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Knowledge and Understanding of the 21st Century Skills through Educator Externships: Programs in Southern New England

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Summary, Principal Findings and Recommendations of this study:

This study utilized the body of knowledge that exists on emergent workforce development issues, the characteristics of the Millennial generation as they relate to the increasingly high drop-outs rates and the globalization of the workplace, the need for 21st Century Skills to be incorporated into the K-12 curriculum, and an authentic professional development experience for teachers, the educator externship.

The Educator Externship experience is a statistically viable method of authentic professional development to help teachers provide the educational experience that their students, the Millennial generation, are demanding.

The data from this study statistically showed that the Educator Externship Experience as a professional development opportunity did allow the teachers to gain knowledge and understanding of the importance of the 21st Century Skills their students will need in order to succeed in school, careers and life.

Purpose

The Problem: 21st Century Workforce Skill Shortage

The United States confronts an acute shortage of a highly skilled competent workforce in spite 37 years of predictions and warnings to create sweeping changes from the top down in the United States public education system from the reports from the National Center on Education and Economic Development (NCEE, 1983;

NCEE, 1991; NCEE, 2007), which clearly confirms education and economic development are directly linked. According to the America's Promise Alliance, 1.2 million American youth dropout of school every year, costing \$329 billion in lost wages, taxes, and productivity over their lifetimes (America's Promise, 2009).

There have been many studies and recommendations from *A Nation at Risk* (1983) to the report of the New Skills Commission on the Skills of the American Workforce, *Tough Choices or Tough Times* (2007) without a concerted effort to address or implement any of them. In between those years, more reports were published including *America's Choice, High Skills, Low Wages*, (1991), *What Work Requires of Schools* (1992), and the *Secretary's Commission on Achieving Necessary Skills*, the SCANS report. In the 1990's, the leaders of the country backed these initiatives and began to implement changes. In 1992, Congress passed the National Governors' Association Goals 2000 Act, with eight ambitious goals to improve the nation's school to be implemented by the year 2000. These goals stated that: the U.S. students would be first in the world in math and science, the high school graduation rate would be 90%, and, teacher professional development would be continuous. Also in 1994, the School-to-Work Transition Act became law, which provided the funding to states to partner education, government, labor, and business to develop an emergent workforce system that would go to scale and be sustained after the federal dollars were gone.

In the first decade of the new century, the new - at that time - leadership in Washington, focusing on the No Child Left Behind legislation that "raised the bar" for student achievement, prescribed multiple layers of testing as the "cure" for U.S. Education deficits (NCLB, 2001). As a consequence, the nation's education

community lost the impetus for creating a globally competing 21st century workforce.

The dire predictions of losing the middle class and lowering the U.S. standard of living has now happened as tens of thousands of high wage low skilled blue collar jobs have been sent off shore or eliminated due to technology (Kirsch, et al., 2007). Today, high skilled white collar jobs have also been uploaded and downloaded to the newly educated middle class worker in India and/or China. The balance of the world's education has shifted (Friedman, 2007).

In June, 2009, at the Partnership for 21st Century Skills, the West Virginia Chief State School Officer explicitly asked, "How can you [higher education] prepare teachers to teach in a 'flat world'?" A representative from the Change Leadership Group at the Harvard Graduate School of Education stated that there needed to be a complete re-thinking of the profession, and that the education schools are 'broken'. The structure of education is still a model of the industrial era and needs to transform to one of the information era. The Millennials are very different in their style of learning based on their own generational values; they demand relevance through active learning-connecting the school and the workplace to their lives (21st Century Skills Summit, personal communication, June 12, 2009).

Millennials

The fact that today's students, the Millennials, have different learning styles and needs must be addressed in order to keep them engaged in high school and to not drop out (Bridgeland et al., 2006). The drop-out rate in Rhode Island as reported by Kids Count, October, 2009, is currently at 30% in our urban centers and overall in the state is 16%. According to the U.S. Department of Labor, October

2009 (as cited in RI Kids Count, 2009), "90% of the fastest growing jobs in the U.S. and two-thirds of all jobs require some post-secondary education and training". How can students who do not finish high school compete for jobs in this global economy? They simply cannot and the odds are they will be incarcerated or placed on public assistance (RI Kids Count, 2009).

