the state or national level. The only way that these changes will occur is if we revolutionize the way we 'do school.'

> Guidance should come from the national and state educational programs to ensure consistency.

Recognizing the difficulty of changing the 100-year-old system of education and way of thinking, participants acknowledge the urgency of this task and its complex nature with multi-level efforts and multi-dimensional factors.

> It's tough to change thinking . . . This will be the challenge. It is amazing to me how difficult it is for professionals to keep an open mind and take ownership in new learning. We are operative [sic] in a system that was built 100+ years ago and the reasons for its being are no longer in existence. It will be important to create a sense of urgency, provide information in various ways to build a support system that will assist educators and parents as we make this journey.

> After this, in-service people and give them time to build new curriculum and test what they have done with real students.

> They should be looked at from many levels and directions. There must be stakeholders from all areas such as state, national, and local agencies. There should be teachers and students involved in the process.

Regarding what aspects to reform, some see equalizing school financing as a priority while others recommend examining and comparing current K-12 curriculum with the needs of community, business, and students, and removing outdated content, replacing it with relevant content, and changing the current assessment system. Here are some representative comments:

> A first step might be the centralizing of funding of all public education within each state by dissolving local school districts that are abysmally and woefully unequal in their economic ability to support viable effective curriculum change. The accident of the location of a child's birth or habitat should not be the determiner of the quality of that child's learning experience . . . . Some states have already taken steps to equalize educational funding more than others . . . .

> Well at an administrative level we need to look at what works for students in the future. That way we can get rid of some of the old curriculum that serves little or no purpose and plug in modern relevant courses.

> Educators and administrators need to take a close look at what skills are needed in today's workplace and then examine how other countries are addressing these needs. We also need to bring employers into the curriculum planning mix to get a real understanding of what skills are needed for successful employment and survival in the global economy.

> We need to start with our assessments. When we develop accurate, authentic assessments it will shape what we do as far as our instructional practices.

## Discussion and Conclusion

The shift from the Industrial Age to the Knowledge Age has forever changed the needs and values of our careers, life, and learning. As Richard Riley, former Secretary of Education under President Clinton said, "We are currently preparing students for jobs that don't yet exist . . . using technologies that haven't yet been invented . . . . in order to solve problems we don't even know are problems yet" (Trilling, 2009, p. 3). The majority of the participants in the study recognize the fact that the world has fundamentally changed and school curriculum should change accordingly, which is in line with Oliva's (2009) remark, "The system that we call education responds to changes as conditions in its suprasystem (society) change. Curriculum change is a normal, expected consequence of changes in the environment" (p. 38). "Education as an institution is activated by a curriculum that itself changes in response to forces affecting it" (Oliva, 2009, p. 21). Schools "woolly mammoth" children when they offer outdated curriculum (Oliva). As curriculum is a product of time, in order to serve its learners well, change should be constant as much as it is inevitable.

The study also shows that the constituents of American education validate the consensus of the general public (AACTE & P21, 2010; Academy 21, n.d.a; NCSAW, 2007; Treadwell, 2008a; Wagner, 2008a, 2008b) that current American

education does not adequately prepare all students with the essential skills—twenty-first century knowledge and skills—necessary to succeed in life and career (AACTE & P21, 2010; Wagner, 2008b). It is recognized that the skill sets people needed for the Agrarian Age (farming and crafts), the Industrial Age (factory, trade, and industry job skills), and need for the Knowledge Age (technology tools and lifelong learning) are quite different (Trilling, 2009). "In the Knowledge Age, brainpower replaces brawnpower, and mechanical horsepower gives way to electronic hertzpower" (Trilling, 2009, p. 16). The Knowledge Age is characterized by an abundance of information, advanced technology, and keen global competition. Schools need to make sure they prepare children for these new challenges and characteristics of the new century.

Participants in this study also embraced and acknowledged the core academic knowledge and twenty-first century skill sets and dispositions that have been identified and recommended for infusion in school curriculum by a number of powerful professional organizations and global forces (AACTE & P21, 2010; Academy 21 n.d.a&b; Eurydice, 2002; Ministry of Education, 2007; NCREL/Metiri, 2002; NCSAW, 2007; NWRC, 2010; Treadwell, 2008a) working on transforming teaching and learning to meet the demands of our time. Taking into consideration the needs of society, students, and subject matter as we transform school curriculum is a very important step according to Tyler's (1949) curriculum development model. Going by the broader definition that school curriculum refers to the experiences and opportunities that children receive from schooling which allow them to gain knowledge and understanding, develop skills, and alter attitudes, appreciations, and values (Doll, 1996), advocacy for schools to teach the whole child with twenty-first century content, skills, and dispositions is definitely commendable. This position is also supported by participants' positive responses to question 3, the four purposes of education, which represents a broad view of education.

After confirming that times have changed, and the American school curriculum needs to be updated and embracing a rigorous core academic curriculum with basic skills and twenty-first century content with the infusion of twenty-first century skills and dispositions, the participants make suggestions about where and how to start this transformation of a 100-year-old educational system. The author is immensely impressed by the knowledge, dedication, and thoughtfulness that the participants demonstrated while articulating their input to questions 14, 15, and 16, and finds their responses extremely insightful, refreshing, and truthful. Not only have they shared their opinions but have also made helpful suggestions for American curriculum change. To the author, these responses draw a meaningful blue print for the American school curriculum reform: start the process at the grassroots level with teachers and students; update curriculum content and instructional strategies to meet twenty-first century needs; start teaching foreign languages in early grades; provide a well-rounded curriculum with arts, music, and physical education; teach critical media and technology skills, financial and health literacies, and global awareness; and infuse twenty-first century skills as identified by national and international groups such as P21 (http://www.p21.org/).

For any changes to take place, the best approach, in the author's opinion, is "bottom up" as one of the ten principles of curriculum development suggests,

"Curriculum change results only as people are changed" (Oliva, 2009, p. 38). Buy-in from people in the classrooms and communities makes or breaks the change process. Of course, strong support from the federal and state governments is needed for the success as well. Also as childrens' well-being, physical and mental health is the number one prerequisite for any learning to take place, regular physical and health education should never be slighted.

The suggestion for teaching foreign languages in early grades and designating them as core subject is sound and invaluable. Language learning provides a means of communicating with people from other cultures and promotes global understanding at the same time. As languages are inseparably linked to the social and cultural contexts in which they are used, they link people locally and globally. Also people around the world learn to speak English and use it as a convenient tool to work with English speaking countries, and to outsource our jobs. Why don't we provide our children in the United States with foreign languages, the communication tool to work with other countries and to compete globally?

Modern language learning has been at the heart of learning for children in many countries around the world. Pufahl, Rhodes, and Christian (2001) conducted a study involving 19 countries, Australia, Austria, Brazil, Canada, Chile, Czech Republic, Denmark, Finland, Germany, Israel, Italy, Kazakhstan, Luxembourg, Morocco, the Netherlands, New Zealand, Peru, Spain, and Thailand and reported that beginning foreign language study early promotes achievement of higher levels of language proficiency. Seven of the countries studied have compulsory education in foreign languages by age 8, and another eight countries introduce foreign languages in the upper elementary grades. In 2007, the UK government made a recommendation to put modern foreign languages on the primary timetable and a compulsory part of the national curriculum for children from the age of seven to 14 beginning in 2010 (Andalo, 2007). Orban (2007) proposed multilingualism as a "plus factor" for European integration, competitiveness, growth, and better jobs, and encouraged European Union (EU) nations to provide citizens of EU members with language tools. His speech provides one example of how EU responds to the changing world, but unfortunately, it is not yet a comprehensive effort. The United States is lagging behind these countries in foreign language instruction and needs to catch up.

Another welcome place to start the reform would be to update assessment and accountability systems, and make them twenty-first century learner-friendly. As Lauren and Daniel Resnick (1992) have said, "The problem is not that teachers teach to the test, but that teachers need tests worth teaching to" (Trilling, 2009, p. 130). Au (2007) through a qualitative metasynthesis of 49 studies investigating how high-stakes testing affects curriculum finds that the nature of high-stakes-test-induced curricular control is highly dependent on the structures of the tests themselves. The alignment of lesson objectives with instruction and assessments is the first lesson we teach new teachers when lesson planning. Teachers know very well that you teach what you promise to teach and only assess what you teach. It is not really arguable that this principle applies to the context of the education system as well. Since the goals of education have been altered, naturally assessments need to follow.

As the proverb goes that it takes a whole village to raise a child, gaining support from communities and families to help teach and pass on important values such as lifelong learning, innovation, work ethic, self-monitoring, self-direction, responsibility, compassion, and entrepreneurship is very important. Previous studies (Jeynes, 2005) provide evidence that family involvement plays an important role in students' achievement in school.

No doubt there are still many questions to be asked and answered about transforming the American school curriculum. One of the immediate ones in the process of upgrading curriculum content would include thoughtful reconsideration of the content, concepts, and facts currently taught and ask: What is essential and timeless? What is not essential or dated? What should be created that is evident and necessary? What content should be kept? What content should be cut? What content should be created? (Jacobs, 2010). The crux of success is to know which core values to hold on to, and which to discard and replace when times change (Diamond, 2005). Immediate future studies are needed to answer these questions. Gray (2010) recalls,

> In 1929, the superintendent of schools in Ithaca, New York, sent out a challenge to his colleagues in other cities. 'What,' he asked, 'can we drop from the elementary school curriculum?' He complained that over the years new subjects were continuously being added and nothing was being subtracted, with the result that the school day was packed with too many subjects and there was little time to reflect seriously on anything. This was back in the days when people believed that children shouldn't have to spend all of their time at school work–that they needed some time to play, to do chores at home, and to be with their families–so there was reason back then to believe that whenever something new is added to the curriculum something else should be dropped (para. 1).

We argue that it cannot be more vital in the Knowledge Age that we let go of outdated content and teaching strategies and replace them with current ones. As Jacobs (2010) said, the ongoing process of challenging accepted knowledge and the cycle of replacing it are the signs of cultural maturation. Also in the Knowledge Age, information is updated every second, and the old concept of teaching and learning, "grasp something and use it for the rest of one's life," does not work anymore. In this new era, the *old Chinese proverb,* "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime" still holds very true. Lifelong learning skills involving constant seeking of new knowledge by way of technology and knowing where and how to find what one needs are deemed to be more useful than memorizing soon-to-be outdated information.

Future studies answering curriculum questions such as what to cut and what to keep, and what to create will definitely benefit from larger scale studies with more subjects than the current one. The author wishes there were more participants, especially more students involved in this study. However, due to the complexity of collecting parent permission for the participation of minors in an online environment, student participation was limited.

It is a privilege for all of us to live in this exciting time and to be part of this challenge and change—change for the better. While working with American school curriculum, it is important to remember that people elsewhere in the world marvel

at what Americans have achieved within a relatively short 200 years, and admire the history of this country with Thomas Edison, Henry Ford, Benjamin Franklin, and the Wright brothers, and the American culture with its creative, innovative, inventive, risk-taking, and entrepreneurial traditions. These characteristics have made America a great country, and we need to make sure future generations of America carry on this tradition.

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# Chapter 6
# Preparing Teachers for the 21st Century: A Renaissance

**Celia E. Johnson and Rosalyn Anstine Templeton**

A renaissance is happening in U.S. P-12 education. We have been talking about educational reform for decades, but it has moved at a snail's pace. We have been slow to change, resisting new ideas, methods, and models. We have fallen from being the world leader in education and continue to be surprised that what has worked in the past is not relevant in the 21st century. As a result we have had too many teachers, administrators, professors, and legislators making excuses instead of making appropriate changes to ensure the success of all students. Other countries have embraced the opportunity to excel in preparing their most precious commodity, their children, to become leaders in tomorrow's world. With the advent of technology that has become an integral part of everyday life, our global society is in a continual state of change and development. Computers have linked more advanced societies to underdeveloped societies all around the globe. This is a good thing and yet can present challenges that are not always simple to address. Instead of resisting change, U.S. education needs to embrace change and see it as an opportunity. We have allowed ourselves to get stuck in the past and survive the present. It is time for a renaissance in all of education; time to have a vision for the future that will again make U.S. education a model world leader.

Fortunately, there are schools, districts, and states that are reviving their educational programs; they are seizing the opportunity to create optimal learning environments; they are creating a future for their students; a future where students can be competitive, successful world citizens. They have left the past, embraced the present, and are creating a vision for the future. Teachers in such schools have been able to do so through focused professional development. New teachers are doing so through on-the-job training since many were inadequately prepared in higher education (Chenoweth, 2007; Darling-Hammond & Baratz-Snowden, 2005).

The current status of most teacher preparation programs in the U.S. is that of a follower. We are not preparing teachers for the future; we are barely keeping up

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_6,

with the present with many P-12 schools way ahead of the teacher preparation programs in higher education. The cutting edge is no longer in higher education; it is in the P-12 arena. Current models of teacher preparation are in need of a vision for the future that must go beyond cutting edge leadership to become a more collaborative partnership where boundaries are less visible and more permeable. Over the past decade there have been more universities with schools of education partnering with P-12 districts to better prepare teachers through Professional Development School (PDS) partnerships. Some of these partnerships are moving forward in their efforts to leave traditional models behind and create new models that will again make U.S. education a world leader. They have become involved at the state level to join the Partnership for 21st Century Skills. Currently, the Partnership for 21st Century Skills in Education has 13 states committed to creating rigorous 21st century education systems (Partnership for 21st Century Skills, 2004). This chapter addresses the needed changes in higher education, what it means to be highly qualified (HQ) in the 21st century, a model for 21st century teacher preparation, needed policy and accreditation changes, and a vision for the future.

## What Needs to Change in Higher Education?

Chapter two focused on the Framework for 21st Century Education and Skills so we will not reiterate extensively. However, as we discuss the preparation of true highly qualified teachers it is important to revisit the proposals for 21st century learning as articulated by the Partnership for 21st Century Skills. For the purpose of determining what needs to change in higher education we can examine The Framework for 21st Century Learning that emphasizes a rigorous curriculum for all P-12 students based on a research-based education model incorporating six key elements:

- Core subjects defined by NCLB; English, reading or language arts, mathematics, science, foreign languages, civics, government, economics, arts, history, and geography
- Learning skills in three broad categories; information and communication, thinking and problem solving, and interpersonal and self-directional
- 21st century tools for the purpose of using information and communication technologies to access, manage, integrate, and evaluate information; construct new knowledge; and communicate with others effectively and ethically
- 21st century context learning through real world examples, applications, and experiences in the process of using 21st century tools
- 21st century content that integrates global awareness; financial, economic, and business literacy; and civic literacy
- 21st century assessments that are balanced between high quality standardized testing and classroom assessments for improved teaching and learning (Policymakers Guide to 21st Century Skills, n.d., p. 11)

Considering the Framework for 21st Century Learning for the P-12 system the same must follow suit for teacher preparation programs in higher education. When states join the Partnership for 21st Century Skills they commit to first examining their current content standards and benchmarks to upgrade and align with 21st Century Skills Standards. Higher education needs to follow suit and cannot afford to be left behind waiting for mandates and accreditation visits to drive change. Most university programs of teacher education currently align with the 10 standards articulated by the Interstate New Teacher Assessment and Support Consortium (INTASC) (see Appendix 1). Written for beginning teachers, they align with the National Board standards and incorporate the skills and concepts identified by 21st century standards. We have gotten started, but have not moved beyond traditional approaches to specifically and intentionally incorporate what those standards actually mean. We know what preservice teachers need to know and today's graduates have a stronger knowledge base than previous generations of teachers (Cochran-Smith & Zeichner, 2005). We have been left behind because we have ignored how teachers learn, practice, and need to be prepared for the increased demands of the 21st century classroom. We know that preservice teachers need to understand about theories and how people learn; pedagogy; diversity of culture, language, and individual learning needs; child development; relationships and the human spirit; appropriate communication and collaboration; use of technology; teaming with families and communities; organizational skills; and the importance of reflective practice (Chenoweth, 2007; Darling-Hammond, 2006; Johnson, Greer & Harrison, 1995; Leach & Moon, 2008; National Education Association, 2002–2009; Whitaker, 2004). What is needed is for teacher preparation programs to review and update mission and vision statements, goals, and programs to specifically facilitate the transition from traditional approaches to teaching best practices and to creating opportunities where preservice teachers not only observe the modeling of best practices but actively and consistently participate in demonstrating and studying best practices. Future teachers need to see university professors and classroom teachers modeling best practices, and to have opportunities to implement best practices while being coached. This can only be done through intensive collaboration with all three parties working together as a team. Not a team where each member works independently connecting only through observation and discussion, but working side-by-side demonstrating and discussing, followed by demonstrating and coaching, ending with demonstrating and evaluating. There needs to be a continual flow between team members with each member having an active role. We need to redefine the terms "team" and "mentor" to specifically incorporate the comprehensive nature of learning to teach. What does it mean to be an "active" team creating the future of education along with mentor teachers in the field?

There are many jobs that require active participatory teaming for learning concepts and applying skills. Probably the most successful is the medical model where student doctors have the opportunity to work alongside reputable doctors combined with voracious reading and classroom instruction that includes many discussions of case studies. Unfortunately, many preservice teachers don't have the opportunity to work alongside reputable teachers who have proven they are exemplary. Instead

many preservice teachers are in classrooms and schools where teachers are unable to model best practices and schools that are in utter chaos. Such environments are not healthy learning environments for the P-12 students or for the preservice teachers who are pursuing a career in teaching. The medical profession would never consider putting students with doctors who have been unsuccessful; cardiologists who lose more patients than they save, general practitioners who misdiagnose more patients making them sicker than those they effectively diagnose and treat, or pediatricians who experiment with interesting treatments or medications that could negatively alter children's lives. Unfortunately, this has not been the case in education. We have often, and we mean often, placed preservice teachers with teachers who scream and yell at children; use derogatory statements to make a point; don't prepare adequately; spend time sending personal e-mails or text messaging instead of teaching; rely on worksheets to do the teaching; start the year counting the days until the end of the school year; and many other actions that clearly indicate they have lost passion, compassion, and a true desire to teach. We justify this by saying that at least the preservice teacher will "learn what NOT to do." We have allowed a disastrous downward spiral to take hold and we must put a stop to it now.

Fortunately, there are places in education where effective teams have come together to ensure success; success for P-12 students, teachers, families, and administrators. These programs are leading the renaissance in education; a renaissance that will again establish U.S. education as a world leader. They provide models that are being examined for replication and models that set the standard for what needs to be in place for training true highly qualified teachers; highly qualified that ensures high quality. Not only that, the number of these kinds of schools is increasing and we need to learn more about them.

Johnson (2008) in The *Education of Diverse Student Populations: A Global Perspective*, highlights three successful schools where the achievement gap does not exist and diverse children are excelling. Lincoln Elementary School in Mount Vernon, New York attributes their success to the hard work of the teachers. The integrated curriculum at Lincoln Elementary includes art, music, and physical education along with the traditional core subjects. Students' success can be attributed to the dedicated teachers who refuse to let any child fail to learn. Similarly, The Metropolitan Regional Career and Technical Center in Providence, Rhode Island, is a high school with the highest rates of attendance and college acceptance in the state. A different kind of school, The Navajo Language Immersion School in Fort Defiance, AZ emphasizes the preservation of native culture and language, infused in a strong standards-based curriculum. Chenoweth (2007) also features Lincoln Elementary along with 14 other schools across the nation where teachers, administrators, families, and communities are transforming education. Chenoweth's observations and interviews clearly reveal what is happening in these schools confirming Marzano's (2003, 2007) optimism in *What Works in Schools: Translating Research into Action* and *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*. Marzano explains what "to do" and Chenoweth identifies what is "being done" in order for schools to succeed in educating children. As members of The National Academy of Education Committee on Teacher

Education, Darling-Hammond and Baratz-Snowden (2005) summarize research on "what teachers need to know" in order "to do" what is "being done" in successful schools. Research reveals three essential areas of knowledge for a beginning teacher's success:

- Knowledge of *learners* and how they learn and develop within social contexts
- Understanding of the *subject matter* and skills to be taught in light of the social purposes of education
- Understanding of *teaching* in light of the content and learners to be taught, as informed by assessment and supported by a productive classroom environment. (p. 5)

Note how these three areas align with the framework promoted by The Partnership for 21st Century Skills and summed up by Chenoweth (2007), "The adults in "It's Being Done" schools expect their students to learn, and they work hard to master the skills and knowledge necessary to teach those students" (p. 226) (See Tables 6.1, 6.2, 6.3, and 6.4 in Appendix 2).

## *Highly Qualified Teachers*

According to No Child Left Behind (NCLB), highly qualified means a teacher has earned, at a minimum, a bachelor's degree from an accredited institution of higher education, is fully licensed or certified in the subject area they are teaching, has demonstrated application of teaching skills, and is knowledgeable in the subject matter they are responsible for teaching (National Education Association, 2002; Solmon, Bigler, Hanushek, Shulman & Walberg, 2004; U.S. Department of Education, 2004). Although the NCLB legislation has led to conscientious examination of what is happening in schools and classrooms, highly qualified status does not guarantee quality teaching. Effective quality teachers are as varied as the students they teach. Yes, there are common characteristics of effective teachers and best practice strategies have been identified and supported through a plethora of research. But finding a single formula for success remains elusive and is unlikely to surface. As can be seen from the following perspectives of leaders in education, it is not as simple as many have tried to make it seem. Shulman clearly articulates, "If you really think about it, teaching is so demanding that it should be both physically and intellectually impossible. It is simply the most difficult task that human beings try to accomplish" (Solmon et al., 2004, p. 57). "Teaching is complex" (Darling-Hammond & Baratz-Snowden, 2005, p. 5). ". . . effective teaching is part art and part science" (Marzano, 2007, p. 191). Marzano emphatically states, "No amount of further research will provide an airtight model of instruction. There are simply too many variations in the situations, types of content, and types of students encountered across the K-12 continuum" (p. 4). That does not mean there is no hope of improving U.S. education where all children can be successful learners.

What the research clearly concludes is that teachers cannot do it alone. There must be collaboration between several stakeholders. Whatever models individual districts and schools choose to follow and create will have common elements and yet may look very different. Common elements include extensive and intensive collaboration with legislators, universities, schools, and communities working toward a common goal of preparing preservice teachers who will be highly qualified teachers upon entering the profession. In order to do this a new model of preparation is called for.

## Preparing Teachers for 21st Century Education

Although most teacher preparation programs are aligned with rigorous standards, the current model is falling short of meeting the needs of beginning teachers, and ultimately the P-12 students they teach. The traditional model of preparing through classroom instruction with scaffolded field experiences that take preservice teachers from observations to small group instruction and end with a 10–15 week student teaching experience no longer works. Chenoweth (2007) attested to this when she identified 20 specific factors that made the difference in schools where unexpected successful learning was happening. One of the 20 factors was that, "They assume that they will have to train new teachers more or less from scratch and carefully acculturate all newly hired teachers" (p. 224). She also states, "... teachers and principals in the 'It's Being Done' schools widely agree that for the most part, university education programs do not even begin to prepare teachers for teaching" (p. 224). Chenoweth's research verified what Darling-Hammond and Baratz-Snowden (2005) concluded in their report to The National Academy of Education Committee on Teacher Education stating,

> Tens of thousands of new teachers, especially in low-income urban and rural areas, have had little or no exposure to basic information about children, curriculum, or schools. And too many of those who have gone through a teacher education program have not received a rigorous education in some of the essential knowledge and clinical training that would prepare them for success in the classroom (p. 1).

The knowledge and skills necessary for 21st century teaching encompass a broader range of concepts than previous generations of teachers. In this section of the chapter, we discuss what researchers have identified as the necessary knowledge and skills that 21st century teachers need to become successful classroom teachers who are passionate, compassionate, and who effectively teach their P-12 students the necessary skills needed in a global society.

### *A Model for 21st Century Teacher Preparation*

Much has been written on preparing urban teachers to be effective in teaching children living in poverty (Dill & Stafford, 2008; Haberman, 1995, 2005; Shakespear, Beardsley & Newton, 2003). Haberman (1995, 2005) has led the way in identifying

quality in teachers. His work has resulted in numerous school administrators adopting his Star Teacher Selection Process when hiring high quality teachers who will be successful and remain for a significant time. The success of utilizing the Star Teacher Selection Process has been documented for over a decade with successful teacher retention rates up to 80% or more (Dill & Stafford, 2008). The selection process focuses on seven functional attributes; persistence that involves problem solving and creative effort, protecting learners and learning through active involvement, application of generalizations, translating theory into practice, a solutions approach to working with students at-risk, professional versus personal orientation, understanding of burnout, and a willingness for taking responsibility for one's mistakes and correcting them (Haberman, 2002). As one can see, the qualities Haberman identifies are a combination of attitudinal or dispositional attributes along with the need for knowledge of how children learn, content knowledge, and pedagogy. Although the focus is on urban teaching, we can take Haberman's work and apply it to preparing all teachers. John Dewey once stated, "The education that is the best for the best of them is also the best for the rest of them" (Hale-Benson, 1982, p. xvi). We would propose a similar statement based on Haberman's work, "Highly qualified teachers prepared for urban schools of poverty are good for all schools" or "The attributes of effective teachers of diverse children in urban poverty are attributes necessary for effective teachers of all children." We need to be preparing teachers with an expanded curriculum that specifically integrates the above principles into every education course and field practicum so that administrators can be confident knowing that those they hire will have the necessary skills and dispositions required. We cannot rely on schools to do the on-the-job training that is currently happening with new teachers and yet we need to examine what the on-the-job training looks like as a guide in redesigning teacher preparation programs.

Going back to the question, "What does it mean to be part of a team creating the future of education along with mentor teachers in the field?" and reiterating that teachers cannot do it alone, we examine models of on-the-job training. Such schools have a specific plan for teacher induction that includes consulting teachers and/or teacher mentors. It seems that the process of mentoring preservice teachers early on would not necessarily eliminate the need for good teacher induction programs but would raise the skill level of newly entering teachers such that P-12 programs could then focus more directly on student learning.

Based on changes in the 1980s and 1990s that emphasized a stronger connection between university classroom instruction and classroom teaching, current programs utilize a scaffolding model in the preparation of teachers. We know that a scaffolding model is effective and many professional programs use them successfully, medical and legal professions as examples. We don't want to abandon the scaffolding model, but we do need to change what is happening at different levels of the scaffold and broaden knowledge and skills at each level. Programs that are moving in this direction are often a part of the PDS model. Effective PDS partnerships between universities and P-12 schools include parent and community partners as well. The research on PDS partnerships is supportive of such programs and merits further development in the preparation of future teachers (Cochran-Smith &

Zeichner, 2005; Epstein & Sanders, 2006; Johnson et al., 1995). The PDS model needs to be extended to include early mentoring programs that have ongoing "active" teams starting when preservice teachers first enter their undergraduate programs and progress to an internship and/or residency in conjunction with continued university classroom instruction. Team's active ongoing roles must include consulting university professors and highly qualified successful classroom mentor teachers. These "active" team members work with preservice teachers to apply what they are learning in their courses through synchronous practice and reflection. Some programs, such as Chicago's Academy for Urban School Leadership (AUSL), the Boston Teacher Residency Program, and the Boettcher Teachers Program in Denver, have already begun to adopt similar models and are being supported by constituent leaders (Darling-Hammond, 2008; Hopkins, 2008). With synchronous course work, classroom practice, and reflection, preservice teachers can learn what it really means to "teach" P-12 students, how to document learning, recognize problems, and problem solve. Meeting and working as a team with parents and community members will allow preservice teachers to develop necessary skills for effective partnership collaboration. They can learn what it really means to have high expectations because they will be supported in examining their own experiences and belief systems and how their personal background interplays with how they communicate to students, parents, professional partners, and others. This can only be done through "active" teaming. Because preservice teachers are part of a team early on they learn the necessary organization skills that support effective use of time, classroom management, partnering with families, and curriculum planning. Effective, progressive PDS partnerships would work to create an "active" team that is in a constant state of motion where professionals are not afraid to reexamine what they do, embrace accountability, make data-driven decisions, and demonstrate what it takes to be an effective collaborator. When preservice teachers have the opportunity to be an "active" team member in these kinds of partnerships they are empowered to embrace learning such that they are not afraid to grow professionally in their dispositions, knowledge, and skills. The purpose of what they are learning in courses is evident and will no longer be a mystery of how it will be reflected in the classroom.

As previously stated, most current teacher preparation programs have some scaffolding of field experiences with the intent of connecting course work to classroom-based experiences. When these scaffolded field experiences were adopted they served the needs of the day, but the skills needed for today's teachers have changed and require a more advanced level of programming. Broadening the PDS model as described takes into consideration what many educational researchers and leaders (Chenoweth, 2007; Cruickshank et al., 1996; Darling-Hammond & Baratz-Snowden, 2005; Haberman, 2005) have identified as needed to adequately prepare teachers for the 21st century.

Such a model more closely parallels the kind of preparation provided to physicians, engineers, nurses, and lawyers where coaching, mentoring, and observation take place within the real world environment.

The concept of "active" teaming cannot be underestimated. If any member of the team is not involved in all aspects of modeling, reflecting, practicing, and

collaborating, it will not produce the expected outcome, a highly qualified teacher ready to succeed as a new teacher. There must be constant reexamination of what team members are doing and a "willingness to examine what's not working and make changes" (Chenoweth, 2007, p. 218). PDS partners need to constantly reexamine their mission and vision statements along with their standards of performance for appropriate alignment to the profession and to the partnership. They must be willing to make the necessary changes for the PDS partnership to maintain a healthy, dynamic momentum that perpetuates success and progress. Selection and preparation of university consultants and highly qualified classroom mentor teachers is critical. Universities and their PDS partnership schools must work toward creating the kinds of P-12 environments that have proven records of success (Chenoweth, 2007; Partnership for 21st Century Skills, 2007). These environments must exude positive energy and embrace a caring perspective where respect is expected and evident in all interactions in support of professional learning communities that are collaborative, demonstrate best practices, and integrate 21st century skills into classroom practice. Teaching of relevant 21st century content and skills must be a priority rather than teaching to tests or punishing behaviors. Administrators must be visible and actively involved but must not be the only leaders in the school. If we don't insist on quality consultants, mentors, and school environments we cannot expect new teachers to be prepared for 21st century teaching. We can no longer afford to inadequately prepare teachers by continuing to place preservice teachers in inadequate learning situations.

We stated that administrators, although vital, cannot be the only leaders in the schools. Preservice teachers will be tomorrow's teacher leaders and must have the necessary skills to accept the responsibility required in making decisions as part of a team or committee member. Moving away from the traditional scaffolding of field experiences ending with a 10–15 week student teaching to the broader PDS model incorporating a more intense internship or residency component allows for the development of leadership skills. Because preservice teachers will have an opportunity to experience active learning communities among professional educators, they will better understand the processes of collaboration, problem solving, and decision making. Donaldson (2009) addresses the learning of practicing teachers that can also be applied to preservice teachers when he states, "The best professional learning experiences help aspiring leaders integrate skills, knowledge, and personal meaning as they perform" (p. 14). New teachers prepared in active learning communities with collaborative partners will have greater opportunities to develop self-esteem and confidence as educational leaders decreasing the likelihood of failure in or abandonment of the profession.

Additionally, preservice teachers must have basic foundational knowledge and skills upon acceptance into teacher education programs with opportunities for specific remediation of essential knowledge and skills prior to being accepted into an internship or residency component of any program. Foundational knowledge and what we expect teachers to know has expanded exponentially over the last few decades and much has been written about what teachers need to know to be effective teachers.

### *Human Development Knowledge*

Advances made in brain research over the last two decades have prompted dramatic changes in pedagogy. What John Dewey promoted a century ago through experience has been substantiated through brain research that has enlightened our understanding of how the brain develops and learns. A thorough understanding of how children develop and learn must be viewed as essential foundational knowledge for a teacher. Understanding that development and learning is not uniform but is a highly complex multidimensional (e.g., social, emotional, physical, etc.) process dependent on personal background experiences of each child relative to culture and language is critical for educators. This knowledge must extend to the preservice teacher's self-understanding in the process of learning to effectively manage the classroom and support student learning. The teacher's knowledge and appreciation for differences and a belief that all children can learn is also a developmental process. Preparing 21st century teachers requires programs that provide opportunities for preservice teachers to not only learn about child development and learning of P-12 students but to be immersed in self-learning as they develop a deeper understanding of different cultures and a belief that all children can learn. This knowledge is essential for an educator to be able to know what, when, and how to effectively teach appropriate concepts and skills throughout the learning process, thereby supporting healthy development and successful learning (Darling-Hammond & Baratz-Snowden, 2005; Haberman, 2002; National Board for Professional Teaching Standards, 1987; National Education Association, 2002).

