

PROFESSIONAL DEVELOPMENT IN 21<sup>ST</sup> CENTURY SKILLS  
IN THE WASHINGTON-SARATOGA-WARREN-HAMILTON-ESSEX BOCES

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## Abstract

Globalization has caused businesses to respond to the world wide market place. Individuals who enter the workplace must be prepared to meet the challenges of high tech, 21<sup>st</sup> century jobs. Schools are the appropriate conduit to workforce preparation. As such, the preparation of students who are exiting public schools must meet the challenges of the 21<sup>st</sup> century workplace if students are to be employable. To that end, educators must receive professional development that affords them the knowledge to teach their students and the skills to adapt instructional practices. This qualitative case study focused on the Washington-Saratoga-Warren-Hamilton-Essex (WSWHE) Board of Cooperative Educational Services (BOCES) region of New York State and the thirty-one school districts that are components of the BOCES. This study explored the research question: *Are educators receiving the professional development they need to prepare students for the regional workforce in the WSWHE BOCES area of New York State?* The researcher investigated the relationship between "21<sup>st</sup> century skills" (basic skills), as extrapolated from the United States Department of Labor, Occupational Information Network (O\*Net), and local professional development plans from twenty-two participating districts. In addition, the researcher conducted interviews with twelve

educators responsible for professional development in six districts, two from each district. While in general, the State of New York has provided strong educational opportunities in academic programs, "21<sup>st</sup> century skills" have not been integrated into the New York State Learning Standards; hence, the school districts of this region have not fully responded to the professional development needs of educators in terms of "21<sup>st</sup> century skills". With BOCES as the lead agency, studies are underway to expand professional development opportunities to the region. Educators are energized by the collaborative efforts between regional businesses and regional schools which will advance professional development for teachers and increase opportunities for the students of the region.

Key Words: 21<sup>st</sup> century skills, career development, globalization, informational technology, instructional systems, mentoring, professional development, staff development, teacher training, teaching, technology

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To my husband, son, and daughters, whose support and understanding is appreciated: You are my inspiration.

This study is dedicated to my parents, Marie Cunetta Infante (April 9, 1919 - January 23, 1975) and Edward Raymond Infante (August 11, 1910 - March 15, 1971), for instilling in me the desire to learn something new every day of my life. While they were not with me very long, their endless lectures about personal and professional achievement have resonated in my mind all of these years. As I walk across the stage on graduation day, I will take my parents with me deep in my heart because I know that their love and diligence in raising me will have afforded me the opportunity to achieve a Doctorate in Educational Leadership.

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## CHAPTER 1: INTRODUCTION

In 2002, New York's Capital Region Chamber Coalition coined the term *Tech Valley* to be the catch phrase for a new marketing campaign launched to recruit high technology companies to relocate to the capital region of New York (Tech Valley Chamber Coalition, 2002). The five focal points of this campaign were Information Technology, Bio-technology, Nanotechnology, Advanced Materials, and Energy (The Center for Economic Growth and the Albany-Colonie Regional Chamber of Commerce, 2006). The presence of two (2) research institutions, the State University of New York at Albany (SUNY Albany) and Rensselaer Polytechnic Institute, along with other colleges and universities contributes to a workforce that is attractive to the technology industry. The campaign has met with success as monies have poured into the region for new initiatives, such as Albany Nano-Tech at SUNY Albany, the Global Foundries chip fabrication plant in Malta, N.Y., and General Electric's new Wind Power Division in Schenectady, N.Y. In addition, new companies, such as Map Info, Vicarious Visions, and Bull Ex, have sprung up from regional colleges and business innovation incubators.

### Regional Description

This study took place in the school districts of the Washington, Saratoga, Warren, Hamilton, and Essex counties of

New York State. These counties are located in the northeast section of the state and are, for the most part, rural.

Washington County is primarily agricultural and is void of any cities (Washington County, New York, 2009). Saratoga County is not only known for its world famous race track, but for becoming the home of the new Global Foundries, Inc., Malta, N.Y.