The new Rhode Island commissioner of education recently stated that "In today's high-tech global economy, our nearly 30% urban dropout rate is a crisis, even a tragedy". The goal for all Rhode Island high schools, is to raise the graduation rate so "all students are ready for success in college, careers and life" (RI Kids Count, October 8, 2009).

Another part of the problem is the characteristics of the Millennial generation (n.1980-2000) who are now entering institutions of higher education and the workforce. They want their school experience to connect to their life and future. Recent high school dropouts were interviewed and surveyed from all parts of the country-rural, suburban and urban districts-to gather information about their reasons for leaving school before graduation. Almost half, 47%, of the dropouts expressed that they were bored with classes and were disengaged from school. Suggestions from the former students to decrease the dropout rate included: making the curricula more relevant, make a stronger connection between schools and work earlier in the school experience, improve instructional practices and increase parental involvement (Bridgeland et al., 2006). This is also the first time in history that four generations have been in the workplace at the same time; values and experience are clashing (Hammill, 2005).

Educator Externship

In order to provide students with current skills for the 21st century workplace, more authentic professional development (PD) for both in-service and pre-service teacher training is needed (21st Century Skills Partnership, 2008). One example of this type of hands-on PD is the Educator Externship that places the educator for a specified period of time performing “real work” in a 21st century, high performance workplace. Teachers can infuse what they learned in the 21st century workplace into the class room by developing units and lesson plans in order to make the curriculum relevant to the Millennial student and her/his future.

Methodology

Introduction

The purpose of this study is to examine one professional development opportunity for teachers that will expose them to 21st century thinking and to 21st century workplaces in order to “...prepare our students to succeed in a rapidly changing world.” (P. DiCenso, personal communication, August 13, 2009).

This research study was designed to test the null hypothesis H0: there is no difference in knowledge of the 21st century skills between the treatment group of teachers who have experienced an educator externship and the control group who have not. The alternate hypothesis H1 states that there is a difference in knowledge of 21st century skills between teachers in the treatment group and the control group of teachers not participating in an externship.

The research questions were designed to determine the effectiveness of the Educator Externship as a form of authentic professional development for teachers to gain knowledge and understand the importance of the 21st century skills needed for the Millennial generation to succeed in the globalized school and work environment.

Research questions:

1. Will the professional development experience; the educator externship, enable teachers to gain knowledge of the 21st century skills?
2. Will the professional development experience; the educator externship, promote teachers' understanding of the importance of the 21st century skills in the 21st century workplace?

The null hypothesis H_0 was rejected: there is no difference in knowledge and understanding of the importance of the 21st century skills between the treatment group of teachers who have experienced an Educator Externship and the control group who have not.

This study answered the questions that as a professional development experience for teachers, the educator externship provided both the knowledge and the understanding of the importance of the 21st century skills. The externship experience also provided the opportunity for the teachers to experience the 21st Century Skills in action in the workplace which re-enforced the need that their students must learn them in order to succeed in 21st century schools, careers and life.

This study utilized a quantitative method to collect and analyze data to answer the research questions. To ascertain the data, a quasi-experimental static-group

comparison design was used utilizing non-random sampling. The same post-test was administered to both the control and the treatment groups. The treatment group had completed an educator externship in one southern New England program; the control group had not experienced an externship (Gall, Gall, & Borg, 2007). The control group receives no professional development and the treatment group receives the educator externship experience (Gay, Mills & Airasian, 2006). This present study is the comparison of the two groups of teachers and their knowledge and understanding of the importance of the 21st century skills in both the classroom and the workplace.

Sample

The non-random sample for this study consisted of two groups of teachers—one control group and one treatment group. The control group $N=44$ represented teachers from $N=6$ high schools. The treatment group, $N=33$ represented educators who completed an externship in a 2009 Southern New England program.

The high schools were selected based on some of the teachers' previous participation in an externship program. The schools selected, represented both urban and suburban demographics. Twelve externship program directors from across the country were asked an open-ended question about the 21st century skills content utilized in any pre and/or post-tests.

The alternate hypothesis H_1 statistically failed to be rejected: there is a difference in knowledge and understanding of the importance of 21st century skills between the group of teachers who have experienced the Educator Externship and the group of teachers not participating in an externship.