### *Content and Pedagogical Knowledge*

It is common sense that teachers need to know the subject matter they are to teach, but they must know more than that, they need to know "how" to teach the subject matter. The National Board for Professional Teaching Standards (NBPTS) has identified five core propositions of which Proposition 2 states, "Teachers know the subjects they teach and how to teach those subjects" (National Board for Professional Teaching Standards, 1987). Likewise, the National Academy of Education Committee on Teaching in their review of teaching literature identified three general areas of knowledge with one specifically focused on content, "understanding of the *subject matter* and skills to be taught in light of the social purposes" (Darling-Hammond & Baratz-Snowden, 2005). Subject knowledge is no longer limited to the basic three Rs of reading, 'riting, and 'rithmetic. Twenty-first century teachers must have knowledge that encompasses language, culture, technology, the brain, statistics, human behavior, and social skills to name a few. When the Partnership for 21st Century Skills developed the framework for what students in the P-12 settings should know for future success, it became evident that expectations for teachers must be more demanding as well. If we expect P-12 students to be more engaged with core subjects at a deeper level, build understanding across disciplinary categories, and connect with real-world data, tools, and experts, their

teachers much have thorough knowledge and deep understanding of the subject matter they are teaching to facilitate such learning. Teacher preparation programs must not only present content and explain strategies for teaching but also give preservice teachers rich opportunities to plan and practice skills in real classrooms where P-12 students are experiencing deeper learning and integration of content relevant to the world they live in. Furthermore, 21st century teachers must be able to understand and respect different ways of learning so they can support P-12 learning for a world that does not yet exist. This requires them to become assessment experts with knowledge of the different kinds of assessment, formative and summative; how to collect and analyze valid data; and how to interpret and effectively report data. They must know how to effectively use data to improve their teaching and student learning. Content and pedagogical knowledge critical for 21st century teachers has become so extensive and complex that we cannot just add additional course work and assume that beginning teachers will be able to absorb it all to put into immediate practice upon obtaining their first teaching job.

Pedagogical knowledge is best learned through practice. This has been demonstrated repeatedly in many different professions that require a level of expertise that goes beyond the knowledge of content to include the application of skills demonstrating expert knowledge. Content expertise develops through practice opportunities. Our 21st century teacher education programs must change and incorporate more intense, collaborative opportunities for practice, if we are to improve the quality of entering teachers and the subsequent quality of their instruction.

## *Strengthening Knowledge, Skills, and Dispositions*

Improving and strengthening the knowledge, skills, and dispositions of 21st century teachers will require broader and more comprehensive collaborative partnerships between universities, schools, parents, and communities. This is necessary to provide intense integration of course work and practice in order to prepare teachers for a profession that demands thorough understanding and deep knowledge of child development and learning, content knowledge, and pedagogy. This cannot be done with each partner making changes independently and then coming together. It requires a fresh start with partners "actively" teaming as they work toward a common mission and vision to create opportunities for preservice teachers to be "active" team members over an extended period of time. To make this happen, partnerships must be comprehensive including local, state, and national legislators where all partners work together holding each accountable for teacher performance and student learning (Darling-Hammond & Baratz-Snowden, 2005; Haberman, 2002; Hassel & Hassel, 2009; Lingenfelter, 2004; National Education Association, 2002; Partnership for 21st Century Skills, 2006, 2007). Darling-Hammond (2006) states, "Improving teaching and teacher education in the United States depends on not only strengthening individual programs but also addressing the policies needed to strengthen the teacher education enterprise as a whole" (p. 312).

## *Necessary Changes: Policy*

Some may say that the proposed changes needed to prepare 21st century teachers are idealistic and not realistic. We don't think the United States can afford to even have such a conversation. Perhaps the focus should be changed from idealistic to necessary. Are we saying ideally we want our students to succeed in work, school, and life, or are we saying it is necessary for our students to have the knowledge and skills to succeed in work, school, and life? Is it idealistic to say we want our students to be able to compete on a global level or is it absolutely necessary? If U.S. education is to recapture its leadership and be able to compete on a global level we must accept idealism as a reality that is not only desirable but achievable as well. The policy changes needed to support such educational idealism are an absolute priority, that is, a necessity if we are to regain and maintain global leadership. Several educational leaders (Darling-Hammond & Baratz-Snowden, 2005; Haberman, 2002; Hassel & Hassel, 2009; Lingenfelter, 2004; National Education Association, 2002; Partnership for 21st Century Skills, 2006, 2007) have recommended policy changes necessary for improving teacher preparation and ensuring that all P-12 students graduate with 21st century skills. Both federal and state governments are charged with the ultimate responsibility to put things in motion with the following recommendations that are consistently addressed in the literature:

Licensure

- Policies that ensure all teacher preparation programs are accredited based on high standards set by the profession—NEA advocates for a single, national system of professional accreditation for teacher preparation under the auspices of NCATE
- Graduated licensure with full professional licensure granted only after demonstrating effective classroom practice
- Eliminate federal and state loopholes that allow unlicensed or unprepared teachers into classrooms.

Collaborative Partnerships and Quality Teacher Preparation

- Support for collaboratives involving higher education, school districts, state departments, families, and communities
- Accountability measures for all collaborative partners
- Federal and State support for the development of schools that support good practice where teachers can apply the skills they have learned – Haberman (2002) specifically identifies the need for incentives for transforming urban schools into successful ones using successful urban teacher education models. We need high quality schools to prepare high quality teachers.
- Support for more intense internship or residency programs. NEA advocates for the funding of new teacher residency programs through the Higher Education Opportunity Act.

- Incentives for National Board Certification. These are the teachers needed for the mentoring of preservice teachers.

Recruitment and Retention

- Offer incentives such as scholarships and loan forgiveness that encourage teachers to gain licensure in shortage areas and hard-to-staff schools (e.g., poor urban schools).
- Develop "grow-your-own" recruitment programs for high school students, community college students, paraeducators, and mid-career changers.
- Provide incentives for qualified individuals to enter the field of education
- Provide incentive grants to districts for developing quality new teacher induction and improvement programs

Research and Accountability

- Fund large-scale research projects designed to discover the most effective ways to teach and assess 21st century skills
- Federal and State funding to districts providing evidence-based quality induction programs

To initiate the above policy changes it would be beneficial to consider what the Partnership for 21st Century Skills advocates for the Department of Education to do:

- Elevate the importance and relevance of 21st century skills in higher education through the ongoing work of the Commission and the agenda of the Secretary.
- Encourage higher education institutions to identify the skills high school graduates must possess in order to be prepared for college and life and work after college—with a specific focus on 21st century skills.
- Identify and disseminate best practices in teaching and assessing 21st century skills in higher education throughout the country (Letter to the Commission on Higher Education).

Yes, policy changes are necessary, but in and of themselves they do not guarantee quality preparation of teachers or quality education of P-12 students. The evidence clearly supports the need for a common vision by all stakeholders that supports true professionalism through continuous evaluation, accountability, and a willingness to embrace change. Shulman states, "The education of teachers must be done better and better and better" (Solmon et al., 2004, p. 61).

Most important is adopting a belief in education as a profession where collaboration between partners will result in highly qualified teachers capable of meeting the challenges of 21st century education and a belief that all children can learn.

## Conclusion: A Vision for the Future

Most high school graduates entering teacher education programs as freshmen have not experienced a 21st century P-12 curriculum. The majority of teacher preparation programs provide minimal opportunities for preservice teachers to be fully embedded in classroom teaching. During their senior year with 10–15 weeks of student teaching they might get five full weeks with almost a full load of responsibility. As clearly addressed in this chapter, the current model is falling short of meeting the needs of education in the 21st century. Due to the precarious state of U.S. education we must assume Americans will meet the challenge through legislation, collaboration, curricular changes, and creation of new models of teacher preparation. Therefore, the future of U.S. education is a bright one. We are on the cusp of again becoming a world leader in the education of our children.

The Six Key Elements of 21st Century Learning include the following: core subjects; learning skills; 21st century tools, context, content, and assessments will not take the lead in higher education. They are proposed for P-12 education. P-12 education will lead teacher preparation in higher education. It is up to teacher preparation programs to adopt a model that will allow for 21st century learning by partnering with P-12 education as an essential part of preparing teachers rather than as an experimental model. The research supports PDS partnerships, and educational leaders have identified what needs to be done, so it is time to move forward. Based on what we know is needed, we will follow the hypothetical case study of two preservice teachers through their 21st century teacher preparation programs.

## Case Study: Two 21st Century Preservice Teachers

Astried and Demitri come from very different backgrounds. Astried has grown up in a poor rural community with little access to technology. Demitri is from the suburb of a large Midwestern city and grew up with daily access to technology. Astried's experiences with technology have been limited to school life where she would use the Internet for research and various computer programs for some group projects. Demitri has had unlimited use of technology both at school and home using a variety of software programs preparing presentations for professional groups and doing international classroom projects using wikis as well as for personal communication through facebook, texting, blogs, and twittering. Both Astried and Demitri were accepted as freshmen to Harmony University in the Teacher Education program. As was expected, they have different strengths in other areas as well. Astried graduated in the top 10% of her class with an ACT score of 32 and seems to excel in academics as well as in sports and she is attending HU on an athletic scholarship. Demitri would be considered more of an average student academically with an ACT score of 23 and creative talents in the arts and in foreign language; he speaks three languages, English, Greek, and Spanish.

As freshmen in Teacher Education, Astried and Demitri were placed in a group of 15 students working with a highly qualified (HQ) P-12 classroom teacher and a HU professor who specifically works with freshmen and sophomores in P-12 schools. They were in a P-12 setting one day a week with their HQ teacher and HU field-based professor who met with them for seminar at the end of the day for reflection, analysis, and discussion. The other four days Astried and Demitri had a balance of classes in general and teacher education. Their teacher education courses were in HU classrooms linked to P-12 classrooms in the PDS collaborating with HU. All classrooms in the PDS have video links to the HU classrooms so that preservice teachers can view teaching as it is happening. The HU professors collaborate extensively with PDS teachers discussing the knowledge, skills, and concepts they will be addressing in HU courses, and the PDS teachers share their lessons so that HU professors can coordinate course work with what can be viewed on video in PDS classrooms. This allows for immediate discussion relevant to real-world teaching with minimal disruption of teaching in the P-12 PDS classes. PDS teachers have the option of incorporating "think alouds" during their teaching. This proved helpful to Astried and Demitri as they developed an understanding of the processes of decision making and problem solving that teachers engage in everyday while teaching. "Think alouds" are also helpful to P-12 students to develop better understanding of process and problem solving in learning. At the end of the day Astried and Demitri were able to discuss how developmental, cultural, language, or life circumstances related to what went on in the classroom that day. Astried and Demitri followed this process for their freshmen and sophomore years at HU. They were in a different classroom with a different HQ teacher each semester for their one day field work, but they had the same HU field-based professor in the school throughout the 2 years. At the end of the 2 years, Astried and Demitri had completed their general education courses, the foundation education courses, and introductory major content-specific courses. Demitri decided to carry a double major in Spanish and was able to volunteer 1 hour a week with the Spanish teacher down the hall from his other classroom. Astried volunteered 1 hour a week assisting the Physical Education teacher.

Astried and Demitri were assessed on an ongoing basis through portfolios, work samples, and tests. It became obvious that Demitri was in need of some remedial work in written communication. Although he successfully passed his courses with Bs and Cs, he needed to improve his writing skills so he chose to enroll in a remediation course focused on communication. When he went to the class he was surprised to see Astried. Astried shared that she really struggled with group work requiring collaboration so her advisor recommended she take the course. Students needing remediation in basic communication or math skills have the opportunity to take remediation course work (these are not repeated courses) for free as a part of federal funding provided to reformed teacher preparation programs focused on 21st century standards in teacher education. Students can also participate in the HU learning assistance program that includes 3 hours of free tutoring per week. Students receiving a D or F in any course are required to take remediation course work prior to

repeating the course following HU policy. After satisfactory completion of the first two years, students can apply for entry into the intern/residency levels of the Teacher Education program. When Astried and Demitri applied for Internship/Residency their applications clearly indicated they were able to self-assess, identify weaknesses, and improve where needed. Their recommendation letters indicated they demonstrated a desire to work with a variety of children, could identify where problems existed, and could engage in creative problem solving. Reflections in their portfolios indicated they were hard workers who were willing to put forth effort beyond minimal requirements.

Junior year of the HU Teacher Education program is considered the intern year where preservice teachers are in one P-12 classroom five half-days for a full year starting with the first day of school and ending on the last day of school in the P-12 district. Students become "active" team members along with their P-12 HQ classroom teacher, their HU field-based professor, other school personnel, and families. Astried and Demitri were in different groups, up to four per group, for their internship due to the age of students they were planning to teach. In the first semester, Astried did her internship in the P-12 classroom during the mornings taking her methods and content-specific course work at HU during the afternoons. Demitri was just the opposite with courses in the morning and an afternoon internship. In the second semester, their schedules were flip-flopped. Throughout the internship Astried and Demitri were able to participate in supervised teaching that involved planning, teaching, ongoing assessment of their P-12 students, reflection, discussion, and problem solving. Both Astried and Demitri participated in grade-level team planning, parent conferencing, professional development programs when possible, Response-to-Intervention (RtI) planning sessions, and Individualized Educational Program (IEP) meetings. When they were unable to attend parent conferences, RtI, or IEP meetings they were expected to provide written information to contribute to the meetings. Assessment during the internship is performance-based and ongoing with regular analysis of practice teaching, reflection, and problem solving for improvement. Astried and Demitri were very nervous about the performance assessment at first, but soon realized this was a model used with the teachers in their respective schools. As "active" team members they were included in discussions, reflections, and analyses of the teaching of their P-12 teacher and the demonstration teaching of the HU field-based professor which often included the school principal and other support staff (e.g., speech pathologist), as well as evaluations of their practice teaching. At the end of each semester during the junior internship year, Astried and Demitri completed a formal written self-evaluation to be included in their portfolios along with those from their P-12 HQ teacher and HU field-based professor. Their evaluations included three to five specific areas of focus for the upcoming semester or senior residency. Astried and Demitri were excited when they applied for their residency senior year. They knew it would be a challenge teaching full-time while attending classes in the evenings and on some Saturdays. Still, they were excited because they were placed with a National Board Certified

(NBC) teacher and would again have a HU field-based professor. Even though they found the schedule very demanding they realized they were in an excellent program set up for their success with the methods classes designed to support what they were doing in their classrooms. They had excellent input and support from their peers and HU professors as they prepared their units and lessons in their methods classes.

At the end of their residency programs, Astried and Demitri were eager to get their first teaching positions. Astried got a job in an inner-city school with a new teacher induction program supported by grant money from the Close the Gap Foundation. This program provided a NBC teacher mentor, a consulting expert from the Close the Gap Foundation, and tuition for professional development in Urban Teaching and 21st Century Education. Demitri's first teaching position was in a magnet middle school where he could teach Literature and Spanish incorporating his creative skills in the fine arts. He too had an NBC teacher mentor who would work closely with him. He had a reduced teaching load his first year and was not permitted to be an extracurricular faculty leader until he received his full professional teaching certificate.

## *Case Study Discussion*

The case study of Astried and Demitri illustrates a different model of teacher preparation. It does not give every detail because each program will need to determine what works best within the model. It does provide a model that will allow for moving forward in teacher preparation. The case study exemplifies a model that supports the incorporation of 21st century skills and standards. Once the United States follows the guidelines articulated by the Partnership for 21st Century Skills, and states align programs with the Framework for 21st Century Learning, preservice teachers more deeply embedded in the P-12 system will have the opportunity to prepare to become HQ teachers. From the beginning preservice teachers will be trained in 21st century classrooms in school and community partnerships with universities. Astried and Demitri were in a P-12 classroom approximately 100 hours each semester in their first two years of school. Because they were continuously involved in the P-12 setting they were able to be a part of learning the "what," "how," and "why" of teaching 21st century skills. Astried and Demitri didn't just learn about child development and learning, but also core subjects; learning and innovation incorporating critical thinking and problem solving; information, media, and technology skills; and life and career skills for leadership and responsibility. Therefore, from the beginning, they were able to integrate the content and pedagogy they were learning into their own learning about teaching within the complexities of real-world classrooms. They were able to do this by being actively engaged in the P-12 classroom as well as through real-world linked-in classrooms while they enrolled in their HU courses. Astried and Demitri developed a deeper understanding of the

knowledge, skills, and dispositions required of HQ teachers in spite of their varied backgrounds. New teachers prepared similarly to Astried and Demitri will be more likely to succeed in their first years of teaching and less likely to leave the profession. They will be more confident and able to focus on student learning rather than on surviving.

## Conclusion

This chapter has only touched on one part of the necessary changes needed to improve U.S. education, teacher preparation. There are many more improvements needed beyond teacher preparation, if we are truly going to prepare all students to be successful in the 21st century. We need PDS partnerships to evolve beyond the traditional partnerships established in the past two decades. Partnership collaborations must be much more dynamic with energy that is evident of "active" teaming by all partners including federal and state legislators, school district personnel, families, universities, and communities. These "active" partners will all be part of ongoing assessment that is never stagnant, preventing U.S. education from being left behind. Americans have been calling for a renaissance in education for too long. The old saying, "the future is now," could never be more relevant than it is today. We cannot afford to move slowly; the research has been done; we know what is needed; we can achieve the ideal out of necessity. It is time for policies and programs to start doing what needs to be done and quit talking about it. Soon we can talk about teaching as a profession and U.S. education as something to be proud of.

## Appendix 1: Interstate New Teacher Assessment and Support Consortium (INTASC)

### *Standard 1: Content Pedagogy*

The teacher understands the central concepts, tools of inquiry, and structures of the discipline he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

### *Standard 2: Student Development*

The teacher understands how children learn and develop and can provide learning opportunities that support a child's intellectual, social, and personal development.

### *Standard 3: Diverse Learners*

The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

### *Standard 4: Multiple Instructional Strategies*

The teacher understands and uses a variety of instructional strategies to encourage student development of critical thinking, problem solving, and performance skills.

### *Standard 5: Motivation and Management*

The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

### *Standard 6: Communication and Technology*

The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

### *Standard 7: Planning*

The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

### *Standard 8: Assessment*

The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner.

### *Standard 9: Reflective Practice: Professional Development*

The teacher is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others and who actively seeks out opportunities to grow professionally.

### *Standard 10: School and Community Involvement*

The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being.

## Appendix 2

**Table 6.1** 21st Century Skills for P-12 Students to be Successful Upon Graduation aligned with Teacher Skills and "It's Being Done" Schools: Core subjects defined by NCLB to include 21st Century themes that have a global perspective and develop literacy in finance, economic, business, entrepreneurship, civic responsibility, and healthy living

| National academy of Ed.—skills teachers need to be successful | Chenoweth—what successful schools are "doing" that results in the success of P-12 student learning |
|---|---|
| • Understanding of the *subject matter* and skill to be taught in light of the social purposes of education<br>• Understanding *teaching* in light of the content and learners to be taught, as informed by assessment and supported by a productive classroom environment | • Teachers embrace and use all the data they can get their hands on to meet the needs of every student<br>• Teachers embrace accountability<br>• Principals are a constant presence<br>• Teachers and administrators pay careful attention to the quality of the teaching staff<br>• Teachers have time to plan and work collaboratively—they observe each other and learn together<br>• Teachers get quality professional development<br>• Teachers mentor new teachers and mentor experienced teachers new to the school |

**Table 6.2** 21st Century Skills for P-12 Students to be Successful Upon Graduation aligned with Teacher Skills and "It's Being Done" Schools: Infusion of information, media, and technology skills throughout the curriculum

| National academy of Ed.—skills teachers need to be successful | Chenoweth—what successful schools are "doing" that results in the success of P-12 student learning |
|---|---|
| • Knowledge of *learners* and how they learn and develop within social contexts | • Teachers constantly reexamine what they do<br>• Teachers embrace accountability<br>• Teachers use time wisely and expand it when necessary<br>• Teachers and administrators pay careful attention to the quality of the teaching staff<br>• Teachers have time to plan and work collaboratively—they observe each other and learn together<br>• Teachers get quality professional development<br>• Teachers mentor new teachers and experienced teachers new to the school |

**Table 6.3** 21st Century Skills for P-12 Students to be Successful Upon Graduation aligned with Teacher Skills and "It's Being Done" Schools: Learning and innovation skills for critical thinking, problem solving, communication, and collaboration

| National academy of Ed.—skills teachers need to be successful | Chenoweth—what successful schools are "doing" that results in the success of P-12 student learning |
|---|---|
| • Knowledge of *learners* and how they learn and develop within social contexts<br>• Understanding *teaching* in light of the content and learners to be taught, as informed by assessment and supported by a productive classroom environment | • Teachers teach the students<br>• Teachers don't teach to state tests<br>• Teachers have high expectations<br>• Teachers use time wisely and expand it when necessary<br>• Teachers do not spend a lot of time disciplining students, in the sense of punishment<br>• Teachers establish an atmosphere of respect—they like kids<br>• Teachers make sure all students get the best instruction<br>• Teachers and administrators pay careful attention to the quality of the teaching staff<br>• Teachers have time to plan and work collaboratively—they observe each other and learn together<br>• Teachers get quality professional development<br>• Teachers mentor new teachers and experienced teachers new to the school |

**Table 6.4** 21st Century Skills for P-12 Students to be Successful Upon Graduation aligned with Teacher Skills and "It's Being Done" Schools: Life and career skills that support flexibility and adaptability, initiative and self-direction, social and cross-cultural competence, productivity and accountability, and responsible leadership

| National academy of ed.—skills teachers need to be successful | Chenoweth—what successful schools are "doing" that results in the success of P-12 student learning |
|---|---|
| • Understanding of the *subject matter* and skill to be taught in light of the social purposes of education | • Teachers know what the stakes are—without education students face poverty and dependence<br>• Teachers make decisions on what is good for kids, not what is good for adults<br>• Teachers use as many resources from the community as possible<br>• Teachers do not spend a lot of time disciplining students, in the sense of punishment<br>• Teachers, parents, community members and administrators are leaders<br>• Teachers mentor new teachers and experienced teachers new to the school |

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# Chapter 7
# Integrating 21st Century Skills into the Curriculum

**Dianne M. Gut**

## The Need to Integrate 21st Century Skills in Content Area Instruction

The world is rapidly changing. Banathy (1991) recognized a dramatic shift in society that left the educational system out of synch with the needs of a constantly transforming society. In 2005, the concept of a flattening world was introduced by Thomas Friedman as he examined and reported the influences that shape business and competition in a global economy. His ideas fueled the discussion and debate about what was needed for the United States to remain competitive in the growing, technologically connected, global economy. He proposed that individuals must learn how to learn, nurture their curiosity, and develop their ability to innovate (Friedman, 2005) in order to be successful in the 21st century. One factor influencing current global business and competition that has significant ramifications for the preparation of future business leaders and entrepreneurs is the exponential growth in the amount of available information.

### *Information Growth*

In 2008, it was estimated that 4 exabytes ($4.0 \times 10^{19}$) of unique information is being generated each year, which exceeds the amount of information generated in the previous 5000 years, and the amount of new technical information is doubling every 2 years (Fisch, McLeod, & Brenman, 2008). Researchers at the University of California, Berkley's School of Information Management Systems estimate that 92 percent of this new information is stored on magnetic media, mostly in hard disks (2003, p. 1).

Today's students are masters at multitasking. A typical worker in the knowledge economy juggles 200 e-mails, multiple instant messages, several phone calls, and

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_7,

numerous text messages on any given day (Spira & Goldes, 2007). Interestingly, the average person spends 2 seconds on each Web site when searching for information (Small & Vorgan, 2008). This exponential growth in information coming from a growing number of information channels leaves today's learners in a position to have to know how to organize, process, interpret, and make sense of an ever-increasing amount of information in a short period of time, in addition to critically analyzing its relevance, trustworthiness, and validity.

## *Meeting Global Workplace Demands*

Many authors speak to the need for school reform to better meet the needs of society and to prepare children for their globally interconnected future (Reigeluth, Carr-Chellman, Beabout, & Watson, 2009; Schlechty, 1990, 1997; Wagner, 2008). In 1990, a group commissioned by the Secretary of Labor, the Secretary's Commission on Achieving Necessary Skills (SCANS), met with business owners, public employers, unions, workers, and supervisors in shops, plants, and stores, and outlined the "workplace know-how" skills young people need to succeed in the world of work. SCANs identified five competencies, and three foundational skills and qualities needed for solid job performance. The competencies include knowing how to use resources, interpersonal skills, information, systems, and technology. The foundation skills require competence in basic skills, thinking skills, and personal qualities of individual responsibility, self-esteem, self-management, and integrity (Secretary's Commission on Achieving Necessary Skills, 1991, p. 5). In their message to educators, the commission states, "We are convinced that if students are taught the know-how in the context of relevant problems, you will find them more attentive, more interested and indeed, more teachable, because they will find the coursework challenging and relevant" (p. 6).

Wagner (2008) interviewed several hundred business, nonprofit, philanthropic, and education leaders and compiled a list of seven "survival skills" students must master in order to thrive in the working world. His list includes: critical thinking and problem solving, collaboration and leadership, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analyzing information, and curiosity and imagination. He argues that educators need to "use academic content to teach the seven survival skills every day, at every grade level, and in every class" (p. 24).

In 1997 Schlechty warned,

> Something is fundamentally wrong with America's system of education. Too few children develop the academic skills they need to develop, and too many children leave school without having developed the skills, attitudes, and habits of mind that will equip them for life in the twenty-first century. (p. 2)

More than a decade later, Reigeluth et al. (2009) are still calling for schools to transform from an "industrial-paradigm to a learner-centered, information-age paradigm" (p. 131).

In a survey commissioned by the Conference Board, Americans for the Arts, and the American Association of School Administrators, public school administrators and American business executives were asked to rank aspects of creativity that would be needed in the 21st century workforce (Lichtenberg, Woock, & Wright, 2008). The report indicated that 85% of employers seeking to hire creative people could not find qualified applicants. Employers rated the top five aspects of creativity as (1) problem identification, (2) ability to identify new patterns of behavior or new combinations of actions, (3) integration of knowledge across different disciplines, (4) ability to generate new ideas, and (5) comfort with notion of "no right answer". Superintendents' top five rankings were (1) problem solving, (2) integration of knowledge across different disciplines, (3) ability to identify new patterns of behavior or new combinations of actions, (4) originality and inventiveness in work, and (5) ability to communicate new ideas to others.

Interestingly, only two aspects of creativity overlapped in employers' and superintendents' top five ratings (i.e., integration of knowledge across different disciplines and the ability to identify new patterns of behavior or new combinations of actions). Also interesting to note is the difference in the top ranked items for each group. Employers ranked problem identification or articulation first, and superintendents ranked it ninth. Superintendents ranked problem solving first, and employers ranked it eighth, indicating clear disagreement between what educators and business leaders consider critical skills.

A nationwide survey of registered voters indicated that 99% of voters believe that teaching students 21st century skills is important to future economic success, and 80% believe that the kind of skills students need to be prepared with to function in the 21st century is different from what was needed 20 years ago (Partnership for 21st Century Skills, 2007). An additional 66% believe students need more than just the basics of reading, writing, math, and science to be successful. These findings provide an interesting contrast to the current emphasis on teaching basic skills and annual assessment to ensure minimum competency in reading and mathematics.

## The Challenge of Straddling and Bridging the Divide

Daily, teachers are confronted with the mismatch between employers' needs, learners' needs, and the academic expectations of school administrators and communities. Frequently, students (digital natives) come to school with technological experiences that are often beyond their teachers' (digital immigrants) experiences. Not only are students more experienced in the use of technology, but their expectations are much higher. Twenty-first century learners are used to a fast-paced, interactive lifestyle filled with media. According to Lee, Bartolic, and Vandewater (2009), children and adolescents in the United States average between 35–55 hours of television viewing, video gaming, and other media use per week, compared to a reported limited use of media in school. In fact, Knobel and Wilber (2009) argue that, "outside school, many students are accomplished authors, filmmakers,

animators, and recording artists . . . [who] are concerned with the quality of their work and the meaning it conveys" (p. 23). Unfortunately, Cuban, Kirkpatrick, and Peck (2001) reported that nationally, even though media access in schools had increased, "most teachers and students are occasional to rare users (at least once a month) or they are nonusers of [information technologies] in classrooms for instruction" (p. 815).

The need to integrate the teaching and use of 21st century skills into the curriculum has been a call put forward by many (i.e., The Partnership for 21st Century Skills (P21), ACT21S, Achieve's Diploma Project), although some critics have stated that P21 focuses too much attention on skills and not enough on core content knowledge (Ravitch, 2009a, 2009b). However, in their *Report and Mile Guide for 21st Century Skills* (Partnership for 21st Century Skills, 2004), the P21 reiterated that core subjects are the foundation of a good education, and stated, "In a knowledge economy, core subjects continue to be relevant and they continue to open doors to opportunity" (p. 9). They contend that,

> . . . to cope with the demands of the 21st century, people need to know more than core subjects. They need to know how to use their knowledge and skills—by thinking critically, applying knowledge to new situations, analyzing information, comprehending new ideas, communication, collaborating, solving problems, [and] making decisions. (p. 9)

Furthering their commitment to the integration of knowledge and skills, the P21 has worked with professional organizations (i.e., National Council of Teachers of English, NCTE; National Council for Geographic Education, NCGE; National Council of Teachers of Mathematics, NCTM; National Science Teachers Association, NSTA; and National Council for the Social Studies, NCSS) to create content Information and Communication Technology (ICT) literacy maps in English, geography, science, mathematics, and social studies to illustrate the connections between 21st century tools and 21st century skills in the content area. Slowly but surely, inroads are being made and content area lesson plans that use and/or teach 21st century skills are being made available to educators (i.e., Route 21, Thinkfinity, Gateway to 21st Century Skills, Literacy Network).

Facing this chasm between what students do with media outside of school versus what little they are asked to do with media in school, teachers are confronted with the additional challenge of balancing the teaching of 21st century skills (i.e., learning and thinking skills, information, media and technology skills, and life and career skills) with covering prescribed content and meeting the demands of assessment-driven accountability and high-stakes testing.

Ohler (2009) asserts that educators must act as managers of students' talents, time, and productivity who can articulate standards of quality and provide feedback that students can use to meet the standards. For teachers who are true digital immigrants, this may be perceived as a daunting challenge. However, Ohler posits that teachers should assume the role of "the guide on the side, rather than the technician magician" (p. 13). This chapter provides educators with some guidance and initial suggestions for how and where to begin to manage what may be perceived as increasing and sometimes competing demands.

In order for schools to meet the challenge of preparing today's students with 21st century skills, a multistrand approach is needed. One strand is for preservice teacher preparation programs to take responsibility to assist future educators by not only modeling and building awareness of 21st century skills but also requiring future teachers to develop and plan content area lessons, aligned with state and national standards that teach and utilize 21st century themes and skills. The following section outlines the results of one such project.

## Integrating 21st Century Skills in Lesson Planning at the Preservice Level

Over the past 3 years, after receiving an introduction to 21st century skills, as defined by the Partnership for 21st Century Skills (P21), 43 graduate students in a university-based teacher training program were asked, in the course of their instructional lesson planning, to incorporate at least one 21st century skill into each of their lesson plans. Teacher candidates were asked to identify at least one 21st century skill that would be taught, used, and assessed in each content area lesson. They were required to identify and include the skill(s) in their learning goals, lesson outcomes, instructional methodologies, and assessments.

One hundred sixty seven lessons were created at the elementary, middle, and high school level. Of the 167 lessons, 11 were written for the elementary grades, 111 for middle school grades, and 45 for high school. Teacher candidates indicated their lessons included the following 21st century themes and skills.

| Theme/skill | Number of times addressed |
|---|---|
| 21st century themes | 46 |
| Learning and innovation skills | 218 |
| Information, media, and technology skills | 81 |
| Career and life skills | 75 |

### *21st Century Themes*

Of the seven 21st century themes (global awareness, financial literacy, economic literacy, business literacy, entrepreneurial literacy, civic literacy, and health and wellness), the theme addressed most often was *global awareness*. It accounted for 45% of the 21st century themes identified in the lessons, and appeared most often as a theme in middle school science ($n = 7$) and social studies lessons ($n = 6$), followed closely by high school language arts ($n = 5$).

Peters (2009) posits that today's students are "the first globally connected citizens" (¶ 9) who have access to global networks enabling them to connect with peers around the world. This provides an ideal opportunity for educators to address the 21st century theme of global awareness, thereby allowing students to become

part of a global conversation and develop a cross-cultural awareness of how issues and decisions made in their own country are connected to and impact individuals in other countries around the world. What better opportunity to explore cross-cultural perspective-taking in language arts, global economics in social studies, global finance in mathematics, or the impact of scientific hypothesis testing in different environments around the world?

All other 21st century themes were incorporated primarily in social studies and mathematics lessons (i.e., financial, economic, business, entrepreneurial, and civic literacy).

