21st Century Standards and Curriculum: Current Research and Practice

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Abstract

The integration of Common Core State Standards (CCSS) and 21st century skills in the curriculum is not only beneficial to students and teachers, but also necessary to prepare our youth for their future careers. In an age of education where standardized tests determine the success of our schools, it is important to allow students the creativity and use the power of technology to support necessary skills and learn in unique ways. By allowing creative thinking and gauging understanding of content standards through a portfolio based system, students can display their concept retention while producing tangible and valuable outcomes. The future of our students depends on flexibility and resourcefulness not teaching to the test. Education needs to make an instructional shift in order to ensure our students succeed as the innovators of the future. This article explores 21st century skills, as they are defined and describes methods that allow students to enhance these skills. It also highlights how educators can link students' current knowledge with authentic experiences that motivate, as well as allow them to create and collaborate using the latest technologies. The article concludes with a discussion around benefits of integrating multimedia in the classroom, including giving students the opportunity to enhance academic and social skills as they communicate and share information, organize their ideas, and express opinions while preparing a project or conducting research through online experience.

Keywords: CCSS, 21st century skills, Integrating 21st century skills to the Curriculum, Methods of instruction 21st Century

1. Introduction

Over the past decades, education has been based on teaching students the "3 R's" which are reading, writing and arithmetic as well as some simple subjects in social studies and language. In this traditional approach, a teacher taught the content by repetition, making students say or write the same thing over and over again which made class less interesting. This model is based upon a teacher-centered focus on rote learning, requiring students to memorize a large amount of information in order to expand their knowledge. Teachers then assess student knowledge by using tests and quizzes at the end of the unit or year in order to identify students' learning level. Today, however, curriculum developers know the importance of developing educational goals and teaching methods in order to prepare students for college and their future careers. As a result, a majority of states participated in the preparation of common standards in 2010 in order to provide students with academic knowledge and skills needed in the future. These standards are called Common Core State Standards (CCSS).

This paper will raise several questions about these standards, such as 1) how can the CCSS enable students to satisfy 21st century needs, 2) what are the 21st century standards, and 3) how can curriculum and instruction be designed to meet these expectations?

1.1 Common Core State Standards and Partnership for 21st Century Skills

The CCSS integrated the framework of 21st century education prepared by The Partnership for 21st Century Skills (P21). P21 (2006) advocated integrating core academic knowledge, critical thinking, and social skills in teaching and learning to help students master the multi-dimensional abilities that are required in the 21st century. These skills can help students succeed in their future careers by supporting 21st century learning systems to improve outcomes. Integrating the CCSS with P21 can help to complement the 3Rs (core academic content mastery) and 4Cs (critical thinking, communication, collaboration, and creativity) (Partnership for 21st Century Skills, 2006). Hence, the P21 framework and the Common Core State Standards support each other to achieve the future skills that students need (see Figure1). By integrating cognitive learning and skills into curriculum, students can obtain deeper understanding of the subject and try to solve complex problems in the real world
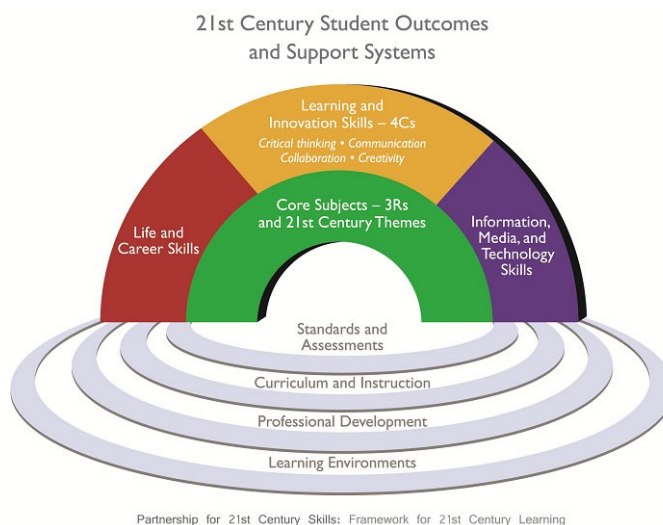
(Wagner et al., 2006).

Figure 1. Framework Partnership for 21st Century Skills

1.2 What are 21st Century Standards?

The Partnership for 21st Century Skills prepared educational standards for the next generation in order to present an appropriate strategy to apply them. The 21st century standards according to P21's website are:

• Focuses on 21st century skills, content knowledge, and expertise
• Builds understanding across and among core subjects as well as 21st century interdisciplinary themes
• Emphasizes deep understanding rather than shallow knowledge
• Engages students with the real world data, tools, and experts they will encounter in college, on the job, and in life
• Allows for multiple measures of mastery

2. Designed Curriculum in the 21st Century Expectation

According to Paige (2009) adopting a 21st century curriculum should blend knowledge, thinking, innovation skills, media, Information and Communication Technology (ICT) literacy, and real life experience in the context of core academic subjects. In order to achieve authentic learning that is demanded in the 21st century, students engage in the learning environment effectively and develop 21st century skills such as critical thinking, problem solving, and collaboration. In this way, students will be prepared with the necessary knowledge and life skills that will help them be successful in their future careers (Lombardi, 2007).