(Saratoga County Chamber, 2009). Warren County boasts beautiful scenery with twenty lakes in the county, including Lake George (Visit Lake George, 2009). Hamilton County is part of the Adirondack Mountain region. It is an adventurous area for skiing, canoeing and other activities of the great outdoors (Hamilton County, New York, 2009). Essex County is steeped in the culture and recreation of the Adirondacks. In 1980, it hosted and was home of the Winter Olympics (Essex County, New York, 2009).

This region of New York State is changing due to the influx of new businesses to the area. Perhaps more important than the new businesses coming to the region is the understanding that new skills are needed by the workforce. Employment possibilities are changing. While agriculture, tourism, and entertainment may still be sources of employment, new jobs are visible on the horizon. These jobs will require high technology use, masterful soft skills, and a greater understanding of the global economy. The most recent new employment opportunity will come from the

Global Foundries, Inc. where a world class silicon chip fabrication manufacturing facility promises to employ 1200 new semiconductor manufacturing technicians and 800 equipment operators. Industries which will relocate to this region to supply this facility promise to employ hundreds more.

This region and these counties, in part, are home to the thirty-one school districts that represent the components of the Washington-Saratoga-Warren-Hamilton-Essex Board of Cooperative Educational Services (WSWHE BOCES) and this study is reflective of the needs of this region.

In 1948, the State of New York created Boards of Cooperative Educational Services, known across the state as BOCES. They were developed to support school districts and their mission is: "preparing diverse populations for roles in the global economy; providing cost effective shared services to school districts; initiating collaboration to close gaps in student achievement" (BOCES of NYS, 2009).

In the fall of 2008, the WSWHE BOCES District Superintendent granted this researcher permission to conduct this study within the thirty-one regional schools, and school district superintendents agreed to participate.

## Statement of the Problem

Tech Valley is now a reality. Global businesses are beginning to appear in the Capital Region as their research and development divisions lease space at Albany Nano-Tech. Supply side businesses are competing for space at the Luther Forest Technology Park, so they can be located in close proximity to their primary customer, the new chip fabrication plant.

Public secondary education now finds itself in the position of responding to the reality of Tech Valley. High tech industries are springing up in most communities and are seeking a quality workforce. These industries seek workers with not only strong academic preparation, but also with a strong tool kit of skills and attributes which have been tagged by the United States Department of Labor as *21<sup>st</sup> Century Skills* (United States Department of Labor, n.d.).

Although some school districts have begun discussing the need to embed these skills in their curricula so that their students are ready for employment in the new Tech Valley, most lag behind. Before teachers can teach 21<sup>st</sup> century skills to students, they themselves must understand these skills and how best to deliver instruction which will develop these skills in their students. Clearly, professional development in 21<sup>st</sup> century skills is crucial if districts are to meet this challenge.

### Purpose of the Study

The purpose of this qualitative case study was to investigate professional development opportunities offered to educators and the relationship of those offerings to the development of 21st century workforce skills among students in the 31 component school districts of the WSWHE BOCES.

### Research Question

The research question for this study: *Are educators receiving the professional development they need to prepare students for the regional workforce in the WSWHE BOCES area of New York State?*

### Interview Questions

In a two phase study, the researcher reviewed documents, including professional development plans, and interviewed educators about the development and implementation of their district's professional development plans by asking four critical questions:

1. How are professional development plans created and is consideration given to teacher preparation in 21<sup>st</sup> Century instructional practices?

2. What professional development is currently in place to train educators in 21<sup>st</sup> century skills that will prepare students for the workplace?
3. Does the district professional development plan coincide with the 21<sup>st</sup> Century needs of the region?
4. What is the vision of educational leaders in the WSWHE BOCES as it pertains to 21<sup>st</sup> Century skills preparation and the regional business needs?

#### Definitions and Terms

The United States Department of Labor (DOL) Occupational Information Network (O\*Net) database was used by the researcher to develop a rubric that would represent a small number of *Basic Skills* as they pertain to teacher training in the area of 21<sup>st</sup> century skills preparation. The O\*Net database provides information on the knowledge, skills, and abilities needed to enter into a variety of occupations. The database provides definitions for each of the basic skills. The developed rubric (see Appendix A), calls upon the following definitions to bring greater understanding to the designated skills:

*Active Learning* - understanding the implications of new information for both current and future problem solving and decision-making.