## *Learning and Innovation Skills*

Preservice teachers found it easiest to identify and incorporate the use of Learning and Innovation Skills in their lessons. They incorporated these skills 218 times in their lessons, most particularly *communication and collaboration* skills which they included in more than half of their lessons.

| Content area | Frequency of inclusion | Total number of lessons | Percentage of lessons |
|---|---|---|---|
| Math | 31 | 43 | 72 |
| Language arts | 28 | 43 | 65 |
| Science | 25 | 39 | 64 |
| Social studies | 17 | 38 | 45 |

Preservice teachers identified incorporating the use of *creativity and innovation* 33% of the time. Creativity is defined by Sir Ken Robinson (2009) as a "process of having original ideas that have value" (p. 22). He posits that most original thinking comes about during the collaborative process while individuals are sharing ideas. He believes that many of the greatest scientific breakthroughs have come during the interactions between individuals with similar interests and diverse ways of thinking. *Creativity and innovation* were incorporated 72 times in the lessons.

| Content area | Frequency of inclusion | Total number of lessons | Percentage of lessons |
|---|---|---|---|
| Math | 24 | 43 | 56 |
| Language arts | 15 | 43 | 35 |
| Science | 15 | 39 | 37 |
| Social studies | 14 | 38 | 37 |

Providing for collaborative opportunities in and across classrooms and learning environments between students with similar interests allows them to practice and enhance creative thinking, problem solving, and flexibility and adaptability.

Finally, *critical thinking and problem-solving* made up 20% of the identified learning and innovation skills integrated by preservice teachers in their lessons.

They were incorporated in 36% of the science lessons, 33% of the math lessons, 21% of the social studies lessons, and 16% of the language arts lessons.

## *Information, Media, and Technology Skills*

Presevice teachers identified the incorporation of Information, Media, and Technology skills 81 times. *Information, communication, and technology* (ICT) skills accounted for 64% of the reported uses, followed by *information literacy* skills (30%), and *media literacy* skills (6%). It is unclear whether these preservice teachers were simply more familiar with ICT, having had coursework in the use and integration of educational technology, or whether they have limited knowledge and awareness of the principles and practices of media literacy.

Media literacy has been defined as a person's ability to interpret and create personal meaning from verbal and visual symbols; to choose, challenge, question, and actively use media consciously for one's own purpose (Pena, Lam, & Adiele, 2007). This apparent lack of attention to media literacy in preservice teachers' lessons points to the need for the inclusion of media literacy education in schools as recommended by Wan (2006). To aid teachers who consider themselves digital immigrants, Sprenger (2009) recommends providing opportunities for digital natives to teach one another skills of accessing, evaluating, and synthesizing concepts in order to create new information, thereby also allowing them the opportunity to practice several career and life skills (i.e., leadership and responsibility and social and cross-cultural interaction).

## *Career and Life Skills*

Finally, preservice teachers included Career and Life Skills 75 times in their 167 lessons.

| Content area | Frequency of inclusion | Total number of lessons | Percentage of lessons |
|---|---|---|---|
| Math | 28 | 43 | 37 |
| Language arts | 13 | 43 | 40 |
| Science | 17 | 39 | 33 |
| Social studies | 16 | 38 | 42 |

*Productivity and accountability* skills were indentified most frequently (44%) and were often identified in combination with the development and use of *communication and collaboration* skill*s* (from the Learning and Innovation category of skills). *Flexibility and adaptability* skills were included 14 times, with *social and cross-cultural interaction* and *leadership and responsibility* skills identified 10 times, followed by *initiative and self-direction skills* included in the lessons eight times.

It is clear that preservice teachers connected using collaborative group work, peer-to-peer learning, and cooperative learning methods as opportunities for students to enhance communication, collaboration, productivity, and accountability skills. To a lesser degree, they identified opportunities to develop social interaction, leadership, and responsibility. One might wonder, with an emphasis on mastery of material and accountability, if preservice teachers are reluctant to turn over "leadership and responsibility" for learning to students and are therefore reluctant to identify these opportunities for student growth.

## Integrating 21st Century Skills in the Content Area (Lessons from Inservice Teachers)

Many resources of readymade, peer-reviewed, standards-based lesson plans are available for teachers. One online site available to teachers in the State of Ohio is the Ohio Resource Center (http://www.ohiorc.org/). The Ohio Resource Center (ORC) contains lessons rated as best-practice or promising practice in mathematics, language arts, and science that are searchable by topic, content area, standard, and grade level. All materials submitted to the ORC are reviewed by content specialists and review boards using a 15-item rubric based on rigorous standards established by the ORC. Lessons are evaluated on 15 categories including alignment with state standards, research base, content, equity, student engagement, contextual learning/meaningful application, response of need adaptability to a variety of settings, classroom discourse, appropriate use of technology, assessment, originality, high expectations, navigability, and presentation (ORC, http://www.ohiorc.org/browse/resource_types/). After review, resources are awarded a designation as either best-practice (having received high scores on the 15 criteria) or promising practice (emerging strategy that indicates potential for becoming best-practice).

Earlier, it was mentioned that a multistrand approach was needed in order for schools to meet the challenge of preparing today's students with 21st century skills. One strand involves preservice teacher preparation. A second strand involves practicing or inservice teachers who are being encouraged to utilize lessons determined to be based on best-practice, or at least, promising practice. In order to determine whether the lessons teachers in the State of Ohio were being encouraged to use, taught or incorporated 21st century skills, a content analysis of a random sample of lessons was conducted and is reported here.

Forty-five lessons from the Ohio Resource Center database (15 from each content area of mathematics, language arts, and science; five per grade level) were randomly selected using http://www.random.org/integers/ and analyzed to determine which P21 skills have been integrated into each lesson. Each randomly selected lesson was reviewed and a count was made each time a 21st century theme or skill was taught or used. The following table provides information about the math lessons contained in the review.

| Content area | Grade level | Lesson title | Lesson number |
|---|---|---|---|
| Math | Elementary | It Counts | 2257 |
| Math | Elementary | Counting Embedded Figures | 11444 |
| Math | Elementary | *Order of Operations Bingo | 11463 |
| Math | Elementary | Food Court: The Bread Basket | 3872 |
| Math | Elementary | Reaching New Heights | 252 |
| Math | Middle | The Busing Problem | 110 |
| Math | Middle | Stacking Squares | 7865 |
| Math | Middle | More Complicated Functions: Introduction to Linear Functions | 5077 |
| Math | Middle | *Bubble Mania | 230 |
| Math | Middle | High Step Shoes: Product Mix | 1217 |
| Math | High | Number Line 2: Changes and Shortcuts | 2387 |
| Math | High | Fantasy Baseball: Part II | 385 |
| Math | High | Baseball Stats | 1494 |
| Math | High | Escape From the Tomb | 7708 |
| Math | High | Tiling the Plaza | 268 |

Two lessons (indicated by *in the table) did not use or teach any of the 21st century skills identified by the Partnership for 21st Century Skills.

## 21st Century Themes

Of the 45 randomly selected lessons, 21st century themes were only addressed six times. *Health and wellness* and *global awareness* were each included twice, while *financial literacy* and *civic literacy* were each included once. Once was in an elementary lesson, two in middle school lessons, and the remaining three times in high school lessons.

### *Learning and Innovation Skills*

Similar to the lessons prepared by preservice teachers, Learning and Innovation skills (L & I) were included most frequently in the randomly selected lessons. L & I skills were included 70 times in the lessons and were fairly well distributed across the content areas. Math lessons included 21 instances of using L & I skills, science had 24 instances, and 25 instances occurred in language arts lessons.

As with the preservice teacher lessons, *communication and collaboration* skills were utilized most frequently, accounting for 40% of the occurrences. Different from the preservice lessons, the ORC lessons utilized *critical thinking and problem solving* skills more often than *creativity and innovation* skills, (33% versus 27%).

When analyzed by grade level, middle school lesson plans included the most L & I skills, with middle school science accounting for 16% of all L & I skill ratings—higher than all other content areas at all grade levels.

| Grade level | Frequency of inclusion | Percentage of lessons |
|---|---|---|
| Elementary | 19 | 27 |
| Middle | 28 | 40 |
| High | 23 | 33 |

## *Information, Media, and Technology Skills*

Interestingly, Learning and Innovation skills were included 25 times, yet *information and communication technology* (ICT) skills were actually taught in only two lessons (high school language arts and elementary language arts). Significantly different from the preservice teacher lessons, the ORC lessons contained the highest use of *media literacy* skills (11 of 25 instances), followed by *information and communication technology* skills (8 of 25 instances), and *information literacy* skills (6 of 25 instances).

It is of concern that this random sample of lessons identified as either "best or promising practice" includes so little use of ICT skills. A cross-national comparison case study of innovative pedagogical practices using technology (Law, Lee, & Chow, 2002) indicated gains in several learning outcomes when ICT skills were included in the curriculum. In addition to increases in knowledge management competencies (skills and abilities necessary for managing knowledge and dealing with information using ICT), students reported an appreciation for working outside the boundaries of the traditional classroom (working virtually and online) and specific gains in information literacy skills while creating a web page for their project; critical thinking skills through discussions and arguing a position with others; confidence in an ability for knowing how to learn; an ability to learn from others and contribute to the learning of others; tolerance and appreciation for the viewpoints of others; and an understanding of the importance and value of learning communities.

As mentioned, although Learning and Innovation skills were used in several of the ORC lessons, they were only "taught" in two lessons, which leads one to question whether educators might be assuming these skills are being taught elsewhere, and yet, evidence from the lesson analysis and prior research (Wan, 2006) has shown such is not the case.

## *Career and Life Skills*

Again, unlike the preservice teachers who identified using *productivity and accountability* skills most often from the Career and Life skills (C & L) category, the ORC lessons utilized *initiative and self-direction* skills most often, accounting for 8 of the 12 (67%) C & L skill occurrences. All other C & L skills received one rating for using *flexibility and adaptability, social and cross-cultural interaction, productivity*

*and accountability*, and *leadership and responsibility*. Elementary lessons contained only one instance of using any C & L skills, while both middle and high school lessons had five each. With the current emphasis on making sure all students are "college and workforce-ready," it seems prudent to begin preparing even our youngest learners with the skills necessary to be successful in career and life.

Although this study looked at a small, random sample (3%) of the nearly 1500 lessons contained on the ORC Web site deemed either best or promising practice, (Science = 467; Math = 448; Language Arts = 556), 21st century skills were addressed 113 times and two lessons did not include the use of any 21st century skills at all. Even though 21st century skills were not the main focus of any of the ORC lessons, there is some evidence that these skills are imbedded in "best and promising practice" lessons.

Evidence from the lessons designed by preservice teachers and the best practice lessons provided for inservice teachers indicate that educators have the capacity to create new, or make use of existing lessons, and with minor adjustments can incorporate the teaching or use of 21st century skills. Once teachers are aware of the need to teach and provide opportunities for students to practice 21st century skills, they can begin to address the challenge. The next section provides suggestions for how and where to begin.

## Taking the Beginning Steps

Several authors provide suggestions for simple changes that can be made to how educators approach lessons that allow for the imbedding of 21st century skills within the academic content. Walser (2008) and Cookson (2009) recommend using a student-led Socratic seminar which allows students to lead their own discussions of books, documentaries, or documents they have studied. These discussions can take place in the context of any content area and even cross curricular boundaries. Students are evaluated based on their participation (i.e., providing clarification, challenging others, adding comments, supporting their position with referenced material from sources, sharing personal experiences, or connecting to current events).

Helm, Turckes, and Hinton (2010) advocate utilizing a 21st century "learning habitat" (p. 67) with flexible learning habitats that include non-traditional and outdoor spaces. For example, as a way to utilize outdoor learning habitats, Walser (2008) recommends having students study latitude, longitude, scale, and proportion using Google Earth, and GPS technology to assist in locating, developing, and implementing a project to improve natural areas in the community or saving and rehabilitating polluted rivers and waterways.

High school students can practice entrepreneurial literacy and other career and life skills by participating in the building of houses or even a rustic covered bridge in the community (Walser, 2008). Teachers of young children can combine the use of outdoor learning habitats and iMovie software to create videos featuring student-provided digital images of naturally occurring shapes found in their environment and neighborhood.

Educators can use real-world events to bridge the teaching of standards with applied skills students need to be competitive in the global economy. Wallis (2006) describes a classroom project that followed a discussion of Nike's development of a more environmentally friendly sneaker, requiring students to choose a consumer product to analyze, explain its environmental impact, and develop a plan for reengineering it to reduce pollution costs without impacting commercial appeal.

Cross-curricular topics and projects such as these require teachers from a variety of content areas to practice and model collaboration for their students, allow for a vast array of academic standards to be addressed and engage learners in addressing real-world issues, while developing the skills necessary to succeed in the 21st century.

If educators have access to technology in the classroom, the following recommendations provide a starting point for incorporating 21st century skills into academic content lessons in relatively simple ways.

Following up on current events of earthquakes occurring throughout the world with varying impact, students can explore the impact of simulated earthquakes of different magnitudes on self-constructed buildings using an internet search engine, free simulation software available from the Discovery Channel, a word processing document, and a spreadsheet to document their findings (http://dsc.discovery.com/guides/planetearth/earthquake/interactive/interactive.html).

Sprenger (2009) recommends using white boards during classroom instruction, thereby providing an interactive tool for either small or large group instruction that makes use of the digital natives' experiences of interacting with screens in a multisensory environment. Cutshall (2009) advocates the use of Skype, (a software application that allows users to make voice calls over the Internet and includes additional features of instant messaging, file transfer, and video conferencing), asynchronous communication methods, and Web sites that provide global connections to enhance the teaching and learning of foreign languages in the classroom. Such interactions provide support for developing global awareness, and social and cross-cultural interaction, in addition to communication and collaboration skills.

Boss (2009) suggests the use of blog posts as a way to enhance middle school students' reflection skills. Students may be required to post one blog reflection a week, providing a longitudinal portfolio of writing that can be examined and evaluated for growth and development. Audio interviews in the form of "video confessionals" can be utilized to encourage young students or reluctant writers to reflect on classroom learning experiences. Audio interviews allow students with writing difficulties to experience a depth of reflection that might not be possible if they were required to write their responses. For visual learners, collaborative tools such as VoiceThread (http://www.voicethread.com) allow young students to record comments associated with digital images of their learning.

Knobel and Wilber (2009) advocate using collaborative class blogs to discuss novels being read by the class or share resources on topics of interest. Students can be encouraged to post book reviews or prepare comparative analyses of books

they have read with movie versions of the text. Other students who have read the book and seen the movie version can respond to the original blog posting with their impressions, thereby enhancing the depth of reflection and dialog. For younger students, PBS Kids (http://pbskids.org/zoom/fromyou/reviews/) offers an online site for students to write and post movies, music, television, toys, games, and book reviews.

Class blogs and Twitter sites can be used to have students assume the role of a character in a book they are reading. Students can create a daily blog or post tweets from the character's perspective on real-life daily events or events from the story. Such activities can be used to explore differing perspectives and character motives, especially if the character is from a background different from the students'.

In social studies classrooms, students can create travel blogs designed to highlight things visitors should know about and places of interest that can be found in the particular region being studied. Students utilize information literacy skills to access and manage information from a variety of sources (both print and online). They apply information and communication technology skills to research, organize, evaluate, and communicate information in their travel blogs. Finally, they utilize media literacy principles to demonstrate their understanding of how to create media products for a specific purpose.

The Public Broadcast System (PBS) provides many suggestions for the integration of media literacy skills within content area instruction. One suggestion for a mathematics lesson is to study percentages and fractions by investigating the ratio of advertisement to news in newspapers and Web sites, or commercials to content in television broadcasts. Students could analyze the type of ads connected to particular sections of the newspaper or Web site, or to particular TV programs, creating spreadsheets or graphs to demonstrate their findings (http://www.pbs.org/teachers/media_lit/getting_started.html).

PBS also provides suggestions for infusing 21st century skills in the study of fine arts. One suggestion is to connect arts and social studies using media literacy skills by analyzing photographs in newspapers to consider how light, shade, texture, shape, and scale contribute to the overall meaning of each photograph. Students identify what the photographer has chosen to include, highlight, and/or exclude in each shot; the location of the photographer in relation to the subject; how the photograph relates to the story it accompanies; and how the photograph might influence readers' attitudes.

The PBS teacher site includes a series entitled, *Access, analyze, act: From economic theory to financial reality* based on case studies using central economic themes. Lesson plans require students to access, process, and analyze economic information and act upon their findings in authentic ways (http://www.pbs.org/teachers/access-analyze-act-economy/lesson-plans/).

As demonstrated above, many existing classroom activities and lessons can be modified slightly to include the use or teaching of 21st century skills, thereby meeting the need to address specific content area standards, while allowing students to practice the skills necessary for their success in the 21st century.

## Diving In: Online Resources for Educators

The previous section provided suggestions for educators ready to take the small, initial steps necessary for incorporating the teaching and/or use of 21st century skills in content area lessons. The educational reformer, Phillip Schlechty states, "if new structures are to be invented, then educational leaders must be risk takers" (1990, p. 152). For educators who have been working for some time to bridge the gap and are fully committed to ensuring their students are prepared for the world of the 21st century and to eliminating the divide between the needs of the transformed society and the knowledge and skills of their students, more in-depth resources are available.

The following section contains short descriptions of a collection of resources for those educational risk-takers who have already dipped their feet in the pool and are ready to plunge in and contribute to the growing database of projects and resources available to assist others in teaching 21st century skills through content area instruction. Each online resource is followed by the web address where it can be accessed, with a short description of its contents.

### *Around the World in 80 Schools*

www.aroudntheworldin80schools.com

Project created by Charline Evans, a teacher from Wales who traveled around the world to connect 80 schools. Students in the 80 schools created animated representations of her travels through their country and culture.

### *ARTSEDGE*

http://artsedge.kennedy-center.org/

Site of the National Arts and Education Network that supports the placement of the arts at the center of the curriculum and advocates creative use of technology to enhance the K–12 educational experience. ARTSEDGE provides tools to develop interdisciplinary curricula that fully integrate the arts with other academic subjects (standards-based teaching materials, professional development resources, student materials, and guidelines for arts-based instruction and assessment).

### *Colorado Learns (C21L) Council on 21st Century Learning*

http://coloradolearns.wetpaint.com/page/Teaching

Wiki-based Web site designed to define powerful learning, share resources, and support educators who want to explore the HOW of 21st century learning.

### *Cybersmart!*

http://cybersmartcurriculum.org/

Database of standards-based lessons aligned with national and state technology and information literacy standards. Lessons prepare students to use basic skills for 21st century learning.

### *Discovery Education Classroom Resources*

http://school.discoveryeducation.com/

Free resources and lesson plans searchable by subject and grade level.

### *EconEdLink*

http://www.econedlink.org/

Web site containing lessons and resources for teaching economics. Links to *CyberTeach*, *Current Events*, *DataLinks*, and *WebLinks*.

### *EDSITEment*

http://edsitement.neh.gov/

A partnership of the National Endowment for the Humanities, Verizon Foundation, and the National Trust for the Humanities. Offers materials for teachers, students, and parents in the subject areas of literature and language arts, foreign languages, art and culture, and history and social studies. Contains links to over 200 humanities sites and lesson plans that integrate EDSITEment resources to promote active learning.

### *Envision Schools Project Exchange*

http://www.envisionprojects.org

Site for teachers to share project-based high school curriculum. Search the curriculum library by subject, school, or portfolio task. Subjects include visual and performing arts, science, language arts, social studies, mathematics, digital design, and world language.

### *ePals*

www.epals.com

Opportunities to create global connections especially for elementary and middle school classrooms. Teachers can make connections by project, location, topic, language, and age.

### *eThemes*

http://www.emints.org/ethemes/index.shtml

Free access to over 2,500 collections of content-rich, child-safe online resources maintained by the University of Missouri College of Education faculty and graduate students. Search by newly added themes, alphabetically by theme, and grade level.

### *EvaluTech*

http://www.evalutech.sreb.org/InstResources/index.asp

Free online educational resources including lesson plans, digital content, Web sites, digital libraries, and assessment instruments. Materials are sorted by topics within each subject area. Provided through a partnership between the Southern Regional Education Board's Educational Technology Cooperative and the Educational Resources Evaluation Services of the North Carolina Department of Public Instruction.

### *Flat Classroom Project*

http://flatclassroomproject.wikispaces.com

A global collaborative project that joins together middle and senior high school students. The project was co-founded by Vicki Davis (Westwood Schools, USA) and Julie Lindsay (Beijing (BISS) International School, China) in 2006, when they joined their classrooms to study and emulate the emerging flattened learning environment. One of the main goals of the project is to "flatten" or lower the classroom walls so that instead of each class working isolated and alone, two or more classes are joined virtually using Wikispaces and Ning to become one large classroom. (Ning: www.ning.com) Free social networking service that can be tailored to specific group needs.

### *Gateway to 21st Century Skills*

http://www.thegateway.org/

Provides access to Internet-based lesson plans, instructional units, and other educational materials in all forms and formats. Goal is to improve the organization and accessibility of the substantial collections of materials that are already available on various federal, state, university, nonprofit, and commercial Internet sites. Resources can be browsed by subject, type, level, or key words.

### *Illuminations*

http://illuminations.nctm.org/

Resources and lesson plans for teaching math provided by the National Council for Teachers of Mathematics.

### *International Education and Resource Network (iEARN)*

http://iearn.org/

The world's largest nonprofit global network that enables teachers and youth to use the Internet and other technologies to collaborate on projects that enhance learning and make a difference in the world.

### *KnowledgeWorks Foundation*

http://www.kwfdn.org/

KnowledgeWorks focuses on creating learner-centered environments by developing and implementing innovative and effective approaches to high school education in the United States by redesigning urban high schools, and developing Science, Technology, Engineering, Math, and Early College high schools.

### *Library of Congress*

http://www.loc.gov/teachers/

Library of Congress' web page for teachers containing resources and links to primary sources along with suggestions how they can be used in the classroom. Organized by lesson plans, themes, primary source sets, presentations and activities, and collection connections.

### *Literacy Network*

http://literacynetwork.verizon.org/TLN/

Supported by the National Center for Family Literacy, the Thinkfinity Literacy Network provides free, educational resources for literacy instruction and lifelong learning for adults and family literacy programs. Content strengthens literacy development, creativity, and critical thinking skills for success in the 21st century.

### *Microsoft Education*

http://www.microsoft.com/education/lessonplans.mspx

Lesson plans that can be browsed by subject that introduce or reinforce technology skills.

### *ReadWriteThink*

http://www.readwritethink.org/

Sponsored by the International Reading Association and the National Council of Teachers of English. Lessons can be searched by grade level, lesson type, learning objective, and theme.

### *Route 21*

http://www.21stcenturyskills.org/route21/index.php

A one-stop-shop for 21st century skills-related information, resources, and community tools. Resources can be browsed by standards, 21st century skill areas, core subject, and theme.

### *Science NetLinks*

http://www.sciencenetlinks.com/

Provides a wealth of standards-aligned resources for K–12 science educators, including lesson plans, interactive, and reviewed Internet resources. Lessons can be sorted by grade level, title, and benchmark.

### *Smithsonian Center for Education and Museum Studies*

http://www.smithsonianeducation.org/educators/index.html

Contains lesson plans and resources for educators that are aligned and searchable by state content standards, grade level, and topic.

### *Smithsonian's History Explorer*

http://historyexplorer.americanhistory.si.edu/

Standards-based American history online resources developed by the National Museum of American History. Utilizes museum artifacts, primary sources, and online tools.

### *Teach Connect*

http://teachconnect.ning.com

Web site-based network of global collaborative projects used to connect teachers across all borders. Teachers can connect to an existing global project or enter an idea or project presentation and include the countries they would like to connect with.

### *Thinkfinity*

http://www.thinkfinity.org/

Thinkfinity is the cornerstone of Verizon Foundation's literacy, education, and technology initiatives with a goal to improve student achievement in traditional

classroom settings and beyond by providing high-quality content and extensive professional development training across seven disciplines.

### *Thinkquest*

http://www.thinkquest.org

Sponsored by the Oracle Education Foundation, the ThinkQuest library provides learning resources for students of all ages on a wide range of educational topics. Featuring over 8,000 Web sites created by students who have participated in a ThinkQuest competition.

### *World Digital Library*

http://www.wdl.org/en/

Images and digital collections. Made possible through a partnership between the Library of Congress and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). Searchable by place, time, topic, type of item, and institution.

### *XPEDITIONS*

http://www.nationalgeographic.com/xpeditions/

National Geographic Xpeditions, home of the U.S. National Geography Standards and ideas, tools, and interactive adventures that bring them to life.

## Conclusion

As with many other educational reform efforts, classroom educators stand at the critical juncture between what must be done, and finding ways to make it happen. Fortunately, as is evidenced by the resources provided in this chapter, educators are not alone in this journey. This time, educators have the support of business leaders, professional organizations, educational leaders, educators from across the globe, and countless others. As digital immigrants, we must work with our digital natives to create new and exciting learning opportunities that will help to prepare learners to be successful in the 21st century, including educators, who by their very nature are lifelong learners and risk takers.

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# Chapter 8
# Reading, Writing, and Deconstructing: Media Literacy as Part of the School Curriculum

**Jessica Collins, Denis Doyon, Christie McAuley, and Andrea Isabel Quijada**

## Introduction to Media Literacy

Media literacy is a set of skills that anyone can learn. Just as *literacy* is the ability to read and write, *media literacy* refers to the ability to access, analyze, evaluate, and create media messages of all kinds. These are essential skills in today's world. Today, many people get most of their information through complex combinations of text, images, and sounds. We need to be able to navigate this complex media environment, to make sense of the media messages that bombard us every day, and to express ourselves using a variety of media tools and technologies.

Media literate youth and adults are better able to decipher the complex messages they receive from television, radio, newspapers, magazines, books, billboards, signs, packaging, marketing materials, video games, recorded music, the Internet, and other forms of media. They can understand how these media messages are constructed, and discover how they create *meaning* – usually in ways hidden beneath the surface. People who are media literate can also create their own media, becoming active participants in our media culture. Media literacy skills can help children, youth, and adults to do the following:

- Understand how media messages create meaning
- Identify who created a particular media message
- Recognize what the media maker wants us to believe or do
- Name the "tools of persuasion" used
- Recognize bias, spin, misinformation, and lies
- Discover the part of the story that is not being told
- Evaluate media messages based on our own experiences, beliefs, and values
- Create and distribute our own media messages
- Become advocates for change in our media system

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_8,

Media literacy education helps to develop critical thinking and active participation in our media culture. The goal is to give youth and adults greater freedom by empowering them to access, analyze, evaluate, and create media.

In many state educational standards and school subjects—language arts, social studies, health, and other subjects—exist the skills of accessing, analyzing, and evaluating information found in media. These are media literacy skills, though the standards may not use that term. Teachers know that students like to examine and talk about their own media, and they have found that media literacy is an engaging way to explore a wide array of topics and issues.

*In the community*. Researchers and practitioners recognize that media literacy education is an important tool in addressing alcohol, tobacco and other drug use; obesity and eating disorders; bullying and violence; gender identity and sexuality; racism and other forms of discrimination and oppression; and life skills. Media literacy skills can empower people and communities usually shut out of the media system to tell their own stories, share their perspectives, and work for justice.

*In public life*. Media literacy helps us understand how media create cultures, and how the "media monopoly"—the handful of giant corporations that control most of our media—affects our politics and our society. Media literacy encourages and empowers youth and adults to change our media system, and to create new, more just, and more accessible media networks.

## The History of Media Literacy in the US

The term *media literacy* started to become a familiar concept among educators in the 1980s when there began to be a growing concern about the content of TV programs, Hollywood movies, song lyrics, and the increased prevalence of media in our lives. In this decade, we saw the rise of MTV, which almost overnight became a success as the first music video cable channel. At the same time, the CD replaced the LP, rental movies on VCRs became an alternative to movie theaters, and little by little, PCs began appearing in people's homes. With emerging technology, media and media messages were quickly becoming a powerful influence on the landscape in American culture.

It wasn't until the 1990s that the education reform movement to include media literacy in classrooms was spawned from a grassroots level. This decade saw organizations like The New Mexico Media Literacy Project and several years later, Project Look Sharp and the Media Education Lab, form and begin building relationships with schools in an effort to inspire students to think critically about media messages. Still, however, the amount of media education taught to students varied greatly among teachers, schools, and school districts. Frank Baker, a media literacy educator, says that the inconsistencies of teaching media literacy in the United States are, in part, because the subject is not on standardized tests (Federov, 2006).

Today, there are more media education organizations, foundations, and coalitions than ever before working to educate community members, families, students, and representatives around the United States. The media literacy movement in schools

is gaining momentum and continues to grow as educators, administrators, and policy makers realize the importance of critically thinking about media as a vital part of classroom instruction in the 21st century.

## How Does the US Measure Up Against Other English-Speaking Countries?

It may be surprising for some people to learn that media education in the US, when compared to other English-speaking countries, has taken a backseat. Despite the fact the US lags behind in the global media literacy community, there are school districts across the US implementing progressive programs that teach critical thinking about the media. Robert Kubey, Director of the Center for Media at Rutgers University, states that countries outside the United States have a greater need for students to critically think about the media because they are not seeing a reflection of their own society as much as they are seeing American values imported into their culture (Kubey, 1998). On the other hand, the explosion of media onto the American landscape is evidence that media education is just as important for people of the US so they may understand the pervasive and profound influence of these messages.

### *The Leading Countries*

In a survey among media literacy experts around the world, Canada is ranked as having the most comprehensive media education curriculum (Federov, 2003). Among English-speaking countries, next is the United Kingdom, followed by Australia, and then the United States. New Zealand, Wales, and Ireland are not mentioned in this survey. A brief overview provides insight into the development of media literacy in each of these countries.

Contrary to the United States, Canada has had mandates about media education in the classroom for a number of years now, with Ontario being the first to establish them in 1987 (Kubey, 1998). Canada was the first country in the world to implement media literacy as a component of the English/language arts curriculum in schools, partially due to the involvement of the Association for Media Literacy founded in 1978. Currently, Ontario's government has mandated media literacy in English and language programs for grades one through 12 (Wilson, 2008).

In 1988, media education became a part of the national curriculum in both England and Wales. In general, media literacy is more prominent in middle- and high school-equivalent level classes than compared to the United States. Media literacy courses are generally a part of the high school curriculum through courses like English and civics, though they are taught across the curriculum in subjects like foreign languages, history, geography, and art (Federov, 2006–2008).

Australia's model of implementing media literacy is partially based on that of Britain's. Media literacy is supported by a number of state curriculum policies

though there are no national standards in place. In some states, media literacy is an elective in high school grades, while in other states, it is implemented across the curriculum (Dezuanni, 2007).

### *What Teachers Need*

More significant than where the United States lies in the media literacy movement is what public school teachers need to implement media education in the classroom. Media literacy is becoming part of the lexicon of educators and administrators, and it is being implemented in more school districts across the nation than ever before. Some states already have media literacy standards that align with the core curriculum; others are revising core curricula standards to include media literacy. First and foremost, in order for teachers to be successful with media literacy in the classroom, they must want to teach it. In addition, current and future educators need several forms of support.

*Materials.* As media are constantly changing, the materials need to be current. It is easier than ever to access and collect a variety of media to use in classrooms. However, technology is a must. Schools need up-to-date computers with high speed Internet, storage devices like hard drives with a large file capacity, LCD projectors, digital scanners, and recording devices/software to download media examples. For production, students need access to video recorders, movie-making software, and for more basic media, art supplies.

*Training.* College-level media literacy courses need to be mandated in teacher's colleges. Professional development in the form of continued media literacy training needs to be available for current teachers, school librarians, and information sciences personnel.

*Administrator support.* Without buy in from principals and superintendents, media literacy in public schools will lose its foothold.

*Teacher support groups.* These groups could serve as a forum for sharing resources, airing concerns, and discussing successes and failures.

*State public education department mandates and funding.* Media literacy needs to be a more integral part of the core content areas of most state education standards, and at least a one-semester course in media literacy should be required for graduation. Funding should be used for professional development and materials.

## Integrating Media Literacy into the Curriculum

The concept of standards-based education in schools is more important today than ever before. It is linked to accountability which can affect teacher pay raises and promotions, determine awardees, and impact schools going on or coming off probation. A focus on standards is an approach that holds school boards, administrators, and teachers accountable in an effort to promote greater success among students.

Some people say that with curriculum standards (also known as academic standards, standards-based education, education standards or state standards) in place, both teachers and students have clearer expectations for classroom learning. Others believe that standards-based education usurps a teacher's right to decide what's most important for students to learn. Despite the broad range of opinions about education practices, standards-based teaching is an integral part of instruction in every grade level and stands in the limelight of public school education reform today.

A *best practice* for teachers is to align the subject content they teach with curriculum standards. Integrating media literacy in the classroom is a complement to this practice because it dovetails with many of the core subjects taught in public schools. For this reason, interdisciplinary units in science, language arts, social studies, and health ranging from elementary through high school grades are a natural fit for critically thinking about the media.