Therefore, curriculum in the 21st century should focus on the construction of knowledge and encourage students to produce the information that has value or meaning to them in order to develop new skills. Preparing curriculum to be connected with the real world can support student participation, their motivation and understanding for the academic subjects, as well as preparing them for adult life (Lombardi, 2007). Researchers stated, "The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people will need for success in college and careers and be positioned to compete successfully in the global economy" (Common Core State Standards Initiative [CCSSI], 2010, p.6).

Additionally, curriculum developers of P21 stated curriculum should be designed in a way that allows students to master knowledge and understand core academic disciplinary knowledge. Also, this curriculum should give students the opportunity to learn and develop various literacies such as civic, financial, environmental, health, and global awareness. Researchers pointed out that "multiliteracy" can enable students to make informed decisions that prepare them to face challenges in the global community and give them the opportunity to be successful in the workplace (Wiggins & McTighe, 2005). Providing students with different skills sets is essential in order to prepare a generation capable of facing the real world successfully. Ellis (2004) stated, "The knowledge-centered curriculum is an academic curriculum where students are expected to acquire knowledge of

their world as a foundation for adult life" (p. 147).

Today, curriculum and educational decisions should be reviewed and redesigned to integrate future skills explicitly. In the 21st century curriculum, educators must integrate over 75% of future skills (Milestones for Improving Learning and Education [MILE], 2002). Researchers argued that these skills should be both part of the school curriculum and integral to the academic content. Ackerman and Perkins (1989) claimed that thinking skills should be taught as a "meta curriculum" intertwined with traditional core subjects. Herrington and Kervin (2007) argued, "A thinking curriculum is one that provides a deep understanding of the subject and the ability to apply that understanding to the complex, real-world problems that the student will face as an adult" (p. 64).

Students need 21st century skills in order to improve their achievement and promote cognitive processes and the construction of knowledge that prepares them to be successful in their future careers. As a result, teachers should apply different strategies and methods for teaching these skills because there is not one specific strategy or model to achieve this goal.

3. Designed Instruction in the 21st Century Expectation

Teachers play a significant role in helping students develop 21st century skills by applying methods that increase students' abilities. They should use innovative strategies and modern learning technologies that help integrate cognitive and social skills with content knowledge as well as increase student participation in the learning environment in order to promote these future skills. There are many strategies that enhance both learning content and skills while also allowing students to engage in real life.

One such approach is problem-based learning. In this model, students can discuss and analyze different issues and topics that are related to the real world. Also, this approach allows students to investigate problems, provide explanations, generate ideas, analyze data, and make judgments in order to find the appropriate solution. Research has shown that students applying problem-based learning increase their participation in class activities and enhance critical thinking skills (Joyce et al., 2009). Some researchers found a significant correlation between problem-based learning activities and the critical thinking skills that students will need in the 21st century (Drew, 2013). Critical thinking requires a set of higher mental processes that augment students' capacities in problem solving. Trilling and Fadel (2009) defined critical thinking as the ability to analyze, interpret, evaluate, summarize, and synthesize information. These processes can give students the opportunity to be successful. Knowlton (2003) mentioned that using problem solving in teaching students can promote critical thinking skills that help them overcome challenges they may face in the real world. This approach allows students to learn through creative thinking and break through thinking barriers in order to achieve unique, 21st century learning skills. When teachers applied this strategy, they supported students' capacities in critical thinking, self-directed learning and cooperation, as well as social interaction.

Another pedagogy that enhances 21st century skills is cooperative learning. This strategy divides students into different groups with diverse abilities and interests, and has a powerful effect on learning that gives distinctive results. The group's work is more creative because of the deep thought and integration of students' strengths and talents in order to achieve a product. The diversity of students' skills and abilities can encourage creative work where "every person brings something to the table" (Knowlton, 2003). Trilling and Fadel (2009) emphasized that working students in different groups can enhance many aspects such as: mutual respect between team members, estimating teamwork required to complete the joint action, and efforts toward compromises needed to achieve a common goal. In addition, collaborative learning has a positive impact on student abilities such as increasing their motivation and performance as well as developing social interaction. Cooperative learning is an effective strategy to increase student motivation and change it from the external to the internal (Joyce et al., 2009).

Today, teachers should give students the opportunities to engage in various activities that promote cooperative learning such as projects, problems, design and researched-based learning. In these activities, students work together in order to complete the class assignment while increasing their participation, achievement, and motivation to learn. Consequently, collaborative learning allows students to contribute different degrees of prior knowledge, abilities, and aptitudes. Students are also motivated to learn more, as well as learn quicker and with a greater degree of achievement.

Additionally, linking knowledge with the real world is an important component in the 21st century teaching model. This achieves the goal of authentic learning. In this approach, teachers make the classroom more interesting by increasing student participation in class activities and applying the knowledge in real time. Using real world contexts allows students to research information from several resources that are outside the school walls such as interviewing experts and specialists to obtain information in a particular field. This approach allows students to obtain new knowledge and skills instead of listening to lessons and memorizing information in

order to prepare for tests.