*Active Listening* - giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

*Critical Thinking* - using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

*Learning Strategies* - selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.

*Mathematics Application* - using mathematics to solve problems.

*Monitoring and Assessing* - Monitoring and assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

*Reading Comprehension* - understanding written sentences and paragraphs in work related documents.

*Science* - scientific rules and methods to solve problems.

*Speaking* - talking to others to convey information effectively.

*Writing* - communicating effectively in writing as appropriate for the needs of the audience.

*Complex Problem Solving Skills* - developed capacities used to solve novel, ill-defined problems in complex, real-world settings.

*Resource Management Skills* - developed capacities used to allocate resources efficiently.

*Management of Financial Resources* - determining how money will be spent to get the work done, and accounting for the expenditures.

*Management of Material Resources* - obtaining and seeing to the appropriate use of equipment facilities and materials needed to do certain work.

*Management of Personnel Resources* - motivating, developing, and directing people as they work, identify the best people for the job.

*Time Management* - managing one's own time and the time of others (United States Department of Labor, n.d.).

#### Limitations of the Study

Throughout the study, requests were made by the researcher for professional development plans from each of the thirty-one school districts. Initially, at one of their monthly meetings, the BOCES superintendent requested of the thirty-one school superintendents, that professional development plans be submitted to this researcher. Many plans were submitted early



but, with others, BOCES intervened, and a few more plans were received. The researcher continued to send emails and make telephone calls to districts requesting plans. In the end, the data gathered and analyzed in this study is representative of twenty-two of the thirty-one component school districts in the WSWHE BOCES region of New York State. Nine school districts did not respond to requests and, as time ran out, the researcher made the decision to proceed with twenty-two plans. The professional development plans of the twenty-two districts did not drive the selection of the six school districts which participated in the interview phase of the study, but, rather, it was driven by those districts whose personnel were available to the researcher for interviews.

## CHAPTER TWO: LITERATURE REVIEW

### 21<sup>st</sup> Century Realities

Globalization has changed how people perceive money, government, capitalism, entrepreneurship, and education (Bottery, 2006). While the global market maintains traditional occupations, entrepreneurs have been creatively opening up new concepts in employment and the future will bring many new occupations that have not been conceptualized in today's marketplace (Truesdale, 2006). As globalization is rapidly occurring, organizations need to adjust their procedures as they meet the "changing external conditions" (Gould, 2000, p. 585).

As the population of workers changes and new workers enter the job market, preparation will need to be evident and aligned to the business marketplaces of today (Mitchell, 2008). In general, preparedness will include individual adaptation for the market of tomorrow. As the world market changes, it will become necessary for global, national, and regional businesses to openly articulate the terms and skills deemed necessary for the workforce to possess.

### Teacher Training Affects Student Learning

Typically, schools have held the responsibility for preparing students for the next steps in their lives, whether it be entering the workforce or furthering their education. While

the curriculum and course offerings that exist in public schools need to be effectively addressed at high levels, educators need to understand the business world, and have the ability to provide their students with opportunities to learn in a relevant classroom setting (Tech Valley Consortium, n.d.).

Within the realm of professional development, educators, as life-time learners, need to be proactive and seek opportunities to attend conferences, make professional visitations to other schools, and work with other professionals to advance their own artistry (Abbott, 2005). Teachers who search for professional development opportunities that support new strategies in their classrooms not only advance their own knowledge but also that of their students (Weasmer, Woods, & Colburn, 2008).

Furthermore, teachers who seek professional development contribute to the sustainability of new practices (Deaney & Hennessy, 2007), and the abilities and beliefs that teachers hold impact the use of new strategies that develop in teachers a sense of ownership (Jung & Hara, 2007; Chen, 2008). Teacher ownership is critical because in the classroom, teachers have more power than they think they do. "The teacher is the gatekeeper of change in the classroom and professional development designed to change teacher practice must be guided by and integrated with teachers' existing values, valences, knowledge, and behaviors" (Giordano, 2007 p.123).