One approach for integrating media literacy into different subjects in a middle school curriculum using the theme of *consumerism* is presented here.

### *Consumer/Family Sciences*

Student activities: research investigative reporting that reveals the "untold stories" about the production of consumer goods; list pros and cons of shopping in bulk and purchasing with credit cards versus cash; determine if brand name or generic products offer the better buy; create a grocery list using real grocery story sale ads to see how far they can stretch $100, then deconstruct the ad to determine what information is left out of the ads.

### *Geography*

Student activities: explore the exploitation of communities in the manufacturing of goods imported into and exported from the United States; monitor local news media for balance on community issues, representation of poor people, people of color, and LGBTQI individuals who make up the community.

### *Health Education*

Student activities: examine some of the unhealthy/potentially unhealthy products targeted at children through ads on TV; create a new (fictional) food product using eco-friendly features that is nutritional and healthy.

### *Language Arts*

Student activities: create media projects such as counter ads that reveal "untold stories" from the advertisers or newspaper reporting; produce and videotape a

news program as a group project going out into the community and reporting on local issues.

### *Math*

Student activities: research and understand data including graphs, tables and percentages with regard to dollar savings, credit card interest, impact of consumerism on health care costs, tax payer dollars involved in cleaning up contaminated communities.

### *Science*

Student activities: research the environmental impact of product packaging on the Earth's natural resources and how that impact affects communities; create a compost pile to observe the process of decomposition; devise experiments to observe different forms of biodegradable or photodegradable packaging.

Being media literate means thinking critically using the top three levels of Bloom's Taxonomy: analysis, synthesis, and evaluation (Bloom & Krathwohl, 1956). When teachers integrate hands-on media projects like monitoring media, producing a news program, creating and packaging a new and healthy food product, it supports diverse learning styles as noted in Howard Gardner's Theory of Multiple Intelligences (1983). In addition, this process promotes the idea of a student-centered classroom that focuses on real-world learning, a necessary skill in our media-saturated world.

Furthermore, deconstructing media such as TV commercials, newspaper articles, magazine ads, and product packaging in the classroom allows for an authentic learning experience. Students learn to be media literate by answering questions such as "Who paid for this media and why?" and "What information is being left out of this message?" By examining media examples and recognizing aspects of reality and fantasy, techniques of persuasion, and texts and subtexts, students recontextualize media messages. This process allows them to gain new meaning about TV commercials that run during their favorite shows, internet pop-up ads on Web sites they visit, or product placement in computer games they play.

## Media Literacy and Social Justice

Students who are media literate can critically deconstruct a piece of media—a print ad, for example—and determine who the target audience is, understand what the text and subtext are, and recognize what healthy and unhealthy messages are present. On

a deeper level, critically thinking about media allows learners to reflect upon who they are as a community, a culture, and a society. Questions such as "Who does this piece of media empower?" and "Who does this media disempower?" allow learners to explore race, class, and gender portrayals in order to understand how misrepresentations of communities they may or may not be part of can perpetuate stereotypes and fuel racism. Student and teacher discussions can shed light on power and justice issues in our society when questions like "Whose voices are heard on the nightly news, and whose voices are left out?" are posed. Teaching about media through a critical lens helps bring awareness to social issues; once awareness is heightened, learners can begin to name their own experiences and understand different perspectives; once there is understanding, students can act to create more socially just communities.

Paulo Freire, a Brazilian educator of the 20th Century, is perhaps best known for his book *Pedagogy of the Oppressed* (1970), that professes teaching marginalized people to overcome powerlessness through action leading to equity and liberation. In this book, he discusses the metaphor of "banking education"—that students should be empty bank accounts and remain open to teachers' "deposits" that may have little connection to the real world. Freire (1970) rejects this banking approach and states that it is too often the method of teaching in our schools. Instead, he believes in student-centered education that provides opportunities for students to integrate their personal experiences, identify social issues, and be an active participant for change (Smith, 2002). Media literacy taught within a social framework upholds Freire's philosophy by empowering individuals and community members to be informed, recognize problems, and take action.

Just as Freire proposes teaching for a just society, James Banks, Professor of Education at University of Washington said (2002) "A literacy education that focuses on social justice educates both the heads and hearts of students and helps them to become thoughtful, committed, and active citizens in their nation and the world" (p. 1). Media literacy becomes a teaching tool for social justice when it integrates [all levels of] Banks' Curriculum Reform Model (n. d.). This model contains four levels of content integration into the curriculum.

Level 1: The Contributions Approach

- Focuses on heroes, holidays, and discrete cultural elements.

Level 2: The Additive Approach

- Content, concepts, themes, and perspectives are added to the curriculum without changing its structure.

Level 3: The Transformation Approach

- The structure of the curriculum is changed to enable students to view concepts, issues, events and themes from the perspectives of diverse and cultural groups.

Level 4: The Social Action Approach

- Students make decisions on important social issues and take actions to help solve them. (Gabriele, 1996, p. 1)

One example of how media literacy integrates Banks' Social Action Approach took place in Robert F. Kennedy Charter School (RFK) in Albuquerque, New Mexico. Students at RFK, a school serving grades nine through twelve, recently studied media literacy in their classroom when they noticed a large corporate-owned billboard with an ad for Tecate beer. The billboard, located a block from their school, had a giant-sized close up of a cold Tecate beer bottle with the words "Finally, a Cold Latina." After catching sight of this ad, several students were offended by both the sexist and racist language that compared a Latina to a bottle of beer. In addition, the students found that the alcohol ad was in violation of a city ordinance because it was too close to the school. As a result, students decided to take action. These RFK Charter School students began getting the word out about the offensive nature of this billboard through networking and distributing flyers. They made requests that other students and community members call Labatt USA, the parent company of Tecate Beer, to complain about the sexism and racism in this ad. Soon, word got out and more students joined in. The students at RFK contacted high profile Latino organizations, including the University of New Mexico's Chicano Studies Department and El Centro de la Raza, and asked them to post flyers opposing the ad on their Web sites. They also contacted the Hispano Round Table of New Mexico and Governor Bill Richardson's office.

Days after the phone call campaign to Labatt USA, the Tecate billboard ad near RFK Charter High was taken down. Weeks later throughout the entire state of New Mexico, these same billboard ads for Tecate were pulled by the company. Shortly after, Tecate's national "Cold Latina" campaign was retired. The students from RFK who led this call for change were recognized in the *Albuquerque Journal*, New Mexico's largest newspaper, and were invited to attend the national UNITY: Journalists of Color "Creating Future Journalists" conference in Washington, D.C. (Fonseca, 2004).

## Conclusion

Media literacy is necessary for the success of learners in the 21st century. When critical viewing, listening, and reading are part of a school curriculum, students are able to ask questions, challenge media messages, and ultimately think more freely for themselves. Media literacy that uses a critical thinking and social justice framework is just one way to support this educational process. With knowledge, learners are more prepared to find answers, make informed decisions, have a voice, be future voters, and civic participants. Ultimately, they can become catalysts for change.

## Appendix: Useful Information and Tools for Teachers

### *Media Literacy Organizations*

Association for Media Literacy—http://www.aml.ca/home/ The Association for Media Literacy is made up of teachers, librarians, consultants, parents, cultural workers, and media professionals concerned about the impact of the mass media on contemporary culture

Center for Media at Rutgers University—http://www.mediastudies.rutgers.edu/ The Center for Media Studies is concerned with the impact of media on contemporary society. Through research, teaching, public events and outreach, the Center seeks ways for the media to better serve the public interest.

Media Ed Lab—http://www.mediaeducationlab.com/ The Media Education Lab at Temple University improves media literacy education through scholarship and community service.

New Mexico Media Literacy Project – http://www.nmmlp.org New Mexico Media Literacy Project works from a social justice framework to cultivate critical thinking and activism in our media culture to build healthy and just communities.

Project Look Sharp—http://www.ithaca.edu/looksharp/ Project Look Sharp provides materials, training and support for the effective integration of media literacy with critical thinking into classroom curricula at all education levels.

### *Media Literacy Concepts*

The study and practice of media literacy is based on a number of fundamental concepts about media messages, our media system, and the role of media literacy in bringing about change. Understanding these concepts is an essential first step in media literacy education.

We've organized Media Literacy Concepts into three levels: Basic, Intermediate, and Advanced. Basic concepts focus on how media affect us. Intermediate concepts examine more closely how we create meaning from media messages. Advanced concepts examine the interaction of media and society, and the role of media literacy in bringing about change.

#### Basic Concepts

1. *Media construct our culture.* Our society and culture—even our perception of reality—is shaped by the information and images we receive via the media.

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A few generations ago, our culture's storytellers were people—family, friends, and others in our community. For many people today, the most powerful storytellers are television, movies, music, video games, and the Internet.

2. *Media messages affect our thoughts, attitudes, and actions.* We don't like to admit it, but all of us are affected by advertising, news, movies, pop music, video games, and other forms of media. That's why media are such a powerful cultural force and the media industry is such big business.
3. *Media use "tools of persuasion."* All media messages try to persuade us to believe or do something. News, documentary films, and nonfiction books all claim to be telling the truth. Advertising tries to get us to buy products. Novels and TV dramas go to great lengths to appear realistic. To do this, they use specific techniques (like flattery, repetition, fear, and humor) we call "tools of persuasion."
4. *Media construct fantasy worlds.* While fantasy can be pleasurable and entertaining, it can also be harmful. Movies, TV shows, and music videos sometimes inspire people to do things that are unwise, anti-social, or even dangerous. At other times, media can inspire our imagination. Advertising constructs a fantasy world where all problems can be solved with a purchase. Media literacy helps people recognize fantasy and constructively integrate it with reality.
5. *No one tells the whole story.* Every media maker has a point of view. Every good story highlights some information and leaves out the rest. Often, the effect of a media message comes not only from what is said but from what part of the story is not told.
6. *Media messages contain "texts" and "subtexts."* The text is the actual words, pictures and/or sounds in a media message. The subtext is the hidden and underlying meaning of the message.
7. *Media messages reflect the values and viewpoints of media makers.* Everyone has a point of view. Our values and viewpoints influence our choice of words, sounds and images we use to communicate through media. This is true for all media makers, from a preschooler's crayon drawing to a media conglomerate's TV news broadcast.
8. *Individuals construct their own meanings from media.* Although media makers attempt to convey specific messages, people receive and interpret them differently, based on their own prior knowledge and experience, their values, and their beliefs. This means that people can create different subtexts from the same piece of media. All meanings and interpretations are valid and should be respected.
9. *Media messages can be decoded.* By "deconstructing" media, we can figure out who created the message, and why. We can identify the techniques of persuasion being used and recognize how media makers are trying to influence us. We notice what parts of the story are not being told, and how we can become better informed.
10. *Media literate youth and adults are active consumers of media.* Many forms of media, like television, seek to create passive, impulsive consumers. Media

literacy helps people consume media with a critical eye, evaluating sources, intended purposes, persuasion techniques, and deeper meanings.

**Intermediate Concepts**

11. *The human brain processes images differently than words.* Images are processed in the "reptilian" part of the brain, where strong emotions and instincts are also located. Written and spoken language is processed in another part of the brain, the neocortex, where reason lies. This is why TV commercials are often more powerful than print ads.
12. *We process time-based media differently than static media.* The information and images in TV shows, movies, video games, and music often bypass the analytic brain and trigger emotions and memory in the unconscious and reactive parts of the brain. Only a small proportion surfaces in consciousness. When we read a newspaper, magazine, book or Web site, we have the opportunity to stop and think, re-read something, and integrate the information rationally.
13. *Media are most powerful when they operate on an emotional level.* Most fiction engages our hearts as well as our minds. Advertisements take this further, and seek to transfer feelings from an emotionally charged symbol (family, sex, the flag) to a product.
14. *Media messages can be manipulated to enhance emotional impact.* Movies and TV shows use a variety of filmic techniques (like camera angles, framing, reaction shots, quick cuts, special effects, lighting tricks, music, and sound effects) to reinforce the messages in the script. Dramatic graphic design can do the same for magazine ads or Web sites.
15. *Media effects are subtle.* Few people believe everything they see and hear in the media. Few people rush out to the store immediately after seeing an ad. Playing a violent video game won't automatically turn you into a murderer. The effects of media are more subtle than this, but because we are so immersed in the media environment, the effects are still significant.
16. *Media effects are complex.* Media messages directly influence us as individuals, but they also affect our families and friends, our communities, and our society. So some media effects are indirect. We must consider both direct and indirect effects to understand media's true influence.
17. *Media convey ideological and value messages.* Ideology and values are usually conveyed in the subtext. Two examples include news reports (besides covering an issue or event, news reports often reinforce assumptions about power and authority) and advertisements (besides selling particular products, advertisements almost always promote the values of a consumer society).
18. *We all create media.* Maybe you don't have the skills and resources to make a blockbuster movie or publish a daily newspaper, but just about anyone can snap a photo, write a letter or sing a song. And new technology has allowed millions of people to make media–email, Web sites, videos, newsletters, and

more—easily and cheaply. Creating your own media messages is an important part of media literacy.

### Advanced Concepts

19. *Our media system reflects the power dynamics in our society.* People and institutions with money, privilege, influence, and power can more easily create media messages and distribute them to large numbers of people. People without this access are often shut out of the media system.
20. *Most media are controlled by commercial interests.* In the United States, the marketplace largely determines what we see on television, what we hear on the radio, and what we read in newspapers or magazines. As we use media, we should always be alert to the self-interest of corporate media makers. Are they concerned about your health? Do they care if you're smart or well-informed? Are they interested in creating active participants in our society and culture or merely passive consumers of their products, services, and ideas?
21. *Media monopolies reduce opportunities to participate in decision making.* When a few huge media corporations control access to information, they have the power to make some information widely available and privilege those perspectives that serve their interests, while marginalizing or even censoring other information and perspectives. This affects our ability to make good decisions about our own lives, and reduces opportunities to participate in making decisions about our government and society.
22. *Changing the media system is a justice issue.* Our media system produces lots of negative, demeaning imagery, values, and ideas. It renders many people invisible. It provides too little funding and too few outlets for people without money, privilege, influence, and power to tell their stories.
23. *We can change our media system.* More and more people are realizing how important it is to have a media system that is open to new people and new perspectives, that elevates human values over commercial values, and that serves human needs in the 21st century. All over the world, people are taking action to reform our media system and create new alternatives.
24. *Media literate youth and adults are media activists.* As we learn how to access, analyze and interpret media messages, and as we create our own media, we recognize the limitations and problems of our current media system. Media literacy is a great foundation for advocacy and activism for a better media system.

## *Text and Subtext*

### Text

We often use the word "text" to mean "written words." But in media literacy, "text" has a very different meaning. The text of any piece of media is what you

actually see and/or hear. It can include written or spoken words, pictures, graphics, moving images, sounds, and the arrangement or sequence of all of these elements. Sometimes the text is called the "story" or "manifest text." For most of us, the text of a piece of media is always the same.

## Subtext


The "subtext" is your interpretation of a piece of media. It is sometimes called the "latent text." The subtext is not actually heard or seen; it is the meaning we create from the text in our own minds. While media makers (especially advertisers) often create texts that suggest certain subtexts, each person creates their own subtext (interpretation) based on their previous experiences, knowledge, opinions, attitudes, and values. Thus, the subtext of a piece of media will vary depending on the individual seeing/hearing it.

## Example

Magazine ad: "got milk?"

The *text* of this media message includes the following:

- An image of musician Sheryl Crow holding a guitar case and a glass of milk in a room with a lamp, bed, open door, etc. behind her.
- The logo "got milk?" and the words "Rock hard."
- The short paragraph: "To keep the crowd on their feet, I keep my body in tune. With milk. Studies suggest that the nutrients in milk can play an important role in weight loss. So if you're trying to lose weight or maintain a healthy weight,

try drinking 24 ounces of low fat or fat free milk every 24 hours as part of your reduced-calorie diet. To learn more, visit 2424milk.com. It's a change that'll do you good."
- Another logo that reads "milk. your diet. Lose weight! 24 oz. 24 hours"
- A small image of Sheryl Crow's album *Wildflower*.

*Possible subtexts* include the following:

- Sheryl Crow drinks milk.
- Sheryl Crow can only perform well by drinking milk.
- Sheryl Crow wants to sell her album.
- Milk renders great concerts.
- If you drink milk you will lose weight.
- Beautiful people drink milk.
- If you drink milk, you'll be beautiful and famous, too.
- Sheryl Crow stays at cheap motels.
- Rock stars like ripped jeans.

## *Tools of Persuasion*

The goal of most media messages is to persuade the audience to believe or do something. Hollywood movies use expensive special effects to make us believe that what we're seeing is real. News stories use several techniques such as direct quotation of identified sources to make us believe that the story is accurate.

The media messages most concerned with persuading us are found in advertising, public relations and advocacy. Commercial advertising tries to persuade us to buy a product or service. Public relations (PR) "sells" us a positive image of a corporation, government or organization. Politicians and advocacy groups (groups that support a particular belief, point of view, policy, or action) try to persuade us to vote for or support them, using ads, speeches, newsletters, Web sites, and other means.

These "persuaders" use a variety of techniques to grab our attention, to establish credibility and trust, to stimulate desire for the product or policy, and to motivate us to act (buy, vote, give money, etc.)

We call these techniques the "tools of persuasion." They're not new; Aristotle wrote about persuasion techniques more than 2000 years ago, and they've been used by speakers, writers, and media makers for even longer than that.

Learning the tools of persuasion is an important media literacy skill. Once you know how media messages try to persuade you to believe or do something, you'll be better able to make your own decisions.

Advertising is the easiest starting point: most ads are relatively simple in structure, easily available, and in their original format. Media literacy beginners are encouraged to learn the tools of persuasion by examining ads. Keep in mind that many media messages, such as television commercials, use several techniques simultaneously. Others selectively employ one or two.

Political rhetoric—whether used by politicians, government officials, lobbyists, or activists—is more difficult to analyze, not only because it involves more emotional issues, but also because it is more likely to be seen in bits and fragments, often filtered or edited by others. Identifying the persuasion techniques in public discourse is important because the consequences of that discourse are so significant—war and peace, justice and injustice, freedom and oppression, and the future of our planet. Learning the tools of persuasion can help us sort out complex emotional arguments, define the key issues, and make up our own minds about the problems facing us.

Note: We've divided our list of persuasion techniques into three levels: Basic, Intermediate, and Advanced. Basic techniques are easily identified in many media examples, and they are a good starting point for all learners. Identifying many intermediate techniques may require more critical distance, and they should usually be investigated after learners have mastered the basics. More abstraction and judgment may be required to identify the advanced techniques, and some learners may find them difficult to understand. However, even media literacy beginners may be able to spot some of the intermediate or advanced techniques, so feel free to examine any of the persuasion techniques with your group.

**Basic Persuasion Techniques**

1. *Association.* This persuasion technique tries to link a product, service, or idea with something already liked or desired by the target audience, such as fun, pleasure, beauty, security, intimacy, success, wealth, etc. The media message doesn't make explicit claims that you'll get these things; the association is implied. *Association* can be a very powerful technique. A good ad can create a strong emotional response and then associate that feeling with a brand (family = Coke, victory = Nike). This process is known as *emotional transfer*. Several of the persuasion techniques below, like *Beautiful people*, *Warm and fuzzy*, *Symbols*, and *Nostalgia*, are specific types of association.
2. *Bandwagon.* Many ads show lots of people using the product, implying that "everyone is doing it" (or at least, "all the cool people are doing it"). No one likes to be left out or left behind, and these ads urge us to "jump on the bandwagon." Politicians use the same technique when they say, "The American people want. . ." How do they know?
3. *Beautiful people. Beautiful people* uses good-looking models (who may also be celebrities) to attract our attention. This technique is extremely common in ads, which may also imply (but never promise!) that we'll look like the models if we use the product.
4. *Bribery.* This technique tries to persuade us to buy a product by promising to give us something else, like a discount, a rebate, a coupon, or a "free gift." Sales, special offers, contests, and sweepstakes are all forms of *bribery*. Unfortunately, we don't really get something for free – part of the sales price covers the cost of the bribe.

5. *Celebrities.* (A type of *Testimonial* – the opposite of *Plain folks*.) We tend to pay attention to famous people. That's why they're famous! Ads often use celebrities to grab our attention. By appearing in an ad, celebrities implicitly endorse a product; sometimes the endorsement is explicit. Many people know that companies pay celebrities a lot of money to appear in their ads (Nike's huge contracts with leading athletes, for example, are well known) but this type of testimonial still seems to be effective.
6. *Experts.* (A type of *Testimonial*.) We rely on experts to advise us about things that we don't know ourselves. Scientists, doctors, professors and other professionals often appear in ads and advocacy messages, lending their credibility to the product, service, or idea being sold. Sometimes, "plain folks" can also be experts, as when a mother endorses a brand of baby powder or a construction worker endorses a treatment for sore muscles.
7. *Explicit claims.* Something is "explicit" if it is directly, fully, and/or clearly expressed or demonstrated. For example, some ads state the price of a product, the main ingredients, where it was made, or the number of items in the package—these are *explicit claims*. So are specific, measurable promises about quality, effectiveness, or reliability, like "Works in only five minutes!" Explicit claims can be proven true or false through close examination or testing, and if they're false, the advertiser can get in trouble. It can be surprising to learn how few ads make explicit claims. Most of them try to persuade us in ways that cannot be proved or disproved.
8. *Fear.* This is the opposite of the *Association* technique. It uses something disliked or feared by the intended audience (like bad breath, failure, high taxes or terrorism) to promote a "solution." Ads use fear to sell us products that claim to prevent or fix the problem. Politicians and advocacy groups stoke our fears to get elected or to gain support.
9. *Humor.* Many ads use humor because it grabs our attention and it's a powerful persuasion technique. When we laugh, we feel good. Advertisers make us laugh and then show us their product or logo because they're trying to connect that good feeling to their product. They hope that when we see their product in a store, we'll subtly reexperience that good feeling and select their product. Advocacy messages (and news) rarely use humor because it can undermine their credibility; an exception is political satire.
10. *Intensity.* The language of ads is full of intensifiers, including *superlatives* (greatest, best, most, fastest, lowest prices), *comparatives* (more, better than, improved, increased, fewer calories), *hyperbole* (amazing, incredible, forever), *exaggeration*, and many other ways to hype the product.
11. *Maybe.* Unproven, exaggerated or outrageous claims are commonly preceded by "weasel words" such as may, might, can, could, some, many, often, virtually, as many as, or up to. Watch for these words if an offer seems too good to be true. Commonly, the *Intensity* and *Maybe* techniques are used together, making the whole thing meaningless.
12. *Plain folks.* (A type of *Testimonial*—the opposite of *Celebrities*.) This technique works because we may believe a "regular person" more than an

intellectual or a highly paid celebrity. It's often used to sell everyday products like laundry detergent because we can more easily see ourselves using the product, too. The *plain folks* technique strengthens the down-home, "authentic" image of products like pickup trucks and politicians. Unfortunately, most of the "plain folks" in ads are actually paid actors carefully selected because they look like "regular people."

13. *Repetition.* Advertisers use repetition in two ways: Within an ad or advocacy message, words, sounds or images may be repeated to reinforce the main point. And the message itself (a TV commercial, a billboard, a Web site banner ad) may be displayed many times. Even unpleasant ads and political slogans work if they are repeated enough to pound their message into our minds.
14. *Testimonials.* Media messages often show people testifying about the value or quality of a product, or endorsing an idea. They can be *experts*, *celebrities*, or *plain folks*. We tend to believe them because they appear to be a neutral third party (a pop star, for example, not the lipstick maker, or a community member instead of the politician running for office.) This technique works best when it seems like the person "testifying" is doing so because they genuinely like the product or agree with the idea. Some testimonials may be less effective when we recognize that the person is getting paid to endorse the product.
15. *Warm and fuzzy.* This technique uses sentimental images (especially of families, kids, and animals) to stimulate feelings of pleasure, comfort, and delight. It may also include the use of soothing music, pleasant voices, and evocative words like "cozy" or "cuddly." The *Warm and fuzzy* technique is another form of *Association*. It works well with some audiences, but not with others, who may find it too corny.

**Intermediate Persuasion Techniques**

16. *The Big Lie.* According to Adolf Hitler, one of the 20th century's most dangerous propagandists, people are more suspicious of a small lie than a big one. The *Big Lie* is more than exaggeration or hype; it's telling a complete falsehood with such confidence and charisma that people believe it. Recognizing The *Big Lie* requires "thinking outside the box" of conventional wisdom and asking the questions other people don't ask.
17. *Charisma.* Sometimes, persuaders can be effective simply by appearing firm, bold, strong, and confident. This is particularly true in political and advocacy messages. People often follow charismatic leaders even when they disagree with their positions on issues that affect them.
18. *Euphemism.* While the *Glittering generalities* and *Name-calling* techniques arouse audiences with vivid, emotionally suggestive words, *Euphemism* tries to pacify audiences in order to make an unpleasant reality more palatable. Bland or abstract terms are used instead of clearer, more graphic words. Thus, we hear about corporate "downsizing" instead of "layoffs," or "enhanced interrogation techniques" instead of "torture."

19. *Extrapolation.* Persuaders sometimes draw huge conclusions on the basis of a few small facts. *Extrapolation* works by ignoring complexity. It's most persuasive when it predicts something we hope can or will be true.
20. *Flattery.* Persuaders love to flatter us. Politicians and advertisers sometimes speak directly to us: "You know a good deal when you see one." "You expect quality." "You work hard for a living." "You deserve it." Sometimes ads flatter us by showing people doing stupid things, so that we'll feel smarter or superior. *Flattery* works because we like to be praised and we tend to believe people we like. (We're sure that someone as brilliant as you will easily understand this technique!)
21. *Glittering generalities.* This is the use of so-called "virtue words" such as civilization, democracy, freedom, patriotism, motherhood, fatherhood, science, health, beauty, and love. Persuaders use these words in the hope that we will approve and accept their statements without examining the evidence. They hope that few people will ask whether it's appropriate to invoke these concepts, while even fewer will ask what these concepts really mean.
22. *Name-calling.* This technique links a person or idea to a negative symbol (liar, creep, gossip, etc.). It's the opposite of *Glittering generalities*. Persuaders use *Name-calling* to make us reject the person or the idea on the basis of the negative symbol, instead of looking at the available evidence. A subtler version of this technique is to use adjectives with negative connotations (extreme, passive, lazy, pushy, etc.) Ask yourself: Leaving out the name-calling, what are the merits of the idea itself?
23. *New.* We love new things and new ideas, because we tend to believe they're better than old things and old ideas. That's because the dominant culture in the United States (and many other countries) places great faith in technology and progress. But sometimes, new products and new ideas lead to new and more difficult problems.
24. *Nostalgia.* This is the opposite of the *New* technique. Many advertisers invoke a time when life was simpler and quality was supposedly better ("like Mom used to make"). Politicians promise to bring back the "good old days" and restore "tradition." But whose traditions are being restored? Who did they benefit, and who did they harm? This technique works because people tend to forget the bad parts of the past, and remember the good.
25. *Rhetorical questions.* These are questions designed to get us to agree with the speaker. They are set up so that the "correct" answer is obvious. ("Do you want to get out of debt?" "Do you want quick relief from headache pain?" and "Should we leave our nation vulnerable to terrorist attacks?" are all rhetorical questions.) *Rhetorical questions* are used to build trust and alignment before the sales pitch.
26. *Scientific evidence.* This is a particular application of the *Expert* technique. It uses the paraphernalia of science (charts, graphs, statistics, lab coats, etc.) to "prove" something. It often works because many people trust science and scientists. It's important to look closely at the "evidence," however, because it can be misleading.

27. *Simple solution.* Life is complicated. People are complex. Problems often have many causes, and they're not easy to solve. These realities create anxiety for many of us. Persuaders offer relief by ignoring complexity and proposing a *Simple solution*. Politicians claim one policy change (lower taxes, a new law, a government program) will solve big social problems. Advertisers take this strategy even further, suggesting that a deodorant, a car, or a brand of beer will make you beautiful, popular, and successful.
28. *Slippery slope.* This technique combines *Extrapolation* and *Fear*. Instead of predicting a positive future, it warns against a negative outcome. It argues against an idea by claiming it's just the first step down a "slippery slope" toward something the target audience opposes. ("If we let them ban smoking in restaurants because it's unhealthy, eventually they'll ban fast food, too." This argument ignores the merits of banning smoking in restaurants.) The *Slippery slope* technique is commonly used in political debate, because it's easy to claim that a small step will lead to a result most people won't like, even though small steps can lead in many directions.
29. *Symbols.* Symbols are words or images that bring to mind some larger concept, usually one with strong emotional content, such as home, family, nation, religion, gender, or lifestyle. Persuaders use the power and intensity of *symbols* to make their case. But symbols can have different meanings for different people. Hummer SUVs are status symbols for some people, while to others they are symbols of environmental irresponsibility.

**Advanced Persuasion Techniques**

30. *Ad hominem.* Latin for "against the man," the *ad hominem* technique responds to an argument by attacking the opponent instead of addressing the argument itself. It's also called "attacking the messenger." It works on the belief that if there's something wrong or objectionable about the messenger, the message must also be wrong.
31. *Analogy.* An analogy compares one situation with another. A good analogy, where the situations are reasonably similar, can aid decision making. A weak analogy may not be persuasive, unless it uses emotionally charged images that obscure the illogical or unfair comparison.
32. *Card stacking.* No one can tell the whole story; we all tell part of the story. *Card stacking*, however, deliberately provides a false context to give a misleading impression. It "stacks the deck," selecting only favorable evidence to lead the audience to the desired conclusion.
33. *Cause vs. Correlation.* While understanding true causes and true effects is important, persuaders can fool us by intentionally confusing correlation with cause. For example: Babies drink milk. Babies cry. Therefore, drinking milk makes babies cry.
34. *Denial.* This technique is used to escape responsibility for something that is unpopular or controversial. It can be either direct or indirect. A politician who

says, “I won’t bring up my opponent’s marital problems,” has just brought up the issue without sounding mean.

35. *Diversion.* This technique diverts our attention from a problem or issue by raising a separate issue, usually one where the persuader has a better chance of convincing us. *Diversion* is often used to hide the part of the story not being told. It is also known as a “red herring.”
36. *Group dynamics.* We are greatly influenced by what other people think and do. We can get carried away by the potent atmosphere of live audiences, rallies, or other gatherings. *Group dynamics* is a more intense version of the *Majority belief* and *Bandwagon techniques*.
37. *Majority belief.* This technique is similar to the *Bandwagon* technique. It works on the assumption that if most people believe something, it must be true. That’s why polls and survey results are so often used to back up an argument, even though pollsters will admit that responses vary widely depending on how one asks the question.
38. *Scapegoating.* Extremely powerful and very common in political speech, *Scapegoat* blames a problem on one person, group, race, religion, etc. Some people, for example, claim that undocumented (“illegal”) immigrants are the main cause of unemployment in the United States, even though unemployment is a complex problem with many causes. *Scapegoating* is a particularly dangerous form of the *Simple solution* technique.
39. *Straw man.* This technique builds up an illogical or deliberately damaged idea and presents it as something that one’s opponent supports or represents. Knocking down the “straw man” is easier than confronting the opponent directly.
40. *Timing.* Sometimes a media message is persuasive not because of what it says, but because of when it’s delivered. This can be as simple as placing ads for flowers and candy just before Valentine’s Day, or delivering a political speech right after a major news event. Sophisticated ad campaigns commonly roll out carefully timed phases to grab our attention, stimulate desire, and generate a response.

## *Deconstructing Media Messages*

All media messages—TV shows, newspapers, movies, advertisements, etc. – are made or constructed by people. One of the most important media literacy skills is deconstruction—closely examining and “taking apart” media messages to understand how they work.

Deconstructing a media message can help us understand who created the message, and who is intended to receive it. It can reveal how the media maker put together the message using words, images, sounds, design, and other elements. It can expose the point of view of media makers, their values, and their biases. It can also uncover hidden meanings—intended or unintended.

There is no one "correct" way to deconstruct a media message—each of us interprets media differently, based on our own knowledge, beliefs, experiences, and values. Just be prepared to explain your interpretation.