Researchers found that linking content with reality lets students engage in the learning environment effectively and promotes future skills such as critical thinking, problem solving, and collaborative learning (Herrington & Kervin, 2007). Students contribute in the construction of their own knowledge and produce the information that has value or meaning to them in order to achieve collaborative work in its truest sense. When students have the opportunity to see the connection between what they are learning and issues of real life, they will be able to be successful in their careers. In this way, students will be prepared with the necessary information and life skills that will help them achieve a future career that has real meaning. Teachers should find useful and effective ways that can support 21st century curriculum and instruction as well as instill necessary skills among students that help them face their challenges successfully. Developers of curriculum and instruction have claimed the essential part of learning in this century is integrating multimedia tools in teaching.

Jacobsen (2001) argued that many technological tools can support different skills such as problem solving, critical thinking, collaborative learning, and the learning environment. For example, portfolios, WebQuests, Guizzes, Wiki, Google site, Digital Storytelling, ePortfolios, and SoftChalk LessonBuilder, Blog, etc., support these skills. Technological tools offer students the option of working in collaborative groups, which may increase student motivation and develop critical thinking. Multimedia tools promote deeper understanding to complete class activities. Some studies found students who used multimedia tools in teaching have higher-level thinking skills than in comparison with traditional teaching methods (Kanuka et al., 2007). Also, the power of technology tools seems to be in their ability to allow students to evaluate their peers' work when using technology. This strategy helps students to develop critical thinking skills that can be obtained by using multimedia tools. By using technology, students can provide meaningful feedback for their peers to improve their work that helps the team effort.

Integrating these tools in education gives students the opportunity to enhance academic and social skills as they communicate and share information, organize their ideas, and express opinions while preparing a project or conducting research through online experience. Robin (2008) argued that educators should use multimedia tools to support students' learning by encouraging them to organize and express their ideas and knowledge in a personal and meaningful way. In this manner, students can work together to prepare their projects, which help them develop communication skills. Moreover, they can deepen collaboration by working in groups to collect the information.

Technology is a powerful tool, which allows students to access information and knowledge by themselves. Teachers should give students the opportunity to research and obtain information in order to develop different skills. As a result, technology can prepare students to "learn how to learn" in order to get information from different Websites. The Internet allows students to expand their knowledge of issues and understand social values in multiple topics such as global warming, famine, poverty, health issues, global population explosion and other environmental and social issues. This would allow them to be informed about and able to address the global issues suffered by society. Multimedia allows for development of the different types of literacies advocated by the CCSS. Technology provides students more practice in reading and writing, as well as online literacy in order to meet their future needs. Drew (2013) said, "Students need to be prepared as skilled and strategic readers, writers, and communicators in online environments" (p. 322). Teachers should "open up the ceiling of teaching" by expanding the information resources to include wider areas outside the walls of school in order to connect students with reality.

Jacobsen (2001) argued that using technological tools in teaching gives students the opportunity to engage in the real world, helping them increase their understanding and develop creativity and innovation skills. There are many options available in the virtual world from which educators can choose in order to achieve real meaning, enabling students to see the real world through their online experience. For instance, video game technologies, role-play in online simulated learning environments, and videos on YouTube can be effective means to show different subjects and issues realistically. 21st century instructors give students the opportunity to expand their knowledge, experience, and skills by building ways to understand the real world. This approach can help teachers enhance current lessons and facilitate discussion about the topics presented by using technological tools, making abstract or conceptual content more understandable (Mueller, 2006). Multimedia tools are the best way to increase student performance and motivation to learn by encouraging discussion, collaboration, problem solving, and innovation, promoting cognitive processes and constructing knowledge.

4. Conclusion

Together, the Common Core State Standards and Partnership for 21st Century Skills emphasize that education should focus on both core academic subject mastery and 21st century skills development. These skills help students to be ready for college and career life. There are various strategies by which to achieve 21st century skills; problem solving, critical thinking, collaborative learning, integration environment, and digital tools in teaching (Tyack, 1974). 21st century curriculum and instruction provides an integrative approach for achieving success for students. Current researchers argue the importance of implementing 21st century curriculum and instruction in schools in order to prepare students who are able to deal with the complex challenges of our age (Rotherham & Willingham, 2009). Future research should consider the implications this has for preparing teachers in the proper ways to embed 21st century skills in their lessons and integrate multimedia tools. In addition, future research must continue to investigate the effects of using 21st century curriculum and instruction on students' cognitive, academic, and social capacities, as well as measuring these effects across different grade levels and subject areas. Trilling and Fadel (2009) emphasized future skills for the 21st century are necessary in order to prepare active citizens who are able to face the challenges of a global society; able to be innovative in order to solve complex problems; and use the power of technology to change the world for the better. Wiggins and McTighe (2005) stated that by combining core academic content and necessary future skills, students can have a bright future. Research has continually shown that the application of 21st century curriculum and instruction is very significant in preparing students with the essential skills that will help them satisfy their desire to be successful in the future.

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