The alternate hypothesis H_1 statistically failed to be rejected: there is a difference in knowledge and understanding of the importance of 21st century skills between the group of teachers who have experienced the Educator Externship and the group of teachers not participating in an externship. The principal findings of this study presented by the research questions are based on the analysis of the survey responses. The principal findings of this study presented by the research questions are based on the analysis of the survey responses. The principal findings of this study presented by the research questions are based on the analysis of the survey responses.

Instrument

The 48 survey questions were designed using the format of a similar post-test from an existing educator externship program and the content of the 21st century skills questions, taken from the Framework for 21st Century Learning-Life and Career Skills, Learning and Innovation Skills, Information, Media and Technology Skills (Partnership for 21st century skills, May 27, 2009).

The forty-eight question survey administered to both the control group and to the treatment group consisted of six demographic questions, twenty-three questions about the 21st century skills and nine questions with ten subparts about the externship experience. The survey was distributed electronically and also by mail to the externship program director and to the high school principals to distribute to the treatment and control groups.

Data Collection

The data were collected through the electronic survey utilizing a 5 point Likert scale to answer the twenty-three questions relating to the 21st Century Skills. The

survey for the treatment group of teachers was administered in September and October of 2009, through the program directors in Southern New England. The same survey was administered to the control group of teachers at 6 local high schools through the assistance of the principals in September and October 2009.

The qualitative data was collected from the answers of the treatment group to the open-ended questions on the survey that were directed to the externs and from the open-ended questions asked of the externship program directors.

Data Analysis

SPSS was used to perform, a series of ANOVAs, analysis of variance, to test the null hypothesis for rejection or failure to be rejected (Creswell & Clark, 2007; Gall et al., 2007). Means, standard deviations, percents and frequency counts will be used to answer the research questions. The results of the surveys were coded, statistically analyzed, and reported objectively.

The qualitative data used in this study were gathered from the four questions on the 21st century skills survey directed to the teachers who completed an externship. These open-ended questions were answered by the treatment group. A survey with five open-ended questions was sent to $N=12$ externship program directors in $N=9$ states. Of the $N=12$ directors, $N=4$ responded to the survey and/or were interviewed for specific information regarding if and how the 21st century skills are included in any pre-or post surveys of the Externs. The answers to the questions were examined using the "zig-zag" approach (Creswell, 2002, p. 480) and categories, themes, and patterns emerged from the data

Additional Findings

The alternate hypothesis: H_1 , failed to be rejected statistically in 21 of 23 tests on the differences of the means of the two groups of teachers—treatment and control. The two skills that statistically rejected the null hypothesis, were Analyze Media and Be Self-Directed Learners.

The Analyze Media skill ranked 19 out of 23 on the ANOVA test of the treatment group's list; it ranked 20 out of 23 on the control group's skills list. According to the 21st Century Partnership, Analyze Media and Create Media Products are in the category of Media Literacy Skills. Create Media products was ranked as number 22 of 23 on the control group's list and number 23 on the treatment group's list. This is a generational issue. The teachers Traditionalists, Boomers or GenXers-did not connect the relevance of these two questions to their lives. But it is extremely relevant to the Millennials, who are totally surrounded by digital media and media choices including Face Book, podcasts, Twittering, web pages, streaming videos, texting, etc., must learn daily to continually make effective media choices both ethically and legally. This is an area of concern globally as reported from the conference in Belgium , Sept. 2009, "How effectively ICT is used in schools knowing that the New Millennial Learners (NML) are so adept at ICT and digital media" (Schleicher, 2009). This is an area that needs to be addressed.

In order to be valued and effective in the 21st century in both school and the workplace, students must be literate in and able to critically analyze information, media and technology. Students need to understand how and why media messages are designed as well as the legal and ethical ramifications that surround them. They

also need to understand “media creation tools” and be able to use them appropriately in the current diverse environment (Trilling & Fadel, 2009).

This, also, is an issue that must be addressed; teachers and parents alike must become as expert in technology as the Millennials, in order to advise them in this new arena that is their life.

Be Self-Directed Learners also scored with statistical significance to fail to reject the null hypothesis. This skill is listed under the topic of Initiative and Self-Direction Skills. The treatment group ranked this one 18th out of 23 skills, but considered it important as 36% percent of the answers on the open-ended survey questions indicated the teachers selected this skill as one they would incorporate into their classroom.