Key concepts for deconstructing media:

- *Source.* All media messages are created. The creator could be an individual writer, photographer or logger. In the case of a Hollywood movie, the scriptwriter, director, producer, and movie studio all play a role in creating the message. Ads are usually put together by ad agencies, but the "creator" is really the client—the company or organization that's paying for the ad. The key point is: Whose message is this? Who has control over the content?
- *Audience.* Media messages are intended to reach audiences. Some—like primetime TV shows—are designed to reach millions of people. Others—like a letter or email—may be intended only for one person. Most media messages are designed to reach specific groups of people—defined by age, gender, class, interests, and other factors—called the "target audience."
- *Text.* We often use the word "text" to mean "written words." But in media literacy, "text" has a very different meaning. The text of any piece of media is what you actually see and/or hear. It can include written or spoken words, pictures, graphics, moving images, sounds, and the arrangement or sequence of all of these elements. Sometimes the text is called the "story" or "manifest text." For most of us, the text of a piece of media is always the same.
- *Subtext.* The "subtext" is an individual interpretation of a media message. It is sometimes called the "latent text." The subtext is not actually heard or seen; it is the meaning we create from the text in our own minds. While media makers often create texts that suggest certain subtexts, each person creates their own subtext (interpretation) based on their previous experiences, knowledge, opinions, attitudes, and values. Thus, two people interpreting the same text can produce two very different subtexts.
- *Persuasion techniques.* Media messages use a number of techniques to try to persuade us to believe or do something. If we can spot the techniques being used, we're less likely to be persuaded, and more likely to think for ourselves. See the Tools of Persuasion section for a list of persuasion techniques and definitions.
- *Point of view.* No one tells the whole story. Everyone tells part of the story from their point of view. Deconstructing a media message can expose the values and biases of the media maker, and uncover powerful ideological and value messages.

## *Deconstruction Questions*

You can use the following questions to quickly deconstruct any media message.

Use the basic deconstruction questions with beginners or younger learners, or when you only have a short amount of time. Use the intermediate or advanced deconstruction questions with other groups or when you have more time.

**Basic Deconstruction Questions**

1. Whose message is this? Who created or paid for it? Why?
2. Who is the "target audience?" What are the clues (words, images, sounds, etc.)?
3. What "tools of persuasion" are used?
4. What part of the story is not being told?

**Intermediate deconstruction questions**

1. Whose message is this? Who created or paid for it? Why?
2. Who is the "target audience?" What is their age, ethnicity, class, profession, interests, etc.? What words, images, or sounds suggest this?
3. What is the "text" of the message? (What we actually see and/or hear: written or spoken words, photos, drawings, logos, design, music, sounds, etc.)
4. What is the "subtext" of the message? (What do you think is the hidden or unstated meaning?)
5. What "tools of persuasion" are used?
6. What positive messages are presented? What negative messages are presented?
7. What part of the story is not being told?

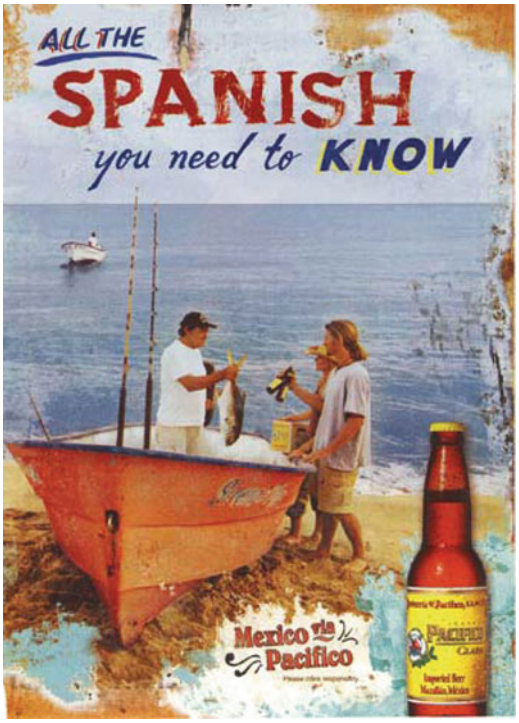
**Advanced deconstruction questions**

1. Whose message is this? Who created or paid for it? Why?
2. Who is the "target audience?" What is their age, ethnicity, class, profession, interests, etc.? What words, images or sounds suggest this?
3. What is the "text" of the message? (What we actually see and/or hear: written or spoken words, photos, drawings, logos, design, music, sounds, etc.)
4. What is the "subtext" of the message? (What do you think is the hidden or unstated meaning?)
5. What kind of lifestyle is presented? Is it glamorized? How?
6. What values are expressed?
7. What "tools of persuasion" are used?
8. What positive messages are presented? What negative messages are presented?
9. What groups of people does this message empower? What groups does it disempower? How does this serve the media maker's interests?
10. What part of the story is not being told? How and where could you get more information about the untold stories?

**Sample Deconstruction**

1. Whose message is this? Who created or paid for it? Why?

   It is Barton Beers' message. Barton Beers is the U.S. importer of Mexico via Pacifico beer. They paid for the ad to market this product to a U.S. audience.




2. Who is the "target audience?" What is their age, ethnicity, class, profession, interests, etc.? What words, images or sounds suggest this?

The words "All the Spanish you need to know," suggest that the audience for this ad does not speak Spanish. The image of a blonde man and a woman in their 1920s or 1930s suggest that the target audience is also blonde white, heterosexual, and under 40. The image of the water, the presence of alcohol, and the implication that this situation is taking place in Mexico suggest a target audience of people who are interested in drinking on the beach while on vacation.

3. What is the "text" of the message? (What we actually see and/or hear: written or spoken words, photos, drawings, logos, design, music, sounds, etc.)

The text is a photograph of a blonde man and a blonde woman who are both barefeet in the sand on a beach. The woman is holding a yellow case of beer, and the man is handing two unopened bottles of beer to a man with brown skin and dark hair in an orange boat. The boat is ashore. The dark-haired man wears a baseball cap and is holding a large fish in his right hand. In the background is the ocean and in the distance in the blue water there is a white boat with someone standing in it. Above the photograph are the words, "All the Spanish you need to know." In the bottom right-hand corner is a photograph of a bottle of beer with the words, "Mexico via Pacifico" and in smaller text, "Please drink responsibly."

4. What is the "subtext" of the message? (What do you think is the hidden or unstated meaning?)

Various subtexts could include the following: the dark-haired man is Mexican, the light-haired couple is American, the dark-haired man only speaks Spanish, the light-haired couple only speaks English, this brand of beer is so valuable that a fisherman is willing to trade his day's work for two bottles of it, it is not necessary to speak any language other than English because alcohol

transcends borders, Mexican fisherman like to drink Mexico via Pacifico so it must be culturally authentic, white American tourists walk around Mexican beaches carrying cases of beer hoping to barter for dinner, trading alcohol for food is a sustainable economic plan for tourists to participate in, giving alcohol to people of color is a great way to get them to give up their resources, and Mexico via Pacifico is a translation service for non-Spanish speaking American travelers.

5. What kind of lifestyle is presented? Is it glamorized? How?
   There are two distinct lifestyles presented in this ad. One is the lifestyle of the tourists who are spending a day of leisure, and the second lifestyle is that of the local fishermen who are working offshore at the same beach where the tourists play. Both lifestyles are romanticized. The tourists are on a beach which appears to be not crowded, and they are getting to purchase a large amount of fresh fish in exchange for two beers. The fisherman's life is romanticized in that he seems to have no need for money in exchange for his day of work, as if he has no other needs or responsibilities that he is accountable for.

6. What values are expressed?
   The values of leisure, work, vacation, fresh food, alcohol consumption, and barter are expressed.

7. What "tools of persuasion" are used?
   The tools of persuasion being used include plain folks, the big lie, association, extrapolation, simple solution, and symbols.

8. What positive messages are presented? What negative messages are presented?
   The positive messages presented are as follows: the fish appears to have lived in uncontaminated water, the beach appears clean, and the use of barter as an economic concept has positive implications. The negative messages presented are as follows: paying someone in alcohol for their work is questionable and underpaying someone for their work is exploitation.

9. What groups of people does this message empower? What groups does it disempower? How does this serve the media maker's interests?
   This message empowers white monolingual U.S. citizens. It disempowers working class people of color, both in the US and outside of the US. Overall, the media maker's interests are served because the target audience is kept comfortable and unchallenged and therefore more willing to feel good about the product.

## *Creating Counter Ads*

You can "talk back" to deceptive or harmful media messages by creating counter-ads. These are parodies of advertisements, delivering more truthful or constructive messages using the same persuasion techniques as real ads. By creating counter-ads,

you can apply media literacy skills to communicate positive messages, in a fun and engaging exercise.

The simplest way to create a counter-ad is to alter a real ad (magazine or newspaper ads work best) by changing the text or adding graphic elements; just write or draw over the original ad, or paste new materials onto it. A counter-ad can also be created by drawing a new image, copying the design and layout of a real ad. Collage techniques work well, too. You can also write scripts for radio or TV counter-ads, and read them to the class. Or take it a step further and record or videotape your counter-ad.

Here are a few tips on making effective counter-ads:

- *Analyze.* Look at several real ads and try to figure out why they're effective. The best counter-ads use the same techniques to deliver a different message.
- *Power.* Your message has to break through the clutter of all the real ads that people see or hear. Think about what makes an ad memorable to you. What techniques does it use to grab your attention? Use them.
- *Persuade.* Use the same persuasion techniques found in real ads—like humor, repetition, or flattery—to deliver your alternative message.
- *Pictures.* Visual images are incredibly powerful. People often forget what they read or hear but remember what they see. The best counter-ads, like the best ads, tell their stories through pictures.
- *Rebellion.* Advertising targeted at young people often appeals to a sense of youthful rebellion. Effective counter-ads expose misleading and manipulative advertising methods and turn their rebellious spirit toward the corporate sponsors who use them.
- *"KISS" – Keep It Short and Simple.* Use only one idea for your main message. Focus everything on getting this message across.
- *Plan.* Try to think of everything—words, images, design—before you begin production. Make a few sketches or rough drafts before you start crafting the final product.
- *Practice.* If you're going to perform a radio or TV script (and especially if you're making an audio recording or video) your cast and crew will need to rehearse. Then, rehearse it again.
- *Teamwork.* Working in a team can lighten your workload and spark creativity. Brainstorm ideas as a group. Make sure all members share responsibility for the work.
- *Revise.* When you think you're finished, show your counter-ad to uninvolved people for feedback. Do they understand it? Do they think it's funny? Use their responses to revise your work for maximum impact.
- *Distribute.* Your ideas are meant to be seen! Make copies of your counter-ads and post them around your school. Get them published in your school newspaper. Show your videotape to other kids and adults. Your counter-ad can stimulate needed discussion and debate around media and health issues.
- *Have fun!* Making a counter-ad is a fun way to learn about media and health, to be creative, and to express your views. Enjoy it!

## *Looking Beyond the Frame*

The ability to analyze and evaluate media messages is an essential first step in becoming media literate. Deconstructing individual media examples, identifying the persuasion techniques used, and applying the media literacy concepts discussed earlier in this section are important skills that can lead us to a deeper understanding of the media messages that bombard us every day.

True media literacy requires "looking beyond the frame" of the media message—the individual TV commercial, news story or Web site, for example —to examine its *context*. This process involves four interrelated concepts and skill sets:

1. Media messages reflect the social, political, economic, and technological environment of the media system in which they are created. They either reinforce that environment—by perpetuating stereotypes, for example—or they challenge it. For example, big-budget Hollywood blockbusters are produced by media conglomerates seeking to maximize short-term profits. They often rely on familiar character types, storylines, and genres because old formulas create a safer investment. In contrast, films made by independent filmmakers—particularly those with little access to money and power—are often more original, covering subject matter and featuring characters we haven't seen before. Instead of appealing to the lowest common denominator, independent films often challenge audiences' assumptions and beliefs. Looking beyond the frame to consider the context of both kinds of films enriches one's understanding of our media culture. This involves *deconstructing our media system* to examine issues of media ownership, power and control, and to recognize how these issues influence media content.
2. Examining the relationship between media and society raises the issue of *media justice*. Our media system produces a lot of negative, demeaning imagery. It privileges some people and some perspectives, and ignores or silences others. It renders entire groups of people invisible. The dominant media system—consisting almost entirely of private corporations producing and distributing media for profit—provides too little funding and too few outlets for people without money, privilege, and power to tell their stories. The media system is unjust, and it perpetuates and strengthens injustice throughout society. The media justice movement works to create a fairer and more just media system that serves everyone, particularly communities that have been historically underrepresented and misrepresented in the mainstream media, including indigenous communities, people of color, the LGBTQI community, people with disabilities, working class and poor people, and others. The media justice movement believes that communication is a human right and that media should belong to the people.
3. Just as *literacy* is the ability both to read and write, *media literacy* involves both understanding media messages and creating media. We all create media. We write notes and send email. We draw and doodle. Some of us play and compose music. Some take photos or make videos. Many people blog and use social networking Web sites. High-tech or low-tech, our own media creations contribute

to the media landscape. Learning how to express oneself in a variety of media is an important part of being media literate.

4. Media literate individuals are active participants in our media culture. While many people analyze and criticize media messages, and others focus on creating their own media, more and more people are also becoming media activists. They are changing the way they use media, challenging media messages and media institutions, supporting independent media, and working for media justice and media reform. Since media create so much of our culture, any social change will require significant change in our media environment, in media policies and practices, and in media institutions. Becoming an active agent for change in our media culture is a natural result of being media literate.

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# Chapter 9
# The Mobile School: Digital Communities Created by Mobile Learners

**Teresa J. Franklin**

*Students today depend upon store-bought ink. They don't know how to make their own. When they run out of ink they will be unable to write words of ciphers until their next trip to the settlement. This is a sad commentary on modern education*
The Rural Teacher, 1929
http://learningismessy.com/blog/?p=177

## Introduction

As is often noted in the media, newspapers, and education policy documents, the American public school system is failing to adequately prepare all students. A challenge has been issued to the educational community by national organizations such as the National Science Foundation, the National Academy of Sciences, and No Child Left Behind to close the national achievement gap through the rigorous mastery of academic subjects and the development of 21st century skills. The two items of rigorous mastery of academic subjects and 21st century skills are seen as necessary for the global society in which today's learners will manipulate information, build knowledge, innovate, and be creative as productive citizens. Some see these educational failings as manageable, calling for more reform while others support a more drastic approach. "We don't need to reform the system; we need to replace the system," states Microsoft Chairman, Bill Gates (as cited in Daly, 2007).

No matter which position is supported—reform or replacement—even the most staunch public school supporter will suggest that the American public school has to change. The continued implementation of the "industrial discipline" of the industrial revolution is in reality detrimental to the future of our students in today's classroom. This industrial discipline seen in the massification of our present school system is in direct conflict to the individualized, customized education supported by and offered through technology (Daly, 2007).

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_9,

Today's technology allows for the diversity within schools that can shape a more productive, creative, collaborative community in which knowledge is constantly changing and does not become obsolete. "We are drowning in obsolete knowledge," states Alvin Toffler of *Future Shock* fame. "We have this enormous bank of obsolete knowledge in our heads, in our books, and in our culture," he continues, "Now because everything is in rapid change, the amount of obsolete knowledge that we have – and that we teach – is greater and greater and greater" (as cited in Daly, 2007).

Reinventing American schools will require unprecedented effort. The American public has to move beyond the belief that learning occurs only to gain a better job or improve the national economy but rather that learning improves the human condition through an elevation of spirit, advances in social health, and produces a civil society. Education must become the national pastime and sport of America, if this nation is to succeed in maintaining a prosperous future for all (Cross & Goldberg, 2005).

This chapter will examine the issues surrounding mobile technologies and the development of digital communities in achieving the educational goals of a more enlightened, socially humane, and productive citizen through the transformation of school.

## Schools as Time and Place

To begin to understand the changes on the horizons for schools, it is necessary to first consider the present nature of schools in America. Schools are formed around specific time and place functions. Students arrive at school at a predetermined time, move from subject to subject in defined intervals, and leave on time. Each space within the school has an identified function with rules and regulations for its use and visitation. Students are disciplined though the regimentation of time and space, where they are categorized and differentiated. Schools are institutions of disciplinary power, in which there is a normalization of knowledge that works to normalize students to the desires of society (Selwyn, 2003).

> The demand that [educational institutions] typically make is to be 'in residence' – to be part of the spatially defined community. And these communities enforce, as well, strict compliance with academic timetables, classroom schedules, and calendars. (Mitchell, 1995, p. 67)

Power is further embodied through practices such as achievement testing, examining content, and tracking of students such that it is easy to identify the 'good student' versus the 'less capable student.'

> This conceptualization of schools as sites of normalization and domination provides us with a powerful framework for understanding school's assimilation and relationship with technology. (Selwyn, 2003, p. 134)

As noted by Cuban (2001), technology seldom impacts the classroom, its curriculum, or pedagogical practice. In many cases, the computers and Internet within the schools remain in the library, locked down, and inaccessible when needed by students and teachers. As one high school science teacher lamented,

> I gave up, I took my eight computers to the principal's office and put them on the chairs and floor in his office and left. He later called me in and told me to take them back to my room. I asked him, why? I can't access the websites I need to teach the content required and I can't load the GIS software needed to give my students a 21st century educational experience in science. You keep them – they are just taking up room in my lab. (R. Weinfortner, personal communication, December 10, 2008)

He continued,

> It really is the school leadership's fault. They hire these tech guys who have no understanding of what goes on in a classroom, how the 'digital native' I teach lives on the web, and then they lock down the Internet so we can't even get to Google!(R. Weinfortner, personal communication, December 10, 2008)

This story is repeated daily in schools across America. Technology use becomes assimilated into the existing practice of controlled Internet access with no exception for those teachers seeking to provide a 21st century digital learning experience for students. The ways in which the technology and the Internet are used within schools, points to a system in which technology is tightly regulated by a small group of privileged staff, privileged teachers, and privileged locations (labs) complete with regulations for privileged use (Selwyn, 2003).

As much as the public would like to think otherwise, effective technology integration into classrooms has proven to be a difficult problem. "Downes (1999) suggests that schools not employing technology in learning are creating a larger gap between informal learning via multimedia technologies (computers, gaming, television, Internet) that occurs in the home and formal classroom learning which relies primarily on text. This formal text-based curriculum in the schools creates a divide for the students between their out of school lives and their school lives there is no motivation or connection and therefore a limiting of experiential learning takes place" (as cited in Smearcheck et al., 2008, p. 4784). The overt and covert control of the technology by technology gatekeepers prevents schools and teachers from realizing the empowerment and engagement technology can bring to all learners. The control of time and place in schools limits our digital natives (Prensky, 2001a) from engaging in meaningful global communications for learning of topics far beyond the walls of the classroom and the knowledge of the teacher.

## Mobile Technologies and School

The cell phone is presently one of the largest areas of consumption for the 10–16 year age group with telecommunications companies targeting this market with designer accessories and options for their cell phones as well as video, Internet searching, GPS technology, text messaging, ring tones, and games to keep the young consumer interested (Norris, 2001). The cell phone represents a shift from directed use of a technology to the convergence of a highly individualized multimedia anytime, anywhere device providing communication independence.

While there have been significant increases in the use of technologies to access information and to communicate within businesses and domestic arenas, schools continue to remain relatively unreceptive to the 'information revolution' and now the 'knowledge society' occupied by today's learner. Technologies common to the home—radio, television, computers, cell phones, and handhelds such as iPods® and Palms®—have not been adopted on a widespread and sustained basis in American schools. Schools remain resilient to the encroachment of technology into the classroom (Cuban, 1986, 2001). At the same time, as schools resist the typical desktop and television technologies, cell phones are creating an even greater opportunity to by-pass the information held by the school and access a cyber community of collaborators, experts, and video and informational databases that can quickly supply content to the learner. More importantly, unlike the school the learner attends, this cyber community is available 24/7.

The use of mobile technologies leads to a redefinition of our learners in school—forcing school to change to a setting with time and space—focused on the individual rather than the shared time-place societal norms of school. The debate is the 'fixed' nature of school versus the 'mobile technologies' in challenging the known power, information, and communication over which schools believe they must retain control. Mobile technologies are shrinking the world in which learners live and expanding information to which learners have access (Selwyn, 2003).

This convergence of the technology, mobility, and connectivity in access to content, while not intruding upon schools, has not gone completely unnoticed. However, schools have primarily focused on the debate surrounding health issues, cyberbullying, and control of cell phones during the school day, and cheating on exams with mobile technologies such as PDAs and iPods. While all are important concerns, continued debate on these topics detracts from the implications of mobile technologies to engage and empower learners.

The challenge of the digital natives in the classroom requires that school districts rethink and redefine effective educational strategies (Prensky, 2001a). Mobile technology opens a wealth of new unprecedented learning opportunities such that the tools used by students are personally integrated into the very fabric of their lives. High expectations for teachers to use ubiquitous tools for teaching and learning, found in a student's daily life, causes some digital natives to disconnect from school when mobile devices, social networking, and gaming opportunities do not exist in the school experience (Prensky, 2005). Teacher pedagogy and delivery for all subjects and at all levels must be changed to support not only the change in technology available to digital natives but the way in which their brains learn. Many have suggested that teenage minds are different; now think about how a teenage digital mind might be different. How does this difference affect cognition and teacher instruction? Prensky, 2001b has examined the brain research on teens and shares the following:

> . . . as a result of repeated experiences, particular brain areas are larger and more highly developed, and others are less so. For example, thinking skills enhanced by repeated exposure to computer games and other digital media include reading visual images as representations of three-dimensional space (representational competence), multidimensional

> visual-spatial skills, mental maps, — mental paper folding (i.e.picturing the results of various origami-like folds in your mind without actually doing them), —inductive discovery (i.e., making observations, formulating hypotheses and figuring out the rules governing the behavior of a dynamic representation), —attentional deployment (such as monitoring multiple locations simultaneously), and responding faster to expected and unexpected stimuli. (p4)

This change in digital native cognition challenges schools to examine the twitch-speed, connected, interactive cyber world of teens and determine how the education being provided can match or change to meet the demands of a new generation of learners in which graphics, music, games, and social networking are competing with the now *boring* classroom (Prensky, 2001b).

Mobile technologies present another set of implications for the classroom—socially. The learner's blending of work and play, the ability to manage life activities quickly, the intensity of the personal interactions, the widening circle of friends, collaborators, and acquaintances for interaction, and the reliance on asynchronous connectivity changes the social dynamics of the classroom. The confines of the classroom are no longer a barrier with personal technologies capable of synchronous and asynchronous activities that connect learners socially to the world outside the classroom. Availability and mobility make for a powerful combination of virtual presence in which the learner is in control of information and communication networks to support his/her virtual learning presence. The wide variety of content, information, and contacts presents a potentially different classroom setting for the learner and teacher. Now, the fixed time of the classroom can be expanded to active time in which the learner connects to a wide variety of "teachers" on the Internet that are ready and willing to support the learner, thereby allowing the learner to make optimum use of his time instead of being seated in a classroom passively waiting for a teacher. These 'web teachers' provide an opportunity for learners to differentiate their learning, individualize content and engagement in learning topics of their choice (Clough, Jones, McAndrew, & Scanlon 2008, Knight, 2005; Sedig, 2008).

While teachers are encouraged to differentiate instruction for their students, the overwhelming fact is that the complexity of the classroom and a belief in the need to control the learner's social interactions prevents differentiation from occurring in most American classrooms. Cell phones and other mobile devices present an opportunity for learners to take the lead in differentiating their own instruction by connecting to global experts in a wide variety of fields. This connectivity presents a change in how schools might approach differentiation of instruction and move to a model of learner-designed differentiation, thus truly meeting the expectations of differentiated instruction for learning (Clough et al., 2008; Knight, 2005; Sedig, 2008).

Mobile technologies free the learner to combine activities and use time more efficiently. This may, however, alter how schools view student work. The combination of a mobile device that can play music a learner can listen to while working to download content from a Web site on the device, and at the same time take a call from a friend working on a similar project, begins to blur the lines between work and play for many educators. The classroom time becomes shattered by cell phone negotiations, connections to experts with more content knowledge than the teacher in a musical background, all the while building a community of learners with shared

knowledge. This presents a very different teaching paradigm when a classroom with 25 plus students is engaged in this same behavior. The cell phone presents the classroom teacher with a constructivist paradigm for teaching and learning—and many of today's teachers are not ready to embrace constructivism as a strategy for learning. Control of knowledge once held by the teacher now becomes the responsibility of the learner as part of learning to engage in creative, rigorous, and meaningful learning in which knowledge has no boundaries through the development of digital learning communities (Clough et al., 2008; Knight, 2005; Sedig, 2008).

## Digital Learning Communities

Digital natives are the first generation to have no understanding of the phone as being attached to the wall of their home. This group sees the phone as a mobile device sporting a camera, media player, and computer capability all to be held in the palm of their hand. Digital natives have grown up in a time in which digital tools are seen as linked together, i.e., text messaging, music, games, photos, and interactive tools have come together and are accessible 24/7 on one device. This generation believes in social networks, collective intelligence, data and visual mashups, video on demand, diversity of collaboration, and mobile broadband. Digital natives think, work, and communicate differently building relationships around their social networks such as MySpace, Facebook, *Second Life* and LinkedIn. This presents an interesting case in which there is an expectation of free information and a possible conflict of intellectual property rights (A Connected Life, 2008).

In the past, mobile computing has been seen as laptop computers and wireless networks but today's cell phone now referred to as the 'smartphone' has as much, if not more, capacity to educationally connect learners than the laptop found in their classroom. Presently, 94% of the college population owns a cell phone and see it as their single most important form of communication. Smartphones link students in new ways to other learners and information. This constant access to information offers learners ways to party, dream, play, and learn in ways never before visualized (A Connected Life, 2008).

These mobile technologies allow educational institutions (and others) to push content to learners 24/7 without waiting for the learner to show up and look at the school Web site or email. Students are subscribing to 'streams of information' specific to their needs. RSS feeds are bringing information to the smartphone and computer as soon as the information becomes available *(Rich Site Summary (RSS) is a format for delivering regularly changing web content. Many news-related sites, weblogs and other online publishers syndicate their content as an RSS Feed to whoever wants it.* http://www.whatisrss.com/). Using a special news reader on their smartphone or desktop, information streams can provide guest speaker information, upcoming events, career opportunities, social networking content, video feeds, and links to Internet sites—all tailored to the individual needs and concerns of the learner.

In his book, *The World is Flat*, Thomas L. Friedman, suggests that "Never before in the history of the planet have so many people – on their own – had the ability to find so much information about so many things and about so many people" (2005, p. 178). This always-on communication has lead to a millennial language with 76% using instant messaging/text messaging and 15% logged on 24/7. President Barack Obama's campaign immediately distinguished itself by sending out campaign messages, using Facebook to reach thousands of potential supporters through connecting Facebook "friends" with the then candidate. This allowed the campaign to reach social networks targeting African-Americans, Asian, Latino, gay communities, and faith-based communities. Each of the presidential campaigns used some sort of social networking tool of the major social networking environments: Twitter, Facebook, MySpace, Flickr, LinkedIn, and Eons – for those not of the Millennial age (Stirland, 2008).

Now seen as a new participatory culture, today's learner expects to interact with the media, not just remain a passive spectator. This convergence of technology, media, and community is changing how learners think, as well as how they socially interact with others. As information is viewed on the web, each constructs a personal mythology in which resources are gathered to make sense of the information. Because there is presently more information than any one person could learn, there is a greater need to converse (through media such as the Internet, cell phone, videos, etc.) to make sense of the information. This collective process becomes collective intelligence. Collective intelligence, a term suggested by cybertheorist, Pierre Levy, suggests that "none of us can know everything; each of us knows something and we can put the pieces together if we pool our resources and combine our skills" (Jenkins, 2006, p. 4). The convergence of cell phones and other mobile technologies now support and promote learners to gain collective intelligence in which a participatory culture presents a school without teachers as gatekeepers (Jenkins, 2006). Part of what schools must now figure out in the development of these mobile learning communities is how and why groups with such different backgrounds, perspectives, diversity, and knowledge are willing to listen and collaborate with one another toward a common goal—something schools have been unable to successfully accomplish within the teaching and learning strategies of the past. Understanding the collective intelligence and participatory culture of the digital native will be critical to how schools will operate educational institutions in the future.

In 2006, the Web welcomed its one billionth user without much fanfare. "Demographers, who study such things, determined that this person was in all likelihood a 24-year-old woman from Shanghi" (Richardson, 2006, p. 35); but in reality, this one billionth user could have been a kid from South Africa, Argentina, or Alabama that decided to fire up the computer, open a browser and begin to connect to all the knowledge being built collectively on the Web. Adding to that collection, she might place video of her home town on her Google Site, a poem written in her 5th grade class, or even share a story her grandmother told her about the "good ole days." In an instant, this child adds to the collective knowledge in which she is creating and consuming content. Tools which are available to everyone, wikis, blogs, YouTube, podcasts, TeacherTube, and Google Sites give us access

to ideas, thoughts, content, and conversations increasing the collective intelligence of all using the web (Richardson, 2006).

Educational institutions for digital natives must become networked learning communities, and therefore educators must begin to think about how such an education would be organized to take advantage of the collective intelligence and participatory culture native to learners. This digital learning community is one in which members collaborate to achieve common goals, learning together as they develop solutions for problems that address the common good. As the learning community grows through collective intelligence and participatory activities, the learners of the community develop new knowledge and skills. In a digital learning community, the distinction between student and teachers fades away—no teachers, no students—just learners (Carroll, 2000).

## New Learning Environments for the Mobile Learner

Exponential change in communication and information technologies and evolving learner behaviors require that schools reevaluate classroom pedagogy taking into consideration both the physical and virtual spaces that might be considered part of a classroom. The availability of low-cost mobile devices, ubiquitous access, and evolving infrastructures to support blended learning environments are becoming available to today's educator and learner.

As mobile devices quickly move to smartphone technology and more and more Web 2.0 applications make their way to the Internet, the web-based learning spaces available to schools will become more visual, video-based, contain music, and require interaction from the learner in response to prompts sent from this Web 2.0 environment. Learners will also engage in new role-playing opportunities, participate in simulations for problem solving, and play games that support content knowledge development. These learning spaces will be immersive in nature allowing the learner to be immersed in the content and experience worlds not typically available in classrooms.

*Wikis, Blogs, Podcasts, Facebook, MySpace, and YouTube*. Communication and connectivity found in the smartphone technology challenges the old concept of education that knowledge is scarce. The abundance of courses, syllabi, video, graphics, pictures, presentations, and lectures found on the web make any learning anywhere, anytime, any content a remarkable, and at times, overwhelming possibility. Free and searchable online courseware is now available from the MIT OpenCourseWare making accessible a very elite group of educators to the world at large (Richardson, 2006). Imagine American students in any classroom, connecting to this courseware, to professors teaching these courses, and sharing and comparing ideas from a global community to build a learning network that reaches beyond the classroom and the classroom teacher's content knowledge such that the student and teacher become co-learners leveraging these networks for portfolio development and challenging the status quo of education.

Facebook and MySpace, both social communities, provide a critical connection to friends, clubs, teams, and virtual communities for many of today's teens. At the

time of this writing, smartphones such as Blackberry and iPhone have Facebook activated and available on every smartphone purchased, indicating the high demand for these social networks by today's digital native consumer. Facebook has become a hub for various tasks students perform acting as connection tool, event planner, online playground, and calendar to-do-list, allowing the user to instantly connect to needed resources through friends (Guess, 2008).

Wikis, blogs, and YouTube are rampant on the Internet. For many digital natives, these tools are the "dear diary" of the past providing a framework for creative expression through the combination of text and video, all of which may be viewed from the average cell phone. The diary that once was hidden under the bed and written in the secrecy of a bedroom is now hidden in a student's pocket with notations made in between classes, on the school bus, and lying on the floor, all the while capturing pictures and video to document the writing events. The versatility of these Web 2.0 applications in helping learners share their thoughts, dreams, and aspirations, demands that educators challenge learners by building projects that take advantage of the possibilities presented by wikis, blogs, and YouTube.

Twitter, an online application that combines blogging, social networking, cell phone technology, and instant messaging (IM) is an interesting twist on the applications already presented. Twitter seeks to answer the question of "What are you doing?" Users have only 140 characters with which to answer, preventing extensive discussion but building a creative language for connecting to potential friends. Many answer the question, but many more text links to resources, musings, and questions for the larger audience of tweets. Because Twitter works with all cell phones and SMS clients, it is easy to stay connected and build more formal and lasting friendships that are virtually connected anywhere. Twitter is being considered by many educators as an opportunity to put active learning to the test as twitter can behave as a "clicker response" device, be used to take attendance, foster interaction among teams of learners, and act as a viable platform for metacognition. The 140-character limit creates an environment in which learners have to be brief, concise, and to the point when engaging in discussion both between learners in the classroom and learners online (Educause Learning Initiative, 2007).

*Virtual Immersive Learning Spaces.* Arriving home from school, students eagerly turn on the Playstation or Nintendo and begin to devour new information through the virtual environments of video games. Many games have been shown to develop skills that connect and manipulate information without knowing that learning is occurring. While many teachers lament, "all they do is play games," virtual learning spaces can be a powerful tool for helping learners solve problems based on real-world applications. There is a growing concern that children are not learning higher order thinking skills required for problem solving but rather are becoming masters of memorization of facts for the next round of testing (Annetta, 2007).