Most teachers take great pride in their profession. Many participate and complete the National Board for Professional Teaching Standards (NBPTS) certification process because it provides them with a new lens as they more deeply reflect on their role as teacher (Tracz, Daughy, Henderson, Newman, Seinty, 2005). In general, teachers are confident that their sensitivity to their students and their professional efforts will intellectually advance students academically and socially. Teachers who are effective in reaching their students cognitively give great consideration to their own learning (Rosenfeld & Rosenfeld, 2004). As teachers improve their own skills, they are able to assist their students in increasing their skills (Hilden & Pressley, 2007). Schweinle, Meyer, & Turner (2006) investigated instruction and student motivation, and they discovered that instructional practice, its integration, and utilization in curriculum delivery all influence student motivation.

Teachers who get involved with mentoring and peer coaching as forms of professional development build capacity and improve instructional practices while they develop relationships that help modify their own beliefs about teaching and learning (Drago-Severson & Pinto, 2006; McCorkel-Clinard & Ariav, 1998; Meirink et al, 2007). The interactions that take place among teachers are essential in improving instruction, and peer

coaching has great benefit to teacher development because it helps to change the behaviors and understanding of the teacher who is coached. Peer coaching is a powerful tool in professional development because another professional is observing in the classroom and providing feedback that causes growth in teacher knowledge (Zwart, Wubbels, Bergen, & Bolhuis, 2007). In addition, the main focus is placed on children and learning, which piques teacher interest in exploring new ideas (Patterson et al, 2004).

### The Impact of Technology

The manner in which people perform their jobs has changed because of advances in technology. Work requirements have grown concurrently with the advent of technology changes; for instance, in addition to filing and answering the phone, a secretary must now be well skilled in office computer applications. The labor market has responded by requiring employees to retain existing skills while increasing their knowledge and ability in the utilization of technology (Mikulecky & Kirkley, 1998).

In recent years, professional development, in part, has focused on technology. Teachers have been trained to use computers, including email, computer labs, software, census bases, report card systems and other more advanced systems such

as Smart Boards. Some teachers have great interest in computer use, while others are fearful and resistant (Gibson & Oberg, 2004). However, as teachers work with other teachers who have expertise in technology, they too develop an expertise (Abbott, 2005). As teachers gain an understanding of their role in the use of technology and in the process of sharing information, strategies, and competencies, teachers provide greater opportunities for their students and improve instruction (Sugar & Kester, 2007; Subramaniam, 2007).

Access to technology is critical in encouraging its use. If computers and other technologies are not available for teacher use, especially following training, then progress is interrupted and barriers may be created.

School districts have made significant investments in technology and in many school districts the financial resources to purchase equipment may be difficult to acquire. In a study by Zimmerman and May (2003), 237 principals listed time and money as being the top inhibitors to internet use in schools. Very often, complications impede progress and professional development becomes impacted by environmental issues such as access, teacher resistance, poor planning, and overworked educators. These issues create barriers to professional development progress. Due to a concern about instructional accountability, teachers in Singapore were inclined to teach the

curriculum and complete it on time. While they did some integration of technology, they taught in the traditional manner (Lim & Chai, 2008). In New York State, where classroom instruction holds as its thrust the New York State Learning Standards, teachers are concerned about achievement scores on State assessments (Mitchell, 2008). When teachers sense support from authority figures, they are more apt to experiment with new instructional tools. With the advent of the No Child Left Behind (NCLB) Act in 2001, the program *Enhancing Education Through Technology (E2T2)* was established. The United States Department of Education provided funds for the integration of technology in classrooms and further provided professional development for teachers. The *E2T2* program assisted teachers in making technology a strategy for curriculum delivery and increased teacher assurance (Overbaugh & Lu, 2008). Whether from the federal government or from local authority, when support is provided at all levels teachers feel more secure about implementing new practices in their classrooms.

### Looking Forward to the 21<sup>st</sup> Century

Since workforce preparedness is on-going and evolving, educational institutions need to adapt instructional practices that assist students in reaching their goals. To that end, students will need to be versed in 21<sup>st</sup> century skills that

promote the knowledge, skills, and abilities needed to be successful (Mitchell, 2008). Strong professional development opportunities will be imperative so that teachers can grow in an effort to expand their own knowledge, skills, and abilities in 21<sup>st</sup> century skills (Mitchell, 2008).