In order for students to be successful in school and in the workplace, they must master these 21st century skills-Initiative and Self-Direction skills-Manage Goals and Time, Work Independently and be Self-Directed Learners.

Students need to be able to set short and long-term goals with success criteria and learn to balance the time to manage the work. In the workplace they will need to be self-directed and work independently without direct oversight; these skills need to be part of the pedagogy in the high school (Trilling & Fadel, 2009).

This is also a generational issue. Teachers, parents and supervisors are much more comfortable with students, children and employees who take orders and follow directions and “do as they are told” (Hammill, 2005). The Millennials are very self-directed and work quickly as they have a greater mastery of technology. In addition, they want learning to be relevant; if they are told to do something and

they see no connection to their lives, they may not do it. This is another area that requires addressing in instructional styles.

The Systems Thinking skill ranked 22nd out of 23 skills on the treatment group's list and ranked 23rd on the control group's skills list. The 21st Century Skills Partnership defines this as knowing and understanding how the parts of whole fit and work together. Simply defined, systems thinking is a big picture view, looking at the forest, not just one tree; a worldview. This is not a generally held perspective of high school classroom teachers; their whole careers are spent in a classroom with four walls, windows, a closed door and generally one content area, very isolated. What collaboration occurs is within departments with other teachers who teach like-subjects. Interdisciplinary connections with other teachers and subjects rarely occur. Application of learning takes place by combining the content and using 21st century skills to solve problems.

The Millennials are able to globally communicate and access information quickly; their lives have no "walls". This is another area that needs to be addressed for educators in their instructional practice to build partnerships to collaborate with the community businesses, industries and community agencies to connect the classroom to the outside world. This is an example of what the Millennials are looking for in school.

School Business Partnerships are an extension of the educator externship. Teachers can bring the experience to the classroom through company tours, speakers, job shadowing, internships and mentorships. These partnerships can be developed and sustained over time to assist the teachers and students to remain up to date with the rapidly changing technology. The relationship with the business

partner can also help the teachers to continue to show their students how to apply the knowledge and skills to solve real problems.

Conclusion

The problem statement outlined the United States and its current workforce skills crisis today in 2009. Over the last 24 years, none of the warnings were heeded beginning in 1983 with a Nation at Risk. Today the country has effectively "lost" the middle class because American businesses sent those low skilled, high paying jobs off shore to save money on labor costs.

The workforce development system must adapt to the current emergent workforce, the technologically astute, and culturally diverse, Millennials. The United States K-12 education system must meet the challenges of a "flat world" (Friedman, 2005) that is continuously infused with rapidly changing technology. The 21st Century Skills Partnership must be adopted, accepted and integrated into the curriculum and assessments in all 50 states, not just 14. Teachers must have authentic professional development experiences. The high dropout rate must be addressed and reversed by addressing and meeting the needs of the Millennial student.

The purpose of this study is to validate a possible pathway to a solution. The Millennials want hands-on authentic learning so they will remain in high school and not dropout due to boredom and disassociation (Bridgeland et al, 2006). Employers want a 21st century trained employee who can successfully compete in the global market (Fogg et al, 2004).

The 21st Century Skills Partnership is offering to states a plan to partner with the business community, labor and K-16 education to create a structure that will

transform the education delivery system to meet the 21st century needs (P21, 2009). Technology, academic standards and professional development are the main focuses of the 21st Century Skills Partnership.

A national academic naysayer group, Common Core, believes in the traditional education practice of repetition in order to gain knowledge, rather than embrace technology (Ravitch, 2009). Technology cannot be ignored.

One authentic professional development opportunity is the Educator Externship program, where teachers are immersed in a business for a specified period of time—from a one day overview to an 8 week, paid hands-on work experience. In order to understand the skills needed in the 21st century workplace, teachers must get out of the classroom and experience that environment. Next, they can share that experience with their students through applied learning units and lesson plans. The data show that the teachers' level of knowledge and understanding of the importance of the 21st century skills increased with the externship experience. This professional development experience needs to go to scale to include every teacher both pre-service and in-service with more teachers every year affecting more students, as each teacher reaches approximately 125 students per semester. More teachers need to have an externship experience. All teachers need to be able to answer the question "why do I need to know this?" to inform their students.