An example of a virtual world, *Second Life*, can be found at http://www.secondlife.com. *Second Life* provides a virtual world environment and goes even further in creating a social network including a game and fantasy world in which presence and communication is through an avatar acting as a persona of the individual. *Second Life* is virtual 3D software created by Philip Rosedale and now owned and operated by Linden Labs. It is probably more accurate to say that *Second*

*Life* is a 3D online, digital work created and owned by the residents of the world. In *Second Life*, virtual property can be purchased, built, changed, and "lived" within this metaverse (term used to identify a virtual space in which multiple universes may consist). *Second Life* becomes the individual's virtual life and world in which to socialize, interact with global companions, build friendships, conduct business, and play (Rymaszewski et al., 2007).

In this virtual world, residents are avatars representing the individual who creates the avatar and participates in the online virtual environment. As an online environment, the world is accessible to anyone connected of the virtual world. These 3D virtual worlds are being explored for meetings on the Internet. Residents of the world can make the rules, play games, roam the environment, fly, and interact with other avatars – only limited by the design, college instruction, simulations and games for middle school students, and general social interaction opportunities for building collaborations. This is the new frontier for learners where the workplace is mobile, virtual, and social, allowing for the building of knowledge in new ways.

Many universities are experimenting with the use of virtual environments for teaching and learning. The Ohio University Science and Technology Enrichment for Appalachian Middle Schoolers (STEAM) has created a number of virtually designed science lab simulations and games aimed toward teaching the "difficult to teach and difficult to learn" concepts of middle school science. Middle school students visit the Science Teen Island in *Second Life* and "play" games designed to teach standards-based science concepts. This virtual world can be accessed from school, home, and any other location with an Internet connection. Within the Game Research and Immersive Design (GRID) Lab at Ohio University, "serious gaming" is occurring through the development of a virtual world to train firefighters in the rescue of people in burning buildings and safety practices of firefighters.

Dartmouth University is in the process of creating a virtual world to train community emergency response teams in which "volunteers learn how to cope with a range of emergencies by experiencing simulated, 3D disaster areas while engaging others – virtually – to deal with unfolding events" (Educause Learning Initiative, 2006, p. 1). Harvard University has created *River City* within the virtual environment of Active Worlds to help students in K-12 learn about the spread of disease while also learning the inquiry process of science. As a final example, the University of British Columbia has developed a virtual world for archaeologists in which students can use contemporary techniques to re-create the structures of time (Educause Learning Initiative, 2006).

Why is this significant? These virtual environments have the potential to foster constructivist learning in which learners take ownership for their own learning processes. Digital natives are already comfortable with gaming and mobile communications. Virtual worlds bring together learners and challenge them to collaborate in problem-solving activities without explicit learning objectives and assessment. For many learners, the avatar-to-avatar experience may seem as real as a face-to-face conversation. Opportunities arise for meaningful engagement in learning across a broad spectrum of persons around the world (Educause Learning Initiative, 2006).

A virtual world as an educational medium requires reflection on how education has been conducted in the past. The virtual world allows for more interaction and more engagement for some students who might otherwise be stifled in the classroom. Technologies can act as applications of human knowledge to solve real-world problems allowing an expansion of an individual's capacity to learn (Jonassen, Peck & Wilson, 1999). *Second Life* uses virtual reality as a communication tool for gaining mutual understanding for collective intelligence and providing an environment for participatory culture development.

*Simulations and Games in the Classroom*. Nearly all children play games as they have become a fixture in the childhood of our modern culture. As video games have come to the attention of educators and parents as a major influence on the home life of children, "partnerships among educators, the military, corporations, medical fields, and video game designers" (Anetta, Murray, Laird, Bohr, & Park, 2006, p. 16) have emerged. "This movement embraces the power of video games to attract, engage, connect, and teach game players critical content in the games' perspective focus area" (Annetta et al., p. 16). While the gaming industry has experienced a major economic boost from video game play, most of the video games have not had an educational focus.

Today's games are complex and require collaboration with others and are part of the modern game world. Sixty-five percent of college students state they play games on a regular basis. Games are very much a part of their mobile environment with games being played on laptops and smartphones, all the while multitasking by visiting with friends, listening to music, or completing assignments. Many are "immersive virtual worlds that are connected to a more complex external environment that involves communities of practice, the buying and selling of game items, blogs, and developer communities" (Oblinger, 2006, p. 1) within complex learning constructs. Games are often not looked upon favorably because the non-game player (the teacher in the classroom) lacks direct experience in the immersive virtual world. "It is important to emphasize that games and play may be effective learning environments, not because they are fun, but because they are immersive, require the player to make frequent, important decisions, have clear goals, adapt to each player individually, and involve a social network" (Oblinger, 2006, p. 2) seeking a common solution to a problem.

The increased gaming experiences of digital natives may prove to be a motivating factor in learning within virtual worlds. "Many kids can sit and play 'World of Warcraft' for hours, yet can't stop fidgeting during a 30-min lesson. Interactive educational games . . . help kids become more engaged and persistent. They allow students to say 'what if' and explore. They also allow one to make mistakes – an important part of learning" (Franklin as cited in Kerslake, 2008, p. 8).

Gaming promotes the convergence of learning, interacting, and managing information. Computers have changed the playing field for learning. In today's world, robots, tiny sensory devices, unmanned solar spaceships and deep sea subs explore the world that humans can't. Computer-simulations allow the learner to examine objects or systems in such a way that it makes the learner wonder, "What would happen if. . .?" then through trial and error see the consequences without harming

himself or others. Simulations in a gaming format have been studied extensively as an educational tool and have provided learners with explorations into worlds in which they do not have access either due to lack of funding for field trips to visit such an area or lack of equipment to safely engage in the world (Prensky, 2003; Shafer, 2006). Many of the questions we have today center around things that are too small to see (atoms), too complex (nuclear fission), too vast (universe), or too far (next galaxy) to be experienced directly, so hands-on learning is not appropriate. Simulations and games provide intrinsic motivation to explore unknown ideas and worlds while building a context in which to experience, try, and learn challenging concepts central to understanding the complexities of the world in which learners live (Prensky, 2003).

## Digital Citizenship for a Mobile Learners

Increasingly, the nightly news, newspapers, and magazines report misuse of digital content in the form of downloading music illegally, plagiarism, cell phone abuse in classrooms through unauthorized recordings, game play during class, sexting, and cyberbullying of students though the use of e-mail. With the availability of the Internet in a wide variety of locations, devices that interface with the Internet and a digital native population, a critical need has arisen for an understanding of what it means to be a "digital citizen." According to Ribble, Bailey, and Ross (2004), digital citizenship can be defined as "the norms of behavior with regard to technology use" (p. 7).

If society is to continue the use of technology with an open platform for connectivity and collaboration, concern for the digital native in becoming a digital citizen must be examined. Seven topics that build a case for the need for digital citizenship in today's mobile society will be presented, focusing concern on the mobile technologies available to young people today. These seven topics are as follows:

1. Digital Access
2. Digital Communication
3. Digital Rights
4. Digital Security
5. Digital Commerce
6. Digital Safety
7. Digital Responsibility (Ribble & Bailey, 2004, p. 14–15b)

*Digital Access*. Equitable access in a digital society is necessary in order for human intellectual capacity and growth to occur. While digital inequity may occur due to socioeconomic, personal decision, and/or social position, the responsibility for providing accessible Internet connectivity rests with providing the resources

needed to participate as a digital citizen. These resources include technology equipment such as cell phones, computers, software, and Internet connectivity including low-cost cell phone connectivity for formal and informal learning opportunities within a mobile society. The issue of economics is a critical one as many people are without adequate income to maintain mobile connectivity. Therefore, society must provide access. Without society's pressure to provide adequate connectivity for all of its citizens, equitable opportunities for learning and improving human capital do not exist for all citizens (Ribble & Bailey, 2004).

*Digital Communication.* Discussions on the use of mobile technologies as a means of communication are long overdue. Teachers, parents, school administration, and higher education communities have to date, and danced around these discussions largely due to concerns over personal rights and ownership of mobile technologies. Little effort has been taken to establish a set of standards for communication etiquette within a digital society. When should the mobile phone be silenced, vibrated, or ringing? When is the use of the mobile phone acceptable within the community? No one can say they have not been annoyed by the loud ringing of a cell phone or the unintentionally overheard conversation due to the cell phone user standing next to them in a store, classroom, or office. IPods with volume set on high are loudly played and can often provide a disturbing undercurrent of sound in a classroom. Game play in the classroom on cell phones and PDAs does not often provide the backdrop for learning in a classroom when the teacher is presenting content. Finally, what form of communication is best presented by use of mobile technologies? In most personal conversations, face-to-face communication is often seen as the best way to convey information while mobile technologies provide an efficient means for conveying basic information (Ribble & Bailey, 2004). Helping digital natives determine when, where, why, and how using cell phones for communication is needed in the development of digital citizens.

*Digital Rights*. Basic rights are expected by every citizen, including digital citizens. In a digital community, the rights of free speech, private property, and privacy when using technology must be maintained and supported. Local, state, regional, and national governments must take the responsibility of helping educational institutions provide opportunities to learn how digital rights are violated or protected when using cell phones, PDAs, and the Internet (Ribble & Bailey, 2004).

*Digital Security*. In the same way we protect our money by placing it in a bank or a safety deposit box, digital natives must protect their mobile devices and the information found within those devices. The use of passwords when connecting to the Internet, sharing information, and accessing web-based sites must be protected. Virus protection and firewalls can provide needed "machine-based" security, but the need to remain vigilant in not sharing passwords and logins by mobile users is paramount to maintaining a secure web presence for personal data. The need to backup secure information in the case of hackers is not unheard of in the mobile phone industry. Contact information from the contacts list of most mobile phones can provide a hacker with a wealth of information on addresses, phone numbers, and identities (Ribble & Bailey, 2004).

*Digital Commerce*. Shop until you drop is no longer the mantra, but rather shop until you need to charge the phone may be a more realistic mantra for the digital citizen. The buying and selling of goods on eBay®, purchases on Amazon® and electronic stores such as Apple® and Best Buy® are merely a button push away on mobile devices. While right versus wrong does not change in a mobile environment, decisions concerning whether an item can be purchased legally may bring about consequences for not doing so. The digital citizen must know and understand the implications of shopping online and privacy, identity theft, and credit card protection strategies. Just because one is mobile it does not mean that the purchaser's identity cannot be compromised (Ribble & Bailey, 2004).

*Digital Safety*. Who thinks about the many ways in which one twists their body to hold the cell phone, drive, and eat while in a car or at their desk at work? Increased use of mobile devices such as cell phones, laptops, and iPods has caused many to worry about the electromagnetic waves and ergonomics of using such devices. While to date, no conclusions can be made as to the electromagnetic impact of mobile devices, ergonomics research does provide several interesting concerns for the digital user. Users must be aware that there are some inherent safety issues with mobile technology use, including eye strain, repetitive stress syndrome, and possible hearing impairment. In turn, society must remain vigilant in researching these and other ergonomic issues surrounding digital devices and implementing needed changes for improved health (Ribble & Bailey, 2004).

*Digital Responsibility*. Ethics remain a huge issue in the use of digital devices both inside and outside school. As a digital community, society must work within educational institutions and the workplace to demonstrate the ethical use of all forms of digital content, information, music, and data. Hacking into a computer system, which includes today's smartphones, stealing or sharing private information cannot be tolerated. Plagiarizing, distributing viruses, Trojan Horses, and other malicious software to mobile devices are unethical acts both in and out of school. Harassing other users through Web sites containing slanderous content, e-mail with threats and vulgar content are equally unethical and have both legal and personal consequences (Ribble & Bailey, 2004).

The 21st century digital world requires ethical and unethical behavior, and appropriate and inappropriate use of digital devices be at the forefront of education in this technological age. The leadership today may not be as technologically savvy as the digital natives that will lead in the future. This demands dialogue concerning digital citizenship occur now if a productive citizenry is expected to participate in a global community. "The old adage seems quite appropriate when gauging the importance of digital citizenship education: 'If not here (schools), where? If not now, when? If not you, who?' " (Ribble & Bailey, 2004, p. 15).

## The Challenge to the Digital Educator

Today's networked community brings into focus a characteristic of American education that contradicts the use of mobile technologies and digital communities. There

is a vast difference in the definition of 'community of learners' so often identified by American schools as a goal, and the definition of the term 'learning community.' A community of learners is one in which the individual is engaged in a community—learning is individual—the learner is engaged in his/her own learning. In a learning community, the learners are engaged as a collective community, as a participatory culture in which collective intelligence is expected and encouraged (Carroll, 2000). Unfortunately, American schools most often reward the 'Horatio Alger' individual that 'pulls himself up' and learns the content. There is little respect for collective intelligence or a participatory culture in which the learning community presents solutions to assignments. Teachers often state that such collaborative work is 'difficult to grade' and some even consider such collaborations cheating. After all, how can a teacher know who was responsible for the assignment presented; much less if learning really occurred as the learners collectively provided intellectual content for the assignment?

Mobile technologies coupled with Web 2.0 applications have the potential to revolutionize learning by enabling learners to engage in various learning activities such as blogs, wikis, Twitter, podcasts, and learning communities wherever learners happen to be (Soloway et al., 2001). The factory-era teaching and industrial discipline learning model still prevalent in many schools that directs information transfer from the teacher to the individual student must change along with the expectation that students learn individually and produce individual assignments for individual grading.

Web 2.0 applications are displacing fixed content and creating unique learning environments that are interactive and collaborative in the construction of knowledge into a collective intelligence. The Web 2.0 environment brings powerful learning opportunities to learners with open access 24/7 whether schools are ready or not (Carroll, 2000). To better serve digital natives, digital educators are challenged to do the following:

- Provide appropriate and differentiated mobile resources to support learning 24/7
- Design and support learning activities for use on mobile devices such as cell phones and iPods
- Monitor learners' progress through the use of teacher-owned mobile devices and Web 2.0 sites such as Twitter
- Encourage reflective practices through web-based blogging, wikis, and video
- Provide formative assessment opportunities for learners to self-check 24/7
- Assist all learners in becoming a part of a digital community in which all knowledge is valued and shared to become collective intelligence (Carroll, 2000)

Mobile technologies offer clear potential benefits to learners as a means of accessing this interactive, collaborative learning environment and these benefits must be part of the classroom. The portability and personal aspect of mobile devices motivate learners through a feeling of personal ownership over the learning tasks in which they are engaged and the technology being used in a 24/7 global community, making mobile devices potentially lifelong learning tools (Waycott, Jones & Scanlon, 2005). In this mobile, collective, immersive environment, everyone must

be a lifelong learner. There is no linear curriculum, no time limit to learning, and no formal structure for how to learn. There are only tools to connect the learner to communities of experts, intellectual discourse, and global perspectives all providing what the individual is interested in learning or pointing to new sources to explore.

This is really good news! Now everyone can be a lifelong learner using mobile technologies and digital communities—connecting educators and learners to ideas, other educators, scientists, and techniques that can bring solutions to world problems that must be solved for a sustainable future for all school children. This truly moves mobile devices from a "toy in the classroom" to a collaborative learning tool both inside and outside the classroom (Waycott et al., 2005). The true success of mobile technologies and digital communities will be measured by their ability to encourage enlightened, passionate, fearless lifelong learners engaged in the creative processes to solve real-world problems and build a humane society through their use.

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# Chapter 10
# Online Learning: A 21st Century Approach to Education

**John Watson and L. Kay Johnson**

## Introduction

The advent and growth of online learning is arguably the most significant development in K-12 public education during the last decade, holding promise for education reform and innovation well into the 21st century. While public education is not known for rapid change, the last 10 years alone have seen online learning develop into an exciting option for more than one million students. Parents, students, and educators are beginning to realize the unparalleled equity and access to a high quality education that online learning affords. As of late 2010, 48 states operated some form of state-led supplemental online learning program for students attending physical schools, and/or full-time programs for students who take their entire education online (Watson, 2010). Notable examples include the following:

- The Florida Virtual School (FLVS) now serves more than 200,000 students each year with supplemental online courses. FLVS, which has grown steadily since its inception in 1997, demonstrates the popularity of online learning when students are provided with the opportunity and provides a winning model for sustainable growth with quality.
- In Chicago and Detroit, the Illinois Virtual School and Michigan Virtual High School, respectively, have partnered with inner-city school systems to bring the benefits of online learning to a range of student populations. In Michigan, the 2006 legislature passed a law requiring all high school students take some form of online instruction before graduating.
- The Louisiana Virtual School partners with local schools that lack a qualified algebra teacher by offering an online algebra course for students in a classroom setting. The students receive instruction from a highly qualified teacher online, and a teacher seeking certification in math provides on-site assistance. This arrangement serves the dual purpose of providing students with a highly

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_10,

qualified teacher online, while allowing the site-based pre-service teacher to receive mentoring in algebra instructional strategies.
- K12 Inc. and Connections Academy, the two largest operators of full-time online schools, count approximately 100,000; 92,000 (Watson, 2010) in their schools in almost half the states in the US. Other national operators of full-time schools, although not yet as large, are growing rapidly.

Despite steep growth and a unique ability to meet critical needs, online learning faces challenges and, in some states, controversy. The issues center largely on fitting the new learning model into existing policies, often created in a pre-Internet age for physical schools, while redefining preconceived notions about how emerging technologies can facilitate new ways of learning. While the challenges are small compared to the actual and potential rewards, it is clear that online learning must carefully and thoughtfully pursue growth. This chapter explores how students learn online, describes types of online schools, presents growth and trends in online learning, identifies challenges and issues, and projects how online learning may evolve over time.

## What Is Online Learning?

Online learning is described by many terms that do not have commonly understood definitions, often leading to confusion among educators and policy makers. This chapter discusses distance learning that takes place via the Internet, both synchronous (real time) and asynchronous, and uses the term "online learning" to describe this format of content delivery and learning. Online learning as defined here includes video, text, audio, and animation, delivered via the Internet versus other channels such as video conferencing.

## The Online Course Environment

Online courses are typically delivered via a software package called a learning management system (LMS), also referred to as a course management system (CMS). An LMS allows instructors to manage distribution of materials, create content and assignments, facilitate communication, and manage other aspects of instruction. The software has numerous features, typically including the following:

- *Authoring tools*: These tools make it relatively simple to structure content to meet the goals of a specific curriculum, regulate the pace at which content is delivered, and post and change content of various types as needed.
- *Communication tools*: Asynchronous tools include e-mail and threaded discussions. Synchronous (real time) communication tools integrate video, audio, text chat, and whiteboard. Some programs also use individual and/or traditional

conference calls between teachers and students along with Internet communication, including web conferencing, using Voice over Internet Protocol (VOIP) technology.

- *Assessment tools*: Besides providing varying answer formats such as multiple choice, true/false, extended response, short answer, and matching, most LMS programs provide auto-grade options for basic assessments. Other assessments naturally require individual analysis and commentary by the teacher.
- *Tracking tools*: Student activity tracking tools provide a snapshot of student involvement in discussion board posts or other in-course activities. Assignment submissions can also be tracked. While activity tracking can be useful, it is not a good proxy for time in a classroom as it does not take into account offline student activity—which may comprise a substantial part of learning activity.

Some asynchronous courses are self-paced, in which case a student starts and ends at any time and proceeds through the course at a rate agreed upon by the teacher and student. Other courses require students to go through as a cohort, with specific start and end dates, allowing them to reach milestones together and providing opportunities for class discussions and projects. At the same time, some asynchronous programs have found creative ways for students to collaborate even if they don't proceed through the course at the same pace. Cross-disciplinary projects, competitions, honor societies, and student clubs are just a few examples of student-to-student online activities.

## Content for Online Courses

Online course content may include text, graphics, video, audio, animation, and other interactive tools. Many courses use offline materials, including textbooks and hands-on materials, to complement content delivered via the Internet. Course features are determined by the developers, the teacher, and even the type of content. An English course might rely heavily on online and offline text, while a course in Spanish might depend more on audio clips allowing students to hear proper pronunciation; biology courses often use animations or simulations to demonstrate concepts such as cell division in a way unmatched by any textbook.

Online content can be divided into two categories. It may be embedded within the LMS or reside outside the LMS at reliable Internet sites (Watson, 2008). Examples of the latter include e-text books found on a publisher's web site, which range from PDF documents to versions of books designed for e-book readers. Many online programs develop some of their own content and license other content from publishers or other providers.

Online courses typically meet state content standards, and increasingly are being created and updated to meet the national standards developed by the International Association for K12 Online Learning (iNACOL).

## The Role of the Online Teacher

Teachers are at the heart of the online learning experience, but online educators—and indeed anyone familiar with technology in the 21st century—recognize that the role of the teacher is changing. The teacher, the textbook, and even the school system can no longer be the *only* conduit of knowledge to students—there is simply too much quality information available. As the nature of learning (and working) changes due to the explosion of readily available information, along with new ways of managing and accessing it, education must continue the shift from doling out facts to training students to be better thinkers, learners, and processors of information. The role of the teacher, especially at the high school level, is increasingly about building literacy and critical thinking skills (Pape, 2005).

The online teacher's role can be broken down into several categories, with some of these tasks sometimes being accomplished by teams of teachers, instructional designers, or content specialists who may not actually deliver individual course content in the role of a teacher:

- *Course Development*: As with a classroom course, the teacher must plan the course. What topics will be covered? How will the course material align with state content standards? How will content be delivered? What homework, group projects, and other course tasks will be assigned? How will content mastery be assessed?
- *Communication*: One of the main roles of the teacher in a student-centered learning environment is to provide consistent feedback and guidance, and to be available for students, even at odd hours. For this reason, many online programs provide standards for how often teachers must log in to their classes and how quickly they must respond to student e-mails.

Online teachers must recognize the potential communication advantages and drawbacks of an online environment. On the positive side, students often feel more comfortable talking to a teacher one-on-one when they are struggling with a concept. Students may also participate in online discussions in ways they might not in a traditional setting. The lack of peer pressure can be a significant benefit to student participation, and the ability to work with others on content without the distractions of a typical classroom is cited by many students as one of the big advantages to online learning. Likewise, the teacher can keep a record of class discussions, beneficial for planning, assessment, and accountability. One communication challenge in the online environment is the inability to use nonverbal cues to determine a student's level of understanding or to keep the student engaged. Videoconferencing is definitely being explored, but it is far from being used on a regular or widespread basis. In order to compensate for the lack of face-to-face contact, teachers must find creative ways to keep interactions with students friendly, warm, and personable. Some teachers create their own web pages and share bits of information about themselves. Most programs rely heavily on phone communication, with an increasing number of programs creating requirements for regular phone interaction; teachers might also

use e-mail, instant messaging, web conferencing, and social networking tools to stay connected with students and keep them on track.

- *Guiding and individualizing learning*: In addition to course creation and communication, the teacher guides learning by creating and facilitating group discussions, developing group projects, and dynamically adjusting course resources to respond to the questions and the concepts students find most challenging or engaging. When students are enrolled in a physical school while taking an online course, some local schools provide a mentor or facilitator for added face-to-face support.
- *Assessing, grading, and promoting*: Online teachers are also responsible for tasks similar to those of traditional classroom teachers, such as creating, giving, and grading tests and homework assignments; providing overall course grades; and determining whether the student is ready to move on to the next unit, course, or grade level. While the technology may automate some grading functions, these crucial assessment decisions remain the professional teacher's responsibility.

## Technology Considerations for Online Programs

In many respects, the hardware and software required for online learning are essentially the "facilities" of an online school, much as physical buildings are the facilities of a traditional school. While technology is important, it is crucial not to overstate its role. In the online environment, teachers and students are still the primary players with the technology playing a supporting role. Indeed, a good gauge of the proper use of technology is to ask the question, "Does it facilitate or interfere with learning?" In a certain respect, technology should be invisible or "ghosted" behind the learning. Students should be less engaged in the technology than the actual content. In addition, while some cutting-edge tools hold great promise for online learning—and indeed classroom-based learning as well—the basic technological components in online education are relatively easy to implement.

Hardware requirements depend on the program but generally include servers, bandwidth, and computers for teachers and students. Local schools often provide access to computers and the Internet for their students in supplemental online programs, while full-time schools often provide students with computers.

## How Is Online Learning Being Used?

Online learning is being used in many ways across the United States, including the following:

- Expanding the range of courses available to students, especially in rural and inner-city schools, beyond what a single school can offer, in subjects ranging

from core courses to advanced or college prep, or electives such as Mandarin Chinese;
- Providing highly qualified teachers in subjects where qualified teachers are lacking or in short supply;
- Providing flexibility to students with scheduling conflicts;
- Affording opportunities to at-risk students, elite athletes and performers in the arts, dropouts, pregnant or incarcerated students, and students who are homebound due to illness or injury, allowing them to continue their studies outside the classroom;
- Increasing the teaching of technology skills by embedding technology literacy in academic content; and
- Providing professional development opportunities for teachers, including mentoring and learning communities.

Online education represents a critically important response to the shortcomings of K-12 education and the need for reform. With the United States economy shifting away from manufacturing and toward a greater percentage of knowledge-based jobs, 90% of the fastest growing jobs in the economy require a college degree. At the same time, according to one estimate, just 70% of all students in public high schools graduate, and only 32% of all students leave high school qualified to attend 4-year colleges. With such challenges, all options need to be on the table. Our nation cannot afford to turn a blind eye to new ways of thinking about how to facilitate learning. In addition to addressing many of the shortcomings of our present system, online education facilitates mastery of essential 21st century skills by stressing self-directed learning, time management, and personal responsibility along with technology literacy in a context of problem solving and global awareness (Watson, 2007).

## Types of Online Programs

Online learning programs may be placed into one or more categories. Although there is some blurring of the lines between the many types of programs, there are important differences in terms of how education is delivered, and the policy frameworks and funding mechanisms under which they operate.

- State-led programs and initiatives are an important online learning option for many students. In many states, the state-led program is the main driver of online education for students enrolled in traditional physical schools. As of fall 2010, 39 states offered state-led programs or initiatives, designed in most cases to work with existing school districts to supplement course offerings. Examples of state-led programs that provide full courses, teachers, and student support include Florida Virtual School, Illinois Virtual School, Michigan Virtual School, Idaho Digital Learning Academy, Georgia Virtual School, Kentucky Virtual

School, and the Missouri Virtual Instruction Program. Examples of state-led initiatives that provide online resources or serve as a central clearinghouse for online courses include the Washington Digital Learning Commons, Wyoming Switchboard Network, Texas Virtual School Network, and Oregon Virtual School District. Most state-led programs are high school level, with some middle school; supplemental, providing one or more courses to students enrolled elsewhere; hiring part-time teachers for the majority of their courses and funded primarily by separate state appropriations rather than the per-pupil funding formula (Watson, 2008).

- Full-time, multi-district online schools are available in 27 states plus Washington DC (Watson, 2010). Unlike most state-led programs, full-time online schools are responsible for students' state assessment scores and Adequate Yearly Progress under No Child Left Behind. Most online public schools are charter schools, a type of public school available in the 40 states that have passed charter school laws. Charter schools have an authorizer who may, depending on the state, be a school district, a university, or an independent statewide entity, among others. There are two types of charter schools related to online learning: fully online schools and brick-and-mortar charter schools that have added an online component. Whether a full-time online school is multi-district or single-district is an important characteristic that largely determines:
  - Size: Few districts have a large number of students who wish their entire education to be online,
  - Funding: If the school is multi-district, it cuts across funding that goes to each district based on pupil counts, and
  - Policy Issues: Multi-district online schools may fall outside of public school reporting norms.
- Single-district programs: These online programs, as the name implies, are run by school districts and serve only students who reside within the district. These programs may be full-time or supplemental. Examples include Los Angeles, Fairfax (VA), and numerous smaller school districts.
- Consortia: Consortium or network programs include the Virtual High School Global Consortium, Wisconsin eSchool Network, and Connecticut Adult Virtual High School. These consortia recognize the value in economies of scale and have combined resources to create online courses, train teachers, and provide student support. They also provide evidence that such programs do not necessarily have to be run at a state level.

## Status and Trends in the United States

Late 2007 and the first half of 2008 saw the continued growth of online learning in terms of new programs being created, growth in existing programs, and the passage

of new legislation to facilitate further growth. As of fall 2008, all but a handful of states were offering significant online learning opportunities for students.

- Seventeen states offer significant supplemental and full-time online options for students. Many of these states have both a state-led program and full-time online schools. For example, Florida offers the supplemental Florida Virtual School, the full-time Florida Connections Academy, and Florida Virtual Academy. Similarly, Colorado offers the state-led Colorado Online Learning, along with numerous full-time district programs and charter schools. In a few cases, such as Minnesota, neither the full-time nor the supplemental programs are state-led but are instead run by districts or as charter schools. In Missouri, the state-led program offers both full-time and supplemental programs.
- Twenty-three states offer significant supplemental opportunities but not full-time. Most have state-led programs, such as the Michigan Virtual School, Illinois Virtual School, and Virtual Virginia. Some have a few full-time online options, such as the Chicago Virtual Charter School and the Traverse City (Michigan) School District, but these programs are not available to students across the state.
- Four states offer significant full-time opportunities but not supplemental. These states have extensive charter schools and/or district online programs but do not have a state-led supplemental program available across the state.
- Many school districts are implementing online learning in a blended model that combines an online and face-to-face component, often for students who are recovering credit or at-risk. Similar to fully online programs, the blended approach offers students flexibility, individualized instruction, and an alternative to the traditional classroom.

As of late 2010, online learning opportunities are available to at least some students in 48 of the 50 states, plus Washington, DC. No state, however, provides the full range of potential online learning opportunities—supplemental and full-time options for all students at all grade levels (Watson, 2010). In addition to the nationwide spread of online learning programs to most states, the number of students taking one or more online courses has rapidly grown. Annual growth rates in individual programs and in some states consistently run in the range of 15% to 50% over multiple years. Although the exact number of students taking online courses across the country is unknown, knowledgeable estimates put the enrollment at about 500,000 to one million students (Watson, 2008).

This dramatic growth at the K-12 level follows the pattern of online learning adoption in post-secondary education and corporate training—and indeed the spread of Internet technology to nearly all facets of modern life.

## Differences in Online Learning by Grade Level

Although many people think that online learning applies mostly or entirely to high school students, more than half of the 44 states offering online learning options

include opportunities for students in grades K-8 on either a part-time or full-time basis. It is now quite common for state-led supplemental programs to offer middle school as well as high school courses. In addition, several state-led programs now address grades K-5, including the Florida Virtual School and the Missouri Virtual Instruction Program. These programs are joining traditionally full-time providers such as K12 Inc., Connections Academy, National Network of Digital Schools, and White Hat Management, to serve the elementary grades. Estimates for the total number of K-8 students served in online programs range as high as 45,000 full time equivalents (FTE) across the nation. As the spectrum of online learning evolves to offer opportunities to students of all ages and learning needs, elementary students are gradually becoming part of the online learning audience. Given the overall growth in online learning and the push by multiple providers to offer courses across the grades, the number of elementary students enrolled in online courses is expected to increase.

An important basic point about online education for young students is that relatively little of the students' time is actually spent online. Connections Academy, for example, estimates that the youngest students spend 15% or less of their time online, rising to more than 75% for high school students. Of course, these numbers represent an average across different students and classes. Some students are more comfortable with being online than others at a young age, and some classes are more suited for online content delivery than others. Online programs for elementary students often include a significant amount of paper-based or hands-on instructional materials: books, worksheets, manipulatives, and the like. These materials are often tied to online lessons but allow students to work away from the computer, develop motor skills, and draw or handwrite instead of being forced to type.

While online schools use teachers to develop and deliver assignments, grade work, assess students, and decide on advancement to the next grade, these schools also rely on an adult who is physically present to assist with learning. These adults, called "learning coaches" in some programs, are often parents. However, when parents are not available, the learning coach may be a grandparent or other responsible adult. For example, Connections Academy estimates that in about 10–15% of cases, the learning coach is not the student's parent. As in online programs for older students, elementary programs typically use a mix of asynchronous and synchronous tools to facilitate interaction between teachers and students and among the students themselves.

According to the providers who serve them, elementary students in online programs are similar demographically to their peers in traditional schools and tend to be fairly evenly distributed across levels. Programs that serve students in K-8 often report a slight bump in the middle school years and a slightly smaller kindergarten class, especially in states where kindergarten is not mandatory. The major K-8 online providers have seen their population of students with special education needs directly mirroring the public school average of about 12%. According to school and state reports, the percentage of students qualifying for free or reduced lunch ranges from 35–50%. Approximately 20–25% of students are members of minority groups, with ethnicity reflecting the particular state being served. Administrators of online

elementary programs report families seek out these programs for a wide array of reasons, including special learning needs, physical health issues (from allergies to ongoing cancer treatment), pursuit of athletic or performing arts careers, or desire for an individualized learning environment.

One concern often cited is that students should not simply sit at a computer to learn but should interact with other students to gain socialization skills. While this is a concern for full-time online students of all ages, it is especially true of younger students because by the time they have reached high school age, they are likely to be more involved in after-school pursuits that engage them with others, such as sports, band, or clubs. Teachers, administrators, and parents associated with full-time online schools are often very active in creating opportunities for students to meet and interact face-to-face, whether in academic-related field trips to museums, or purely social events. The International Association for K12 Online Learning's (iNACOL) September 2008 Promising Practices report, *Socialization in Online Programs*, documents multiple examples of such activities.

## Online Learning Policy Developments in Recent Years

In many cases, online schools and programs exist because of policy enactments (e.g., creation of a state-led online program by the state legislature) or policy changes (e.g., changing the state education funding formula to allow online schools.) Policy development has clearly become a central component in the evolution of online learning. Major laws and policy changes over the last few years include the following:

- The Florida legislature passed a new law in 2008 that requires school districts "to make online and distance learning instruction available to full-time virtual students in grades kindergarten through grade 8 by 2009–2010." Following the lead established by the Florida Virtual School (FLVS), the School District Virtual Instruction Program (K-8) will be funded based on successful completions, though unlike FLVS, there will still be a seat-time component requiring providers to take attendance and adhere to a 180-day school year. FLVS partnered with Connections Academy to offer districts the Florida Virtual Connections Academy as a solution to the legislative requirement. Using their long-established district relationships, FLVS is working collaboratively with districts to pilot the elementary initiative, while providing a comprehensive solution that includes the technology, courseware, and instructors necessary for a quality program. FLVS itself, which serves middle and high school students, continues its rapid growth, reaching over 120,000 course registrations in 2007–2008.
- In 2006, Michigan created a requirement that all students have an "online learning experience" before graduating. The Michigan Department of Education subsequently developed guidelines that explain options for the "online learning experience" and require the "meaningful online experience requires a minimum accumulation of 20 hours... for students to become proficient in using technology tools to virtually explore content."

- In 2008, Alabama became the second state to create an online learning requirement when the State Board of Education passed a resolution that "beginning with the ninth-grade class of 2009–2010 (graduating class of 2012–2013), students shall be required to take and receive a passing grade in one on-line/technology enhanced course in either a core course (mathematics, science, social studies, or English) or an elective with waivers being possible for students with a justifiable reason(s)."
- Wisconsin gained national attention when an appeals court ruled in December 2007 that the Wisconsin Virtual Academy (WIVA), a charter school established by the Northern Ozaukee School District and affiliated with K12 Inc., violated state laws and was not eligible for state funding (Watson, 2008). To prevent online charter schools across the state from closing due to denied funding, the legislature responded by enacting Act 222 (Watson, 2008), which made changes to charter schools, open enrollment, and teacher licensing laws allowing virtual charter schools in Wisconsin to operate with public funding.
- Hawaii and Wyoming both established task forces to research online learning options for their states. Both reported to their respective state legislatures, which in 2008 passed legislation supportive of the task force recommendations. Wyoming created the Wyoming Switchboard Network to create and oversee online and other distance learning courses, while Hawaii's legislation supports both a state-led supplemental program and full-time online schools.
- The legislatures in Kansas and Idaho both responded to concerns raised in state audits about practices of a few online programs and oversight by state agencies. The laws created new reporting and oversight requirements and allowed the continued operation and growth of online programs. Notably, in states where questions have arisen via audits or lawsuits about the practices or oversight of online programs, laws have been passed, after legislative review, to allow the online options to continue. In states such as Wisconsin and Colorado, there were initial concerns that online schools would be shut down as a result of the court case in Wisconsin, or that new schools would not be allowed due to a suggested moratorium in Colorado. Instead, in Wisconsin, Colorado, Kansas, and Idaho, after the initial questions were explored in greater depth, the legislatures decided that oversight and reporting of online schools needed some changes, but overall, the online programs were successfully serving students and filling an unmet educational need and should be allowed to continue and grow.
- North Dakota passed a law requiring the state Department of Public Instruction to create an approval process for online courses being provided from out of state (but not between schools in North Dakota.) Notably, the law states that all teachers must "meet or exceed the qualifications and licensure requirements placed on the teachers by the state in which the course originates," meaning that teachers do not have to be certified in North Dakota. This law is significant because state certification of teachers remains a stumbling block for many programs operating across state lines.
- Indiana's 2007 budget bill HB1001 stipulated that virtual charter schools would not be funded through June 2009: "A virtual charter school is not entitled to any

funding from the state of Indiana during the biennium and is not entitled to a distribution of property taxes." The law defined virtual charters based on 50% of instruction taking place online, and subsequently two charter schools opened that provided less than half—but still a significant portion—of their instruction online (Watson, 2008).

The preceding list is just a sample of the new laws and regulations that have been created in the last several years that have significantly impacted the growth and development of online learning. As with any effort to bring change or innovation to government programs, creative and thoughtful policy development plays a crucial role.

## Key Issues in Online Learning

The main challenges in online learning policy and practice revolve around a few issues, including funding, content and teaching standards, and accountability for student achievement.

### *Funding*

The question is often asked—how is online education funded? The easiest way to answer is to note that "online education" per se is not usually funded, rather, schools and education programs using online delivery are funded. The distinction is important because the way online education is funded is almost entirely dependent on the entity providing the courses, teachers, and education. In fact, most schools, whether traditional or online, are funded by a variety of sources, from legislative appropriations to bake sales. The main sources are discussed below.

State-led programs are primarily funded by an appropriation from the state legislature that may range from several hundred thousand to several million dollars per year. This appropriation is usually not tied to the number of students who take an online course. In some cases, states may charge fees to the districts whose students use the program, ranging from approximately $50 to several hundred dollars per student per semester course, making up a significant portion of the program's budget.

Charter schools that are fully or partially online are usually funded in the same manner as other charter schools in the state, primarily through public education funds. This funding is provided based on student attendance or seat time and is directly tied to the number of students in the school.

District online programs are funded by school districts using public education dollars provided to the district, which is also based on student attendance. However, because the online program is a part of the district, the program's funding may be a line item and not directly tied to the number of students in the program.

In most states, per-pupil education funding varies based on a number of factors such as district size. In a handful of states, funding for online courses or students is set at a different level than the funding level for students in brick and mortar schools—and is typically set at the low end of the funding range.

The most important questions related to online learning funding are as follows:

(1) Does state law allow students to choose an online course, or an online school, with few or no restrictions?
(2) Does the state fund online students at a level similar to students in traditional schools?

States with the most growth in online learning, in almost all cases, allow students to choose online schooling, with funding following the students. For example, growth at Florida Virtual School (FLVS), the largest online program in the United States, doubled when the Florida Legislature passed a law giving students the right to choose a FLVS course and ensuring that most of the student's FTE funding would go to FLVS as the student successfully completes the course. Florida is the only state that uses a performance-based funding measure for online learning. FLVS is about ten times larger than other state-led programs in states where the right of students to choose an online course has not been made clear. With full-time online programs, whether charter schools or district programs, states with open enrollment laws that allow students to choose a school in any district in the state, have seen online education growth at many times the rate of states where students cannot easily choose an online alternative.

No matter how a school is funded, there are ramifications, just as in any business. For example, when an employee's performance is tied directly to compensation, there is often a higher likelihood that the employee will be motivated to do his or her best. Or when a business unit's compensation is tied to revenue growth, an extra incentive to perform is integral to the workplace. Programs where funding is tied to attendance or seat time will likely create policy and accountability measures to ensure students meet the required hours. The challenge here could be to place too much emphasis on attendance and not enough on achievement. In a program funded by an appropriation, but paid for on a per-seat basis by the districts, the challenge may lie in getting districts to take advantage of a program that requires payment from their local budget. Performance-based funding puts the emphasis on student achievement versus seat time, but the challenge is to ensure assessment and accountability measures are comprehensive and transparent.

Perhaps the greater challenge related to funding is in deciding who "owns" educational funds in the first place. Is it the state, the district, the local school, or the individual student? Traditionally, the United States has favored local control of educational funding, but online learning is about moving far beyond local boundaries, and for the first time, as students move—for whatever reason—they can take their learning with them. However, they can't always take their funding. Part of the challenge as we move forward as a nation to implement online and blended K12 learning opportunities on a broad-scale basis is to find funding mechanisms that respect

local autonomy and focus on the student's needs while transcending geographic boundaries.

## *Course Quality and Standards*

Online courses are subject to state content standards, but many policy makers and practitioners now recognize the need for national standards specific to online courses. In September 2007, the North American Council for Online Learning released its *National Standards of Quality for Online Courses* (NACOL). Recommendations fall into several categories:

- Content
- Instructional design
- Student assessment
- Technology
- Course evaluation and management
- 21st century skills

The release of national standards for online courses has been an important milestone. Prior to their release, online courses were aligned to state content standards, but educators realized that a good online course should be designed to reach goals that far exceed state standards and are specific to the online environment. With national standards now in place, online programs are able to align and evaluate their courses with the standards to make sure they are taking advantage of the online medium across content, design, assessment, and other measures. Although there are no requirements for online programs to use the national course standards, an increasing number of programs are doing so voluntarily to demonstrate the quality of their courses.

This development mirrors the issues and developments in funding. As a nation built on the idea of local control, each state has its own academic standards. Districts may add to those standards, and individual schools may even add more. How do you develop online courseware that meets standards in such an environment? The release of the NACOL national standards provides a mechanism whereby educators across the nation can speak the same language. While there are still challenges in mapping courses to state standards, progress has been made by at least creating a quality roadmap that educators can use to evaluate their own online courses or those they may be considering purchasing.

## *Online Teaching Skills*

The skills needed to teach online include and exceed the skills needed to be a successful teacher in the traditional classroom. There are two main elements to learning how to teach online. The first, learning the technology and tools of the software, is fairly straightforward. The second, effective online pedagogy, is much

more complex. How does an English teacher facilitate an online discussion about the use of metaphors? How does a science teacher demonstrate the concept of gravity online? What tools does the online instructor use to engage students in debate, analysis, or collaboration? How does the teacher assess learning and ensure academic integrity? Many professional development requirements for online instructors focus on learning to motivate individual learners, enhancing student interaction and understanding without visual cues, tailoring instruction to particular learning styles, and developing or modifying interactive lessons to meet student needs.

Researchers note several key skills for online teachers that should be bolstered through professional development opportunities. The following are based on *Essential principles of online teaching: Guidelines for evaluating K-12 online teachers* (Southern Regional Education Board, 2003):

- Teachers must develop heightened communication skills, particularly in written communication.
- In asynchronous programs, time management skills are critical for teachers (and students) because they can be online at any time.
- Teachers must be able to recognize different learning styles and take advantage of the dynamic and individualized nature of online learning to meet the needs of a wide variety of students. The idea of prescriptive learning is gaining ground since, in theory at least, each course could be tailored to the individual needs of each student. More programs are allowing students to "test out" of sections of content they may have already mastered in order to provide more time for the part they have yet to learn. The technology to completely customize courses is developing rapidly, but there are still hurdles to overcome both with the Learning Management Systems and with the very way we measure success in standards versus competencies.
- If teachers have any students with disabilities, they must know how to differentiate course content and instruction to meet these students' needs.

Online programs often evaluate teachers on more dimensions than most physical schools. This is possible in part because of the nature of the LMS technology, which captures teacher–student interactions, class discussions, and course content in a way that is not possible in a traditional classroom. A school administrator can drop into a threaded or web-based discussion much more easily than in a traditional classroom without impacting the discussion. Also, many online programs survey students one or more times per semester and may ask students' opinions about their teachers. For some teachers, this may be intimidating at first, but there are unprecedented opportunities for teachers to work with teacher-coaches or mentors to share strengths and coach one another through weaknesses. Veteran instructors often report that their teaching skills actually grow in the online environment in a way they had not believed possible before. Besides the capability of sharing ideas more readily with colleagues, online teachers can "observe" one another and team up for learning. This is much more difficult to accomplish in brick and mortar schools where teachers often work in isolated silos, never having the opportunity to share their strengths.

Most state-led online programs are supplemental and hire a mix of full-time and part-time teachers, with the greater proportion being part-time. However, there are exceptions. FLVS, for example, only hires full-time teachers. Most full-time online schools use full-time teachers.

## *Accountability for Student Achievement*

Full-time online schools are public schools that are accountable for the achievement of their students in the same ways that all public schools are accountable, mainly through the requirements of No Child Left Behind. Students in full-time online schools take state assessments, and the schools are assessed and reported through state report cards and any other accountability measures established by the state.

In the early years of online learning, getting online students to participate in state assessments was a challenge, largely due to the logistical difficulties of getting students to a physical location to take the tests. This is still a challenge for online schools, particularly those that draw students from a large geographic area, as no states have implemented large-scale online assessments. In recent years, however, online schools have redoubled their efforts to get students to take part in the assessments, and in most states, participation rates now approach or exceed state averages.

A significant number of online schools serve students who are at-risk or otherwise underachieving. In some cases, the test scores of these schools have been compared to state averages and found wanting, leading to a robust and ongoing debate about the ways in which schools are measured under NCLB. Online schools with a large proportion of at-risk students argue that they should not be compared with state averages, as they risk being penalized for serving students who have not previously achieved educational success. Even if these schools raise students' test scores, the scores may lag behind state averages. This debate is clearly not limited to online schools, and progress toward using student growth models to measure school performance holds promise across public education, including online programs.

Because state-led programs are mostly supplemental, they are not responsible for student participation in state assessments. They are, however, responsible for student achievement in various other ways. In many cases, because a student's participation in online courses is at the discretion of the local school, the school's decision to allow participation and grant credit becomes the oversight mechanism. A few states require end-of-course exams that are tracked by the state, potentially allowing for a comparison of test scores of students in online courses against state averages. Advanced Placement courses also have end-of-course exams, and many programs track the results of their students' AP exams (Christensen, 2008).

## *Millennial Students and the Digital Divide*

One of the key issues in online learning is more of a generational than an educational challenge (Arafeh et al., 2002). The millennial generation in K-12 schools today

is made up of students who grew up in a digital age and are typically far more comfortable with technology than their parents and teachers (Arafeh et al., 2002). This difference is not just about what today's students do with their time; it is also about how they use technology differently than older generations and how deeply technology is integrated into their lives. This difference is clear to anyone who has watched teenagers send text messages, using their thumbs to type faster than many people can type on a computer keyboard. The challenge to online learning and, indeed, to education as a whole, is to be technologically in sync with its consumers while also meeting broader academic, policy, ethical, and social imperatives.

Another key technology issue is that of the digital divide—the disparity in availability of computers and Internet access across student demographics. While broadband Internet access and up-to-date computers are available now in many homes, this is certainly not always the case, particularly among low income and minority groups. A key part of public education's mission is to provide quality education for all students, and online programs must likewise ensure availability to all students, not just those from families with higher incomes. Some online programs work with local schools to provide computers and Internet access, and some students are able to use computers at libraries and community centers. Programs like the Digital Divide and other community-based initiatives also provide resources to fill the gaps. The growing use of mobile technologies may eventually hold promise for expanding access while reducing costs.

## Online Learning in Other Countries

The United States is not alone in implementing online learning; indeed in many cases, other countries are ahead of the United States and are developing national e-learning plans and initiatives. Examples include the following:

- In September 2007, the United Kingdom and China signed a deal to create e-learning content for 20 million Chinese students to access content beginning in the spring of 2008.
- New Zealand, Hong Kong, and Singapore have developed national Information and Communication Technology (ICT) plans with sections that define how to effectively integrate e-learning throughout their individual nation's K-12 education systems. Hong Kong's *IT in Education Strategy 2004* plan discusses the development of e-learning in local primary and secondary schools in the next few years. They believe that e-learning is not likely to take over face-to-face teaching; however, the use of Information Technology, including e-learning, is enhancing student learning and is practiced daily in Hong Kong schools.
- The New Zealand Ministry of Education's, *Enabling the 21st Century Learner: An e-Learning Action Plan for Schools 2006–2010* provides multiple goals for implementing e-learning within the schools and supporting a wider range of digital and Information and Communication Technology (ICT) tools.
- Singapore has already implemented a nationwide learning management system, and as of 2006, 100% of secondary students and 85% of primary schools

(grades 1–6) were using it daily for teaching and learning. Singapore's Ministry of Education has adopted a learner-centered mode of education, and the second phase of the country's ICT Master Plan, launched in 2003, focused on students and teachers using online tools to discuss, research, and develop technology for learning.

These are just a few of many examples of countries implementing online learning in K-12 schools. Other countries, including Australia, Turkey, and Mexico have integrated online learning in K12 schools as well (Powell, 2008).

## Looking Ahead

Across all grade levels and across the nation, students are finding increased opportunity, flexibility, and convenience through online learning. Teachers are discovering a new way to reach students, many of whom were not successful in traditional schools and courses. Administrators are exploring ways to offer a wider range of courses to students and professional development opportunities to teachers. Online learning is spreading for these reasons and also because technology is an appropriate, and perhaps necessary, way to educate students in the digital age. Integral to the lives of the Millennial generation, technology is the conduit for how they find information, communicate, and entertain themselves, and they expect their education to include technology-rich experiences. All too often, this is simply not the case.

Online learning is undoubtedly here to stay. Equally clear is that even though online programs have grown rapidly in the past decade, we are still only at the beginning stages of their growth. Clayton M. Christensen, a professor of business administration at the Harvard Business School, predicts that by 2019 half of all courses in high school will be taken online (Christensen, 2008), as online courses gain more acceptance and move further into the mainstream.

Part of the reason for the growth of online learning is that online technology allows for innovations that extend learning well beyond the walls of the classroom and beyond the temporal confines of the school day. Already, students in Michigan are collaborating with others around the state, and students in the Massachusetts-based Virtual High School work with classmates from around the world. In addition, simulations that have long been used in professional training are making their way into K-12 education, and multi-player games are being adapted for learning as well as for entertainment.

While technology is not at the heart of online learning—teachers and students are—technological advancements hold great promise for transforming learning. Rick Ferdig (2007), an expert in gaming within education, notes the growing use of new and innovative technologies for content delivery in online learning programs. He believes gaming is an important new medium for teaching and learning, as psychologists and educators are discovering positive affective, cognitive, and social outcomes through online, computer, and console-based games.

Technological advancements, along with the doubling of computing power every few years and the associated drop in computing cost, suggest that cutting-edge technologies will become an increasingly important part of education. Broadband access will become commonplace, to the point where most online programs will develop content with broadband in mind. One-to-one computing programs will spread, and online learning will blend with classroom teaching as an increasing number of teachers use the Internet to bring new resources to students and to extend the school day. Access to the Internet and downloadable content will be available through an increasing number of mobile devices—cell phones, iPods, and other tools that are still on the drawing board. Of course, all of these changes are merely an extension of the lifestyle that today's Millennial students already enjoy, as they download music and movies, and connect with their friends on MySpace and Facebook. The key for educators, then, is to make learning more of a seamless and fully integrated part of the digital world where students already live.

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# Chapter 11
# Redesigning Teacher Education from the Ground Up – A Collaborative Model

**Renée A. Middleton and Bonnie L. Prince**

This chapter examines the role of collaborative alliances among education organizations in making program change possible to achieve 21st century distinction. As change does not occur in a vacuum, it must be envisioned in mental images, articulated in language, converted to development strategies, and nurtured into real action. Such strategies are the invisible backbone that frames the more salient actions that lead to prominent new configurations that we identify as "educational change." Fullan (1993, p. 119–120) writes that "reforming teacher preparation institutions, like any attempt to change complex traditional organizations, faces enormous obstacles," that "systems don't change themselves," and that there is "the necessity of teacher educators to take the initiative." The characteristics of an interorganizational partnership that reaches across institutional boundaries, beyond the walls of universities, teachers' colleges, and school systems to achieve educational change collaboratively will be explored.

Drawing on the story of Communication and Connections (C&C), an innovative school–university partnership among educational institutions in an Appalachian state, we document in the rich dialogue of its members, how selected organizational dynamics work to accomplish change in teacher preparation programs. We seek to understand, through participants' accounts, how interorganizational collaboration is grounded in communication capacities to produce change that is different from hierarchical structures of traditional single-system organizations.

Through the C&C partnership, one college of education's quest for new ways to prepare educators to accomplish 21st century standards is being moved forward. Teaching practices in K-12 schools in the region are being freshly influenced to attain up-to-date educational principles and operations. And the concerns of school personnel, parents, and community stakeholders in an economically low-resourced region are being addressed with new vigor in this change. C&C offers a working model of a regional collaborative that addresses educational challenges spanning organizational and geographic boundaries.

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4_11,

## Processes of Change in a Collaborative Organization

C&C's story is drawn from the experiences recorded in the transcribed dialogues of key participants who were interviewed individually and in small groups, including the Dean of Education and Human Services at a regional university, two faculty members (A and B), four superintendents (A, B, C, and D), and the C&C supporter whose involvement was integral to the organization. Pseudonyms have been used in this chapter to represent participants and institutions involved. Participants include seven people who have witnessed the growth of C&C from an embryonic idea to an emerging alliance, and who have been involved first-hand in its early gestures toward collaboration, have contributed to defining its possibilities across organizations and now actively take part in C&C activities. A recently hired university faculty member (Faculty A) and late-joiner to C&C offers a valuable external perspective that transcends the other members who were immersed in the organization's history and evolution.

Using these transcripts, we trace how group members verbally construe and reconstruct their organization. Members' recollections, personal accounts, and the reported actions of themselves and others offer a fertile, multifaceted understanding of the development, impact, and significance of C&C by illuminating the organization's dynamics embedded in individual linguistic expressions, group dialogue, and interaction, and how this collaborative effort has brought changes to the teacher education programs to meet the region's needs. Some of the findings reflect research and formal directives for forming collaborative organizations found elsewhere (Couture, Delong & Wideman, 1999; Czajkowski, 2007; Fullan, 1993; Kezar & Lester, 2009; Martucci & Hirsch, 2001; Ravid & Handler, 2001).

From the numerous categories of communication dynamics revealed by our study, we have selected to illustrate those that offer the most salient examples of capacity to shape collaboration. Our intention is to examine how the collaboration process is motivated, activated, and fulfilled over time and to offer insight into the inner dynamics of how interorganizational collaboration functions to bring about change. These quotations are both content data about the story of C&C and also a representation of organizational dialogue, an ongoing "conversation" in which members constantly define, construct, and recreate their organization:

> The idea of the organization as a conversation . . . assumes that organizing occurs in the processes of sharing, dialogue and discussion of ideas, whether tacit or explicit, and that these create reality and meaning. These conversations are not *about* the social relationships; they *are* the relationships. The organizing process is continually reproduced and constituted in a loosely coupled network of many micro-conversations and builds on local knowing. (Broekstra, 1998, p.175)

Studying discourse among organizational members is well practiced by linguists, sociologists, and organizational theorists who investigate how organizations function. Researchers have examined organizations in the context of members' use of discourse (Grant, Kenoy, & Oswick, 1998); narrative methods (Boje, 2001; Salzer-Mörling, 1998; Wallemacq & Sims, 1998); metaphor (Cazal & Inns, 1998; Morgan, 1997); conversations (Broekstra, 1998); conversations and collective

identity (Hardy, Lawrence & Grant, 2005); cultural models (Holland & Quinn, 1987); action as a counterpart to talk (Marshak, 1998); and cultural and symbolic frames (Bolman & Deal, 1991).

We apply these methods to investigate how separate education organizations sharing geography, culture, political sphere, and socioeconomic conditions come to recognize common prominent educational concerns, seek out others with similar concerns, find common ground, join forces, synchronize their separate concerns into an integrated vision and then create something innovative which has a synergistic impact greater than any individual organization could achieve independently.

## Understanding Interorganizational Alliances

Colleges of teacher education are not isolated institutions serving only internal constituencies of students, faculty, and administrators within their university campuses. Instead, they are embedded in a shaggy web of interdependent external organizations—local schools, school districts, education service centers, accrediting agencies, other universities, state and federal government organizations, businesses, industries, and an assortment of community associations representing public and private stakeholders. While universities have often included external groups in advisory councils and grant-funded projects, they typically retain central control of the venture. C&C is a different kind of collaboration which engages a variety of education stakeholder groups as coequal peer partners in solving salient problems common to their geographic region. C&C resembles "loosely coupled systems" (Orton & Weick, 1990; Weick, 1976), an organizational metaphor that is useful for exploring the interactive nature of collaborating organizations (Beekun & Glick (2001). It also reflects Senge's et al. (2000) models of the "learning organization" and "schools that learn" which are grounded in Senge's (1990) "systems thinking" theory of organizations that embrace stakeholders in ever widening circles to expand, learn from, and respond to environmental contexts. Goodlad (1994) focused primarily on school–university partnerships, and Cambron-McCabe in *Schools that Learn* (2000) described fostering educational leadership relationships between a university department and local schools. However, *Schools that Learn* largely ignored the involvement of higher education. Championing Senge's systems approach, Fullan (1993; 2010) explored implications for change in education. Borrowing from Senge (1990), Fullan's (1993) image of change was of nonlinear interrelationships rather than cause–effect chains of processes rather than "snapshots" (p. 20). He advocated acquiring "the habit of experiencing and thinking about educational change processes as an overlapping series of dynamically complex phenomena" and recommended developing a "non-linear system language, new thinking about change" that structures data in circles and loops. Collaborative partnerships between universities and schools were extensively examined by Ravid and Handler (2001) who observed not only the need for partnerships but the need to study the dynamics of those partnerships that are successful.

## Dynamic 1: Building the Momentum

### *Previous Initiatives to Resolve Educational Disparities*

C&C evolved from earlier alliances of concerned educators, including the Regional Superintendent Association in Appalachia (RSAA), an association of superintendents, university staff, and other citizens which, since the mid-1980s, had voiced strong objection to the State's inequitable school funding model which, based on property values, left school districts in the low-resourced Appalachian region with substantially less funding compared to state averages. RSAA was ultimately instrumental in successfully suing the State for more evenly balanced funding. Yet state legislators still failed to enact location-neutral financing, again leaving the Appalachian region with poorly funded schools and a culture of poverty that limited opportunity to rise above its economic and social limitations. Over the years, several regional university Deans of Education participated in RSAA initiatives. However, there remained a need for a comprehensive effort to address not only school funding but wider issues, particularly, the preparation of education professionals who would be attuned to the culture of the region, find local jobs, upgrade classroom instruction, and remain employed in the region instead of migrating to more lucrative work elsewhere.

### *Prevailing Cultural Perceptions*

People in the region often share a perception that the Appalachian counties are unfairly disadvantaged, and school children have low self-expectations compared to the rest of the state. This mindset was strikingly conspicuous to a C&C member who had recently moved to the region from another state, who, with an external perspective and fresh eyes, detected this perception among colleagues and at local meetings, describing it as a "binding force" that actually united people:

> As an outsider coming in, I see a kind of binding force to this, as being the perspective of [this region]. Which has a unifying effect because this has been a region that has been underprivileged. And so there is a kind of bond . . . . In many of the meetings I go to, or bring constituents into these collaboratives, it comes out all the time: "We have been ignored by the State. We're not given our fair share. We are looked down upon by the state." It really seems to pull people together. (Faculty A)

Analogous to Holland and Quinn's *cultural models* which are "presupposed, taken-for-granted models of the world that are widely shared . . . by members of a society and that play an enormous role in their understanding of that world and their behavior in it" (1987, p. 4); this perception existed among many participants in our study. Superintendent C noted that the county where she had previously worked was "no man's land . . . . Everyone thought it was so far away that we can't go there. And it turns out it's not that far away but nobody knows that because we're rural, and we

are little, and we are removed." The C&C supporter also remarked on the provincialism of the region, recalling people who wouldn't travel the short distance to the capital city for high-paying jobs: "Students wouldn't move and parents wouldn't travel. They are connected to the region culturally and that's the uniqueness about the region. It's a uniqueness that does not exist in other parts of the State. If I lived in [a town near the State's capital city] and I knew I had a job an hour away, there wouldn't be a question. I would quickly get in the car and drive it every day. But in [this region] it's different."

Similarly, at the C&C meeting, Superintendent B, who had met early that morning with young students in a low-resourced school in the region, described how this cultural mindset affected the self-esteem and aspirations of schoolchildren: "You have kids here that have all kinds of ability, but don't see their future. And when you don't see your future, then any road will do . . . . We were dealing with the students . . . who didn't see their future. And so today, this morning at 5:30 a.m., anything would do."

The superintendents believed that the personal and social issues of these regional communities and school children were consequences of inequity and discrimination in the State's school funding system. Asked if the problems of the region were the same as the rest of the State, Superintendent B stated, emphatically:

> It's not the same. I was at a meeting yesterday in [the State capital] and we were talking about the statewide system, a computer system for schools. The other school districts that have money, they're not worried about not being able to buy a service. They have local dollars that can buy those services. It's the poor and rural schools that are trying to figure out [how to pay for it] . . . . [Our districts] have transportation issues that many other districts don't even know about, or don't even suspect those kinds of difficulties. [A school district in our region] has the longest bus route in the State . . . . They cover more miles per day than any other school district . . . . So someone who is used to quick snow removal or flat ground can never understand why the district . . . might be closed for six and seven days in a year. Just because of the snow. (Superintendent B)

For the superintendents, this bias against the region traditionally was even personal experience. Superintendent B recalled "If I go to [the capital] for a meeting, and I say I am from [a regional] County, most of the time people say, oh you're not from [that] County. And I say, "Yes I am." And they say, "Were you born there?" And I say, "No." And they say, "Then you are not from [that] County." They have an image of [this part of] the state as being unable or unwilling to take care of themselves".

These personal impressions are partially substantiated by demographic and statistical data. The University's immediate service area, the Appalachian region of the State comprising a third of the state's counties, is geographically the largest, most rural, and most economically challenged area of the State, resulting in significantly lower rates of high school and college graduation than the rest of the State. One focus of the C&C was to try to answer the question, what the College should do to redesign its educator preparation programs to address the unique needs of the region in order for the children to be successful in the new century.

## *New Eyes, New Voices, Opportune Moment*

The Dean of Education and Human Services (CEHS) at the University addressed this challenge with a fresh awareness regarding the dilemma of the region's public schools and a new impetus to transform the University's teacher education program to correspond more closely to regional needs. She initiated the change process with direct school visits and discussions with school officials and recommitted the CEHS to assuming a more prominent role in assisting regional schools in overcoming barriers that schoolchildren faced, while simultaneously asserting the parallel responsibility of local schools in their own education improvement:

> One of the things I wanted to do was to get a sense of the community and the schools. And so I visited many of our schools in [the region] and continue to do so. One of the things I heard over and over again is that we were not doing as good a job as we would hope in aligning our educator preparation program with the needs of schools and communities. At least that was their perspective.
>
> What I wanted to do was to help all of us understand that it was not going to be fruitful for our teachers and superintendents and other P-12 personal to view the development of candidates as the sole responsibility of Higher Ed. It could not be viewed that way. My sense is it means if there's a problem in one area, it is a problem for us all. Again, we're all part of the solution, and if we're not being part of the solution then we are part of the problem. So it is owning up to the fact that we're all part of the problem, that we have a responsibility to find a solution to the challenges. (Dean of Education and Human Services)

She further recognized the symbiotic interdependence between universities and schools in how children learn, how candidates are trained and gain field experience, how teachers teach and mentor candidates, and the imperative for university faculty to participate directly in local schools:

> The schools are our labs. One of the most salient areas of preparation is the field experience and the professional internship that happens in the schools by teachers already in the field mentoring teacher candidates. And that meant the products we were graduating from [our] University were not simply our product. It was the region's product. It was the product of all of us . . . . It became clear to me, that it was important that our faculty understand that their role in preparing the candidates was only half of the story. In order for us to make theory connect with practice, our faculty had to understand very clearly the environment they were placing our students in. They had to understand what was on the mind of teachers in the schools, the principals in schools, the superintendents in the schools. And while many of our faculty have been former teachers, that experience at some point, becomes stale. You have to remain current and that meant we needed to be in the schools ourselves, and we needed to be listening to what lead teachers, principals, and superintendents tell us. And they have been telling us the same thing for years. At least I've been hearing the same thing for years. (Dean of Education and Human Services)

The idea that a university, regional schools, and communities should share responsibility for children's education mirrors Senge's et al. (2000) notion of "learning communities":

> An effectively operating community (or classroom or school) is one where people recognize the webs of invisible influence, seek to strengthen them, and feel responsible to everyone

> connected to them. When that breaks down, children fall through the cracks and are lost. (Senge et al., 2000, p. 18)

The Dean's "walk-about" off the University campus to regional schools sparked the attention of education communities as both an extraordinary gesture and a solid commitment, symbolizing genuine openness to a new relationship between schools and the campus. Two superintendents remarked on the schools' astonishment and on the political risks involved:

> I've been involved with the last five Deans of the College of Education. From those who encouraged things to happen to those who were not actively involved, didn't always follow-through, to a dean who was extremely removed and seemed not to want any input from the public schools. [This current dean] comes with a sincere active committed interest in working with the schools. I think there's a huge difference. (Superintendent C)

> Oh I can tell you that she visited [local schools]. And if you talk to the teachers, some of whom have been there a long time, they had never seen a dean from a college at [the] University in their building. She came and visited [classrooms] and after-school programs and some other kinds of programs that were going on there. And took the time to do that. I think that people recognize that she is busy. But again it goes back to that she is showing what she is willing to do. And also . . . my guess is that she's taken some hits to do some of those things. I mean politically. (Superintendent B)

The Dean's presence spoke louder than words to these schools, initiating a new relationship across institutions. Concurrently, her participation in RSAA meetings resulted in tentative discussions with regional educators who began, in 2007, to informally explore key educational concerns in the region. Although they all shared RSAA's goals for equitable school funding, these educators realized that wider issues for the region's education remained unaddressed including the quality of pedagogy, preservice teacher preparation at the University, candidate mentorship in the schools, use of resources and technology, in-service teacher professional development, school leadership, faculty attentiveness to the region, and schools' relationships with the University's College of Education and Human Services.