The analysis of the teachers' comments gave insight into their externship experiences and showed that they did understand the implications of incorporating the 21st century skills into their teaching, based on what they saw and experienced in the workplace. The data also showed that the teachers wanted to support

student internships, mentoring, and job shadowing. The Millennial students are asking for learning to be meaningful and relevant to their lives.

Recommendations

Rhode Island must become a 21st Century Skills Leadership state. To become a Leadership state, the Governor, the state Commissioner of Education and Business leaders must agree to the Partnership mission and develop a structure for implementation.

The Governor of Rhode Island created a PK-16 Council (pre-kindergarten through 4 years of college), whose mission in part is to: "Produce a more competitive workforce and promote economic development through quality education, research and workforce development" (RI Governor's Executive Order, April 2005). This body, comprised of members of the business and education communities is in a position to undertake the issue to build strong coalitions and partnerships to focus on lowering the drop-out rate and improve the workforce preparation of the emerging workforce.

Rhode Island can use the former School-to-Career (STC) 1997-2005 structure to begin the implementation process. The STC principles, practices and policies, the current RI Diploma System and high school reform structures are in place to build relevant partnerships between classrooms and the workplace (RI STC Act, 1997; RIDE, 2003). Rhode Island is positioned to become a 21st Century Leadership State.

Professional development is the "key" to all the changes that need to take place to enhance the pedagogy to make learning relevant to the Millennial students.

- 1. The externship experience should become an essential professional development program for teachers.*

2. *It should become standard for the whole business community to take one or two teachers every year as paid externs.*
3. *The state needs to issue tax credits to the business partners, as do other states, as incentives to take on the teachers as 'employees'.*
4. *The next step would be to institutionalize the educator externship as a pre-requisite for Rhode Island teaching certification.*
5. *Rhode Island is in a position to consider adopting the mission of the 21st Century Skills Partnership and become the 15th Leadership State in 2010.*

Recommendations for Further Research

1. Pedagogy Changes: A longitudinal research study based on observation and quantitative data needs to focus on the Educator Externs and how they have changed their teaching strategies to incorporate more of the 21st Century Skills learned at the worksite.
2. Student Achievement: Part II of the longitudinal study should map the state test scores of the students of the externs to determine if there is an improvement in achievement. A similar study is conducted at Columbia University measuring the success of their educator externs by the students standardized state test scores (SRPST, 2009)

Summary

The study presented statistical data that upheld the Externship Experience as a valid professional development opportunity for teachers to learn the 21st Century Skills and "see them in action" to understand their importance in the 21st century workplace. The data showed that the teachers were also able to transfer that

knowledge to the classroom, their instructional practices, and indicate the activities that the students should also be experiencing.

Definitions

21st Century Skill Set

Basic Skills:

Reading/Language Arts	Science
World Languages	Arts
Mathematics	Economics
Geography	History
Government & Civics	

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 and Business Literacy

- Knowing how to make appropriate personal economic choice
- 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 are health enhancing 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

Learning and Innovation Skills

- Creativity and Innovation
 - Think Creatively
 - Work Creatively with others
 - Implement Innovations
- Critical Thinking and Problem Solving
 - Reason Effectively
 - Use Systems Thinking
 - Make Judgments and Decisions
 - Solve Problems
- Communication and Collaboration
 - Communicate Clearly
 - Collaborate with others

Information, Media, and Technology Skills

- Information Literacy
 - Access and Evaluate Information
 - Use and Manage Information
- Media Literacy
 - Analyze Media
 - Create New Media Products
- ICT Literacy
 - Apply Technology Effectively

Life and Career Skills

- Flexibility and Adaptability
 - Adapt to Change
 - Be Flexible
- Initiative and Self Direction
 - Manage Goals and Time
 - Work Independently
 - Be Self-Directed Learners

- Social and Cross Cultural Skills
 - Interact with others
 - Work Effectively in Diverse Teams
- Productivity and Accountability
 - Manage Projects
 - Produce Results
- Leaderships and Responsibility
 - Guide and Lead Others
 - Be Responsible to Others
 (Partnership for 21st Century Skills, May 27, 2009)

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