The most pressing determination was to change how teachers were prepared. As this informal group began to transform itself into the fledgling collaborative organization that would become C&C, the uniqueness of an endeavor that crossed organizational boundaries with participants sharing equal roles became clear, as the C&C supporter reflected:

> First I think that C&C has played a vital role to identify the need to change the way we train teachers to teach in this region. And then the next way is to identify methods that teachers need to use in the classroom to what they are currently using, or to refine what they are using where to identify the strengths of what they are currently using. One of the things I've noticed at the very beginning is the absolute change in the culture between Higher Ed and [regional] Public Ed (K-12). Because the two cultures did not interact, and traditionally have not interacted. One of the favorite things of K-12 in [the State] for years has been to say one of the drivers is Higher Ed. They're the bus drivers. They are going to take us there. Because they know. Or they think they know. And one of the things that C&C has done is to put everyone in the same room so that they are actually talking about the same topic and sharing ideas on a one-to-one equal basis. (C&C supporter)

## *The Right Point in Time*

To the C&C faculty, the impetus to form partnerships was appropriate, with a sense that "the time was right," both locally and nationally. Partnerships were seen as a natural vehicle for education transformations that were already moving in collaborative directions, partly motivated by "systems thinking" and "learning organization" models of education (Fullan, 1993; Senge, 1990; 2000). The following dialogue captures how the C&C collaborative model mirrors an historic national continuum of new teacher preparation models that were fostering collaboration across education stakeholders:

> We had a new dean, and new ideas seem to come with new deans. And the time for this kind of innovation was right. Not just because there was a new dean, but because there were some felt needs, both locally and I suspect nationally about the connection between higher education and both the general public and our colleagues in K-12. All rotating around teacher preparation by and large. In decades before, inroads had been made to bridge the gulf that separates. For instance in 1980 the idea of early field experiences captured people's imagination and abilities to build a bridge across. And that idea has taken shape and sustained over time. Then in the mid nineties to 2000, the professional development school idea emerged to strengthen what prior to that was known as field experience.
>
> But it still was not enough. And so it was time to get more systematic in tune with the given ways of thinking with regards to teacher preparation and going the next distance with building communications and connections between P-12 schools and higher education over the preparation and continuing professional development of teachers. (Faculty B)

Faculty A, using an external and historic perspective from his experience of partnership development, responded:

> I agree with [Faculty B's] accounting of the historical perspective and the nationwide interest in partnership . . . . When I was interviewing and thinking about coming here and I looked at the website, I looked at RSAA, the City-Country Collaborative, and the Teachers' Advancement Collaborative, and C&C. What I see is that here it's been realized to some extent. What we were talking about [at my previous university] was how we would try to get these people together and what would motivate them to be together, and what would they get out of it, given that their own institutions that command their first loyalty, and what would they have to contribute to this mega organization.
>
> But I think there is a genuine interest [here at this university] in this partnering and exploring how we do partnerships in different ways. So I think it fits a really well . . . . In some part [the Dean] comes from an environment [of collaboration] too, so that does reflect a national perspective. Then coming out of the historical development of seeing more and more possibilities, as earlier projects have been realized, has been satisfying and fulfilling and fruitful. Let's do more. Let's see what else we can do with this. (Faculty A)

The C&C supporter expressed a similar belief in the "rightness" of people and timing to share a common vision:

> Number one, you have to have the right people there to start with. And then keep the right people coming, and that is the key. You have to have leaders, you have to have workers, and you have to have the vision. They all have to come together, because they all share the same vision. (C&C supporter)

## *Articulating a Shared Vision of Change*

The significance of generating a common vision of change among members of school communities and partnerships, including specific facilitative processes, has been discussed in Senge et al. (2000), Fullan (1993), Kezar and Lester (2009), and Ravid and Handler (2001). Senge et al. (2000) wrote that the shared vision process has three purposes: to provide participants "enormous relief" from pent-up tensions over current concerns; to become "generative" by enabling expression of hope for children and the community and therefore creating mutual trust; and to give people "the inherent satisfaction of recreating the school together, with one another's support–including those they have mistrusted in the past" (pp. 290–291).

In 2007, the original informal group of educators assembled over 100 stakeholders from diverse organizations and communities throughout the region. Using the I-Wheel instrument and software from the Institute for Strategic Exploration (http://strategicexploration.com/implications-wheel/software/) to envision the implications of change, a series of group sessions took place over several days to respond to the core question:

> *What are the possible implications of creating an aligned, agile, regional system of professional learning that meets the unique educational needs of children and the broader demands of a global society?*

These events and the subsequent fine-tuning of findings of the needs analysis generated hundreds of specific statements of inferred change emanating from 10 basic categories evoked by the core question. While the I-Wheel can be considered merely a "technology tool" as Faculty B and Superintendent A each described it, the actual experience of participating in exhaustive interactive brainstorming and the extensive lists of imagined possibilities became the cornerstone for a heightened consciousness among participants about the potential for change in regional education, change they could take ownership for:

> So we put together an implication wheel process . . . and we brought something like 90 to 100 people together and we talked to them about the implications of changing teacher training in a way that teachers could help influence student learning [for this region]. Participants were superintendents, high school principals, teachers, high school students, first and second year candidates at [the University], university professors, and obviously we tried to get a few parents and lay people involved in it. We spent a whole day trying to identify what the implications of that training would be. And we came up with a pretty decent body of knowledge that we were able to come back to later in a separate meeting and examine whether they were a good thing, or bad thing, a likely thing, or an unlikely thing. How, if they were bad things, how we might then be able to deal with them. How, if they were a good thing, how we might be able to accomplish them . . . . From that the concept of the three different working groups . . . was put together, and I think the university has used the information to drive the way they look it teacher training. (Superintendent A)

Soon after the I-Wheel process was completed, a series of focus group meetings was held at three locations across the region, bringing together a cross-section of stakeholders from the education sector, extending the needs analysis and further contributing to understanding the region's educational issues.

## Dynamic 2: Crafting Agile Alignment

### *Non-Hierarchical Organization*

While organizational alignment and agility would seem to be incongruous, these forces, written into C&C's purpose statement, keep it responsive, able to foster collaboration among participants, and adaptive to new concerns in the changing educational environment. C&C lacks a traditional organizational structure, but instead relies on fluidity, even porosity, to define its shape, enabling quick response to new interests as they arise, rather than restrictions of fixed form and procedures in conventional institutions.

While C&C meets as a whole group every 3 months and has four spin-off "design teams" (developing specific system changes such as aligning curricula, fostering new models of candidate mentoring, redesigning the candidate residency program, and using technology), it has neither a hierarchical configuration nor a chosen leader, though the Dean acts as the undesignated coordinator. The Dean stated, "It's not hierarchical. In fact we have an outside facilitator who facilitates the meetings. Beyond the responsibility to identify solutions, there's not any one of us at the table who can do that objectively. We need an outside person who can hear and listen objectively and keep us focused." The expectations of C&C's participants are primarily associated with change processes for expanding the influence of their vision for educational improvement. Superintendent D noted that C&C is "the vehicle to make other things happen. It's not an entity in and of itself."

The Dean associated flexibility with responsiveness to change, noting that by not having a fixed membership, the group had been able to anticipate change and even provide leadership for change:

> We have had to be responsive to the change that is taking place at the Federal level, at the State level, our in schools and Higher Ed . . . . So we have added different people to the committee to help us be responsive and people have come in and out based on their interest in what we're focusing on. The group is not a static group. It has to be responsive to change. It can be very difficult to be responsive to change. What I found is because we have continued to meet, that when change has occurred we have been ahead of that change. We've not been behind the change, we been ahead of it. (Dean of Education and Human Services)

Faculty B suggested that "getting past that kind of structural need . . . is the potential for an organization like C&C . . . Examples might be Go-Green, or MoveOn.org as a loosely coupled organization . . . . They seem to be the way of the 20th century. Everything is redefined now." She identified similar "amorphousness" in the design teams, which produced generativity and synergism:

> And there's an amorphousness in how people understand about the charge to each of the design teams . . . . You'll see there's a coupling between Design Team One and Two. They both go back to the same thing, that Design Team Two is more field- based and Design Team One is more faculty-based because they are working on the undergrad curriculum. Design Team Two is working on how the curriculum is received. Which is a bifurcation.

> But the fact is that the two design teams are supposed to come together to work all that out, and that's where this synergy will be, the generative work. (Faculty B)

Thus the lack of structure actually enhanced the collaborative functioning of the C&C in its ability to bring members together for creative work.

## *Bridging Boundaries*

C&C was also seen as cutting across institutional boundaries in significant ways, allowing formerly competitive institutions to collaborate on teacher education. Faculty B observed the shift from competition to collaboration:

> Historically we are all in competition, and we all have our designated regions with imaginary lines that divide up the field. But the goal of the whole idea [of C&C] is about the agile aligned system. We all draw from each other's areas. It's one big area, not a divided one. It's a united area. And the outcome we produce, we place teachers all over [the region]. (Faculty B)

Regarding the cooperativeness of faculty across institutions, she said, "It's exciting! The responsiveness of the faculty from the other Higher Ed institutions has been intriguing to me." Illustrating this sharing, the C&C supporter told of the lack of proprietary possessiveness regarding data generated by the University during its focus group meetings. From the very beginning the Dean has said, "We'll share this data with everybody, we will a share the focus group data with the other universities." "What great data to share with them so they can too change their curriculum! Now I see that as a win-win for everybody" (C&C supporter).

Superintendent B also observed that with C&C, there had been a shift from competition to mutual benefit. Citing another smaller regional university that could not compete with the resources of the University, he noted that through C&C, the "conversation" has changed to

> . . . now you are collaborating with them, what do you bring to the table, and how do you benefit? In a real collaboration everyone benefits. If you can get to that point, and I think we are moving to that more and more, a lot of these turf issues are not going to be significant obstacles.

Collaboration across institutions also meant integrating different philosophies of education, particularly between schools and universities. Superintendent A remarked on the merging of academic and practical approaches:

> The University people had their thoughts about teacher training. The superintendents had their thoughts about teacher training. And I don't know that they were that dissimilar. The piece that was interesting was how to get–you know there's a balance between theory and practice.

Similarly Faculty B framed the bridging process as being mutually beneficial across groups:

> Each constituent group is bringing particular ways of thinking about, perceiving, believing about things that are becoming a concern of all. Not just the group . . . . when you

> have a design team that's trying to come upon a project, and a focus, it's giving people the opportunity to make their frames of reference visible for each other, not just not just . . . singing to the choir. As we may have been doing in the past.
>
> So when the questions are about the practice of teacher preparation and continuing professional development, we have got a win-win situation to bring these people back. Even though we all have our different frames of reference that derive from our own preparations for teaching and from the work environments. (Faculty B)

## *Seeking Common Ground*

Accounts of the initial C&C meetings indicate that the first encounter between two interdependent yet estranged groups was an extraordinary attempt to bridge quite different prior experiences with each other, experiences that had grown to the level of distrust. As Faculty B stated, "We didn't know each other very well." Superintendent B reported, "When [the Dean] first asked us to come to the meetings, a lot of people were guarded in that we weren't really sure that when she said 'I really want you as a partner,' that she wanted a partner." Superintendent A recounted similar uncertainty but praised the University for being candid and reflective about teacher training quality:

> Oh the first meeting was kind of interesting because no one knew what it would be like. We didn't know the Dean, and the Dean didn't know us. Some people went to the meeting and they shared their feelings. The teacher training institution certainly should be commended, You know they did the "mirror mirror on the wall" thing about the teachers that they produce. The superintendents were extremely pleased that the Dean and the faculty would be willing to have that kind of conversation. (Superintendent A)

Asked what occurred at the end of the first meeting, Superintendent A offered a fitting anthropological analogy:

> The time the leaders of the Indian tribes would get together and just talk. And they would just talk . . . and have a conversation and they agreed to get together and talk some more. And that's what we did. And it was good.

Two other superintendents reiterated surprise at the gesture that the Dean extended to actively seek common ground about real issues:

> Superintendent D: And I think the difference is that committees have been, and always have been, involvement of stakeholders. You know these are just key words, they are buzzwords. Where people say "oh, have got to have a committee, and that I have stakeholders."
>
> Superintendent C [with irony]: Or "I've got to have some local superintendents represented on it."
>
> Superintendent D: The difference is I do not believe that [the Dean] approached it from that perspective. I think her perspective was, "Look, I've been going to RSAA meetings for about six months now, and quite honestly I am hearing from different people that there are these concerns, and I have also noticed these concerns of my own. Let's put together a committee to talk about it, whether we can find some common ground here."

## Dynamic 3: Creating Equitable Participation

### *Membership and Participation Roles*

As participants pointed out, C&C lacks a fixed membership. The C&C supporter recalled how the original group was formed of persons with a wide range of perspectives, including those who might detract from its chief goals as a way to gain understanding of viewpoints:

> You know there's lots of different ways of doing that. You could have a leader say, "I'm going to go out and start looking for people who have my vision." That's one way. Or you could bring people together, let's say a faculty, or a staff at a school, and say, "What are our needs? That's talk about why we do this" and come up with a shared vision. So you could do it as one person standing. Or you could do with the larger group . . . and from that you than begin to identify partners of the collaboration, outside. Who are those key players? Who are the [Superintendent Ds]? Who are the [Superintendent As]? And who are the ESC [Education Service Center] superintendents who are going to be there and be sustainable? Who are the key faculty drivers? And yet at the same time . . . who are the ones were going to fight you every inch of the way? 'Cause you need to identify those people too. My philosophy is that you bring them to the table, and you keep them there till either they convert, or they go away screaming and yelling saying, "I'll never do this!" but you have given them the opportunity to be heard. And you've given them what they believe is full light. And to me, that helps the rest of the group to say, "I understand them better now. They don't share my vision, I understand them, but they don't share my vision." And that helps the rest of the group move on. (C&C supporter)

He speculated on how participants who span dual roles, as members of C&C, and as members of their own organizations, become ready to contribute:

> I believe they come representing their organizations, but once there, they are part of the C&C and they are comfortable in that group. It takes a while sometimes, but the process has to allow them to enter it when they're ready to do that. Some are ready to jump in with both feet, right at beginning. Some are processors, that is what I call them, and they'll sit back and analyze everything. And when they're ready you have to have an opening for them to be able to jump in. (C&C supporter)

### *Equals at the Table*

In keeping with the lack of hierarchy, the predominant metaphor members used for participation in C&C was being *at the table,* an analogy suggesting a horizontal surface, a round-table discussion, or forum where all views were equally welcome, rather than a vertical workplace or lecture hall. Members used the term to frame the new equality among C&C members from across stakeholder groups who previously did not contribute equally to educational or political discussions. The word serves the partnership concept well, with members associating it with such referents as having equal participation, having a voice, reducing the pecking order, showing that school and district administrators have expertise, bringing ideas forward, fostering

collective ownership, and showing commitment. As a C&C supporter observed, "at that table they are all equals."

## *Building Relationships*

Participants mentioned the building of relationships across stakeholder groups created loyalty and willingness to work voluntarily on behalf of the organization. Two superintendents gave the example of the Dean calling upon members for support. Superintendent B stated, "I think that everyone round the table has had a call from [the Dean], and I would say, 'I can't, I have to be a field trial in [another state].' And she'd say, 'I really need you to be here.' And I'd say, 'Oh, I think I could get back!' [laughter]. That point about building relationships, and being willing to take time to build relationships, that's critical, that's really critical." Similarly, Superintendent C noted:

> The committee serves as the vehicle for building relationships. I think this Dean has really strong relationships with practitioners because of the committee . . . For example if the facilitator cannot be here today, she calls [Superintendent D], and says "Will you do this?" You know if she needs something from [Superintendent B], she calls him, she has his telephone number. But I don't think those relationships could have built over time without a seat at the table, without strong communication taking place. (Superintendent C)

## *Collaborative Decision Making*

While hard decision making was not often required of C&C, it is relevant to understand the give and take that members use when resolving conflicting issues while remaining peers. Faculty B viewed this negotiation process as a merging of interests:

> So it is through that work and the productivity of it that requires interconnections in what people are bringing to the table and think is significant. If there's a product, in order to get a product, you have to have the convergence of those ideas and a collective ownership.

Superintendent B also described how talk and continued talk are the basis for resolution if differing views occur in meetings where the Dean and the superintendents disagree:

> When [the Dean] comes to the meeting and she wants something done, she has been able to articulate why that is in our best interest to do that. If it is a negative response from the superintendents, she's willing to talk about what it will take to change that. And sometimes we can't reach agreement on what will take, but we keep going back to the table. (Superintendent B)

These accounts of seeking of common ground, of returning to "the table," suggest consensus building has served C&C well to maintain civil and productive connections over and above specific differing issues.

### *Sharing Responsibility*

Another mode of equitable participation is the sharing of responsibility. Superintendent B recalled a time when the Dean reversed roles and made him accept responsibility, a first experience for him:

> I had an exchange with [the Dean] that went something like this. There was a disagreement, and I said to her "What are you going to do about it?" And she said to me, "What are *you* going to do about it? You're in this too!" So what do you say? That was the first time I ever had . . . and I worked with some of those earlier Dean's before too. And had experiences where the superintendents would get up and walk out of the room because of the dialogue that was going on and lack of respect for the public schools. That was the first time anyone ever said to me, "And hey, this is your problem too, we are in this together. I'm going to do my part, but what are you willing to do?" I think those are the questions that get asked more and more. (Superintendent B)

## Dynamic 4: Generating Collaboration through Language and Symbols

Applying the concept of culture to organizations is a way of understanding the communal sense-making and unity that occurs among members, processes which typically differ from production-based organizational work. Researchers commonly use organizational stories, myths, idiom, heroes, rituals, and symbols to explore "shared meanings" among members. "Traditional views [of organizations] emphasize organizational reality and objectivity. The symbolic frame counterposes a set of concepts that emphasize the complexity and ambiguity of organizational phenomena, as well as the ways in which symbols mediate the meaning of organizational events and activities" (Bolman & Deal, 1991 p. 270). We suggest that symbols and linguistic expressions form frames of reference that anchor members, giving significance and cohesion to their participation. However, in a "loosely coupled" collaborative organization like C&C, where members are not employees, seldom share physical space, and owe no official allegiance to each other, cultural systems may be lacking. Yet, C&C reveals strong elements of a budding culture. As we have documented, C&C possesses a significant purpose statement, a defined shared vision resulting from the I-Wheel process, and is strongly influenced by the contiguous cultures of its members, Appalachia, and education. Earlier we explored two cultural phenomena, the *table* metaphor and the cultural model of the Appalachian mindset. Here we examine three additional symbolic representations: C&C's name, its purpose statement, and the I-Wheel symbol.

### *Word Power: Naming the Organization. Adopting the Purpose Statement*

The repetition of significant organizational words, slogans, maxims and catchphrases, both literal and metaphoric, has the power to evoke a symbolic frame or

organizational culture (Bolman & Deal, 1991) and enable members to situate themselves within the organization's purpose and functions. Organizational words and stories make mutual sense-making possible and provide members with common meanings for orientation and continuity (Boje, 2001; Wallemacq & Sims, 1998). While C&C was not the primary organization of its members, and members were not often co-located to share conversation, nevertheless certain words used in the organization were frequently repeated and carried special significance.

The organization's name *Communication and Connections* rang true with members and at times aroused them to active participation. Asked about the title's origins, Faculty B described its gradual adoption by "a few key players, who were trying to make the connection." The name changed people's perception of a vaguely identified need to link together into a tangible concept that motivated them to join the membership. It "captures the need that was felt but unnamed. And as soon as that got a name, people started saying, oh I will sign up for that." The name resonated with members' need to become acquainted with each other: "the name C&C captured in two words . . . the needs of the region to communicate and connect. We didn't know each other very well . . . *communications* and *connections* –click click [laugh]" (Faculty B). To the C&C supporter, "communications and connections" was an imperfect term but one that signaled the function of collaboration, of sharing and equality:

> You know every time I write that term [communication and connections] I think it's not quite the right term. Yet that's exactly what they do. It's not a committee and I call it more than a partnership. I call it a collaborative. Because to me the word collaborative means sharing on an equal basis. (C&C supporter)

Superintendent A associated the organization's title with a "burst" that moved collaborators beyond the more static RSAA organization:

> RSAA was the organization that brought the Deans and the faculty together in the same room with superintendents of schools in the RSAA region. [However] C&C was a platform for the vehicle by which the conversations took place that burst the communications and connections component. (Superintendent A)

His shift from passive metaphors of *being together in the same room, platform,* and *vehicle* to describe RSAA, to the unexpectedly forceful metaphor *burst* in association with "communications and connections" implies an abrupt energetic change, even an explosion, from a prosaic way of functioning to dynamic collaboration.

In similar fashion C&C's purpose statement, to create "an aligned, agile, regional system of professional learning that meets the unique educational needs of the children and broader demands of a global society," stated formally at the opening of C&C meetings and documents, had become internalized by participants and the concepts were sufficiently familiar that they used them spontaneously in their discussion. The following interactive conversation captures a moment of shared meaning between the two faculty who used organizational concepts found in the purpose statement and collaboratively reconstructed them in their own dialogue: agile, aligned, aligned responsiveness, locally, regionally, nationally, ready to respond, ability to respond, and national prominence:

> Faculty B: So I think this is a new turn for constituent groups throughout [the region]. And it makes us ready to respond. The whole theme, the whole idea is developing, what is it, agile, is ah . . . .
>
> Faculty A [voice over Faculty B]: . . . aligned . . .
>
> Faculty B: . . . aligned responsiveness. The ability to respond to what is needed, when it is needed, in order to be recognized in the important venues for teacher preparation, locally, at the state level, nationally, we're increasingly feeling very ready and able to do that.
>
> Faculty A: Yes, I personally agree that for a regional university, the best way, especially for the field that we're in, is to be successful locally and in the region. That would bring national prominence in teacher education. Certainly you have to be successful locally to make a claim nationally.

This short exchange, with overlapping voices and participants filling in and repeating key organizational words for each other (*agile, aligned, aligned*) and shifting in chorus from local to state to national venues illustrates that core C&C values found in the purpose statement were ingrained in each participant and available for unprompted recall when members were talking together. The words are also generative, acting as springboards to wider interpretation beyond the original purpose statement (e.g., ability to respond, gaining national prominence, recognition).

Tannen (1989) describes the repetition of words in conversation as both facilitating meaning and bonding the participants to each other in "mutual participation in sense-making" noting that "each time a word or phrase is repeated, its meaning is altered" and "the audience reinterprets the meaning of the word or phrase in light of the accretion, juxtaposition, or expansion" (p. 52). She notes, "The pattern of repeated and varied sounds, words, phrases, sentences, and longer discourse sequences gives the impression, indeed the reality, of a shared universe of discourse" (p. 52). The faculty dialogue illustrates these phenomena. By repeating phrases and collaboratively constructing their individual interpretation of the organization's purpose statement, and by gently modifying the purpose using new but related ideas, the faculty are sharing an important moment of mutual understanding regarding the significance of the organization, the communication and alignment of C&C's undertaking.

## *Milieu of Interactive Dialogue*

Related to symbolic language, interpersonal dialogue in an organization is a different kind of orienting medium, a fluid milieu that gives an organization its daily life. Three members referred explicitly to sharing verbal language but in different contexts. As shown earlier, Superintendent A recognized that it was "conversations" that "burst" the C&C as an organization. Superintendent B referred to a "dialogue about the future" begun by the Dean which supported cooperation rather than competition among schools and universities. To him, "it's the conversation [that's] changed to 'Now you are collaborating with them, what do you bring to the table, and how do you benefit?' In a real collaboration everyone benefits." Faculty B stated that the

I-Wheel "started the conversation and started us listening to each other," and also described talk as driving the organization:

> That's the mystery of it. We are too accustomed to the structures that make everything visible. But the least, and maybe at the most, it is an opportunity to go to those meetings can get acquainted, and talk, and share. And talk drives the thing. (Faculty B)

## *Image of the Wheel*

The I-Wheel (http://strategicexploration.com/implications-wheel/software/) exercise not only generated specific ideas for changing the education system, its completion became a landmark occasion for the spiraling out of new concepts of education from the center and a metaphor of mutual accomplishment as members became aware of the immense possibilities of collaboration. The I-Wheel (http://strategicexploration.com/implications-wheel/software/) event was a symbolic orientating point for C&C members as the first concrete enactment that shaped the organization's purpose. Participants remarked on its significance, for the data it gathered, for the collective process across stakeholders that it instigated, and for the opportunities it generated for collaborative relationships, task teams, and teacher training:

> When we did the I-Wheel, teachers . . . [came from] all over the region because they were representatives. There were high school students who participated. PTA chair persons. Parent-volunteer types. So there's more awareness about this kind of work distributed across the region than you might imagine. (Faculty B)

> Everybody's ideas are in there. Everybody's ideas are retrievable. And what is it? It is just a tool. But the I-Wheel started the conversation and started us listening to each other. (Faculty B)

> And the initial data was overwhelming– my first glance at it was, what the heck is all of this? But the process– and it is a process–allowed the groups to begin to sort it into specific areas. And from that we were able, the C&C was able, to really break down to the action items we could really work on. (C&C supporter)

> So we felt that from the Implication Wheel . . . we had a pretty decent research base for the information that we had unearthed. That research base would be a good place to begin from as we looked at how we might change some things. And the three design teams came out of that . . . . I think from that the concept of the three different working groups [design teams] the Dean put together, and I think the University has used the information to drive the way they look it teacher training. (Superintendent A)

Faculty B also saw the I-Wheel exercise as giving rise to the design teams and sharing:

> I think that in the C&C everybody sees some aspects. Nobody sees all aspects. And to try to summarize anyone individual's experiences is to underestimate the whole. You have to talk to several. And figure out what. And that's the struggle for a lot of us, because we like to know everything about everything. And the design teams are descendants of the I-Wheel. Their wheels are spinning. And when they come together it's to share some aspects, but you can't possibly share all. And I think that's part of the learning that we have to do. (Faculty B)

In this case, the I-Wheel becomes a parent metaphor with "descendants" of the design teams. The speaker expresses frustration with the complexity of numerous perspectives and activities saying "wheels are spinning." Expanding on the generative power of the I-Wheel, Faculty A linked it with model formation, where the design teams "could serve as a model for how further work could be done, and what's happened, the whole narrative of the I-Wheel, and the design teams." He further suggested developing design teams at all C&C universities, saying "then perhaps universities would be less competitive and they would be more of a collaborative effort to build a knowledge base on a particular a region with particular needs. That's how I was thinking how the design teams could become models. Other people could develop similar things and they could become models too for us."

## C&C Impact on Teacher Education and Regional Schools

While still an emerging organization, C&C has had significant impact on regional teacher education. Its flexibility has enabled the formation of specifically focused spinoff projects which seek tangible solutions to issues and areas of change identified by the core organization. The most visible are four Design Teams, the joint endeavors of administrators, university faculty, school teachers, and superintendents who combine forces to investigate and develop new models of teacher education. Areas currently under development by Design Teams include: (a) a redesign of the University curriculum to align courses and learning outcomes with newly identified professional skills required of new teachers such as improved classroom management and student assessment, two needs of local schools identified by the I-Wheel where the traditional University curriculum had been weak; (b) fresh approaches for candidates to gain teaching experience and mentoring from veteran teachers in the schools; (c) innovative teacher residency models that align regional practical experience with impending changes at State and Federal levels; and (d) new applications of multimedia technologies and infrastructure to augment the development of current and prospective teachers. To Faculty A, the emphasis on creativity and design in the context of functional education outcomes was eye-opening:

> It is called a design team. That is the word, *design*. It is not an assessment or evidence. I guess it would be like a research lab, or think tank. Having an institution or some kind of organization that is devoted to [design] is valuable, however the process occurs . . . . there's a lot discussed about . . . evidence-based decision-making. But very little has been done . . . about how you go from evidence or data to something new, how you get there. And it is a big question to me whether that can be done systematically, or if is it an open, creative process. Can these kinds of open generative processes be regulated, or monitored, or managed? But the design teams recognize the importance of invention, of creating something new and they attempt to do it in a systematic way, or at least where it's planned that we're going to go in and create something new as a group. And I think that is really novel. Because . . . there is a lot said about assessment, but very little about development or generation or recreation of new structures or entities, or how we do that in a planful way. I really like that part. (Faculty A)

A second outcome is C&C's increasing public recognition within professional educator circles. Its story has been told in several formal presentations at national conferences such as AACTE and meetings of the State school board and teachers' associations. Its model has been the foundation for successful grant applications and has influenced how educators at all levels regard processes for education change. Another impact has been the influence of C&C on the professional status of member organizations themselves. In 2009 during the accreditation renewal process of the College of Education and Human Services by National Council of Accreditation for Teacher Education, the compelling testimony provided by regional superintendents and other C&C members regarding significant changes in the region's schools and in teacher education programs brought about by the collaborative efforts of C&C was very well received.

In addition to broad inter-organizational gains, participants in the study cited impressive benefits for individual student candidates and local schools. Superintendents spoke of the new University relationships reinvigorating their schools with a fresh perspective for both schoolchildren and teachers. Superintendent B remarked, "And that's a dramatic change from when [a local school district] seemed like the last outpost." One superintendent said that the number of teacher candidates in his district from the University had tripled, while another stated:

> In my district the percentage of students who believe that they're going to go to college and graduate has traditionally been very small. So I think that by developing a relationship with the university students, they are saying, "You know maybe it's not that different, maybe it's not that difficult." (Superintendent D)

Superintendents also noted a significant change in the University's faculty. Superintendent D said, "The University is listening and immediately responding to concerns from the field with regards to how principals are prepared, how teachers are prepared." Superintendent C observed an increase in school—university partnership agreements where student candidates could gain practical experience.

Perhaps the most fundamental outcome has been the development of C&C as a platform for articulating regional educational issues that cross over organizational boundaries and benefit from collective attention and action. When issues are seen as significant to the education concerns of the region, they are jointly addressed by the widening scope of C&C stakeholders which has now expanded beyond the original University faculty, principals and superintendents and includes deans and other representatives of additional higher education institutions in the region, program directors of several teacher professional development projects, and a permanent representative from the State Department of Education. Individual institutions no longer have to "go it alone" to solve problems independently.

## Final Thoughts

While many colleges of education solicit local schools systems to be a venue for their teacher candidates to gain teaching practice, C&C is different. This model

brings together regional educational stakeholders on an equal basis to jointly solve education needs. All members of C&C are integrated as essential partners, peers and colleagues whose ideas are needed and respected, in a mutually collaborative process in shared change endeavors. To do so, external organizations and their personnel have roles beyond "advisory boards," a largely one-directional process where members give recommendations but do not directly share in the outcomes nor gain much for their own organizations. In C&C all members and the organizations they represent have become part of a collegial partnership to make change together. Each contributes to the change processes that evolve from the partnership and benefits correspondingly from decisions of the collaboration. Yet C&C's collaborative model is more than one that only bridges institutions. Members of C&C observe that it reaches down to the schoolchildren of the region. One member noted that a "mind shift" is needed to move from viewing only their own institutions' needs to thinking in terms of collaborative processes that span all organizations to ultimately better the lives of the children in the region. As the C&C supporter said, "It amazes me that the process works, but it works because it's driven from the ground where the needs are."

This thriving and timely partnership between the College of Education and Human Services and its regional colleagues has contributed to the redesign of the teacher preparation programs to meet the needs of the children and families in this region, and to better prepare the regions' schools for the challenges they face in the 21st century.

## Notes

All interviews were conducted independently by the second author. The names of places, people, and organizations were withheld or substituted per requirements of the University's Institutional Review Research Board.

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G. Wan, D.M. Gut (eds.), *Bringing Schools into the 21st Century*, Explorations of Educational Purpose 13, DOI 10.1007/978-94-007-0268-4,

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