As this century unfolds, students will need a variety of skills to succeed in the global market. They must be able to solve complex problems that cannot be solved in a vacuum. Identifying and sharing information, perhaps across the world, will necessitate a cooperative/collaborative work ethic (Wallis & Steptoe, 2006; Russell & Flynn, 2000; Partnership for 21<sup>st</sup> Century skills, 2007). Being cooperative and working collaboratively are skills that need to be taught. "Treating others as we would like to be treated, personal and organizational integrity, and basic honesty must be part of preparing students" (Uchida, 1996, p.5).

Globalization has caused both the business world and educational institutions to study the preparedness of students in 21<sup>st</sup> century skills (Gould, 2000). If students are to be prepared for high tech jobs, then teachers need to be skilled in the delivery of instruction that addresses the needs of regional industries. Professional development efforts need to support teachers as they shift from teacher-controlled classrooms to active student participation (Postholm, 2006).



In the 21<sup>st</sup> century, professional development plans will be a necessity. The plans will need to be collaborative in nature, but address district needs in terms of teacher preparation to improve instruction. As teachers become more involved in their own learning, support will be needed through superintendent endorsements of planning and resources. In a study by Fenwick (2004), superintendents were interviewed to determine their perceptions of Teacher Professional Growth Plans (TPGP). These plans served to mandate the specific professional development that was of importance to five schools across Alberta, Canada. In this study, Fenwick explored how TPGP were used, how they changed over time, and if they were of benefit. Fenwick discovered:

The main benefits of TPGP's noted by district-level administrators in these five districts included the increased ability for districts to influence the direction of teachers' learning by encouraging alignment of teacher goals with district and school goals and the increased opportunity to target professional development resources to meet specific teacher-defined needs (Fenwick, 2004, p.272).

The collective actions of districts, teachers and businesses will create meaningful opportunities for professional development in the 21<sup>st</sup> century. Written into future professional

development plans should be the integration of 21<sup>st</sup> century skills in all areas of instruction (Krieger & Appel, 2009).

As the relationship between business personnel and educators develop, teachers will have access to first hand information from the workplace. This knowledge will assist teachers in developing curriculum and making appropriate decisions about the delivery of instruction. However, "defining the skills necessary for success in the next generation is often an elusive task for educators because many jobs have not yet been invented" (Tuesdale, 2008, p. 1). If teachers have the opportunity to develop curriculum and participate in curriculum decision making, their role changes from one of curriculum users to curriculum developers (Law, Galton, & Wan, 2007).

If educators are to prepare students, then they will need professional development opportunities that will assist them in readying students to meet the expectations of the workplace. Schools will need to explore what successful professional development models are, what is needed in professional development practices, and what barriers exist in terms of time, resources, and resistance.

Resources are critical in supporting professional development. While financial resources are diminishing, people resources are likely to expand professional development opportunities for teachers. Time is the most precious resource

of all and, while other nations provide time for embedded teacher development, in the United States, schools are less likely to provide enough teacher training time (Wei, Andree, Darling-Hammond, 2009).

When time for professional development is built into teachers' working time, their learning activities can be ongoing and sustained and can focus on particular issues over time. Job-embedded professional learning time also supports the kind of context-specific professional learning and action research that is effective in catalyzing change (Wei et al, 2009, p. 30).

More collegial efforts within the schools will assist teachers in realizing 21<sup>st</sup> century skills because,

... teachers must be able continually to learn to address the problems of practice they encounter and to meet the unpredictable learning needs of all of their students --- and they must take responsibility for contributing what they learn not only to their own practice but also that of their colleagues (Darling-Hammond, 2005 p. 304).

Across the State of New York and across the nation, localities are in greater need of a workforce that is prepared to be part of the new regional and global economy. There is a gap between this need and the numbers of individuals skilled, available, and ready to advance in the workplace. (Krieger &

Appel, 2009). As described in *America's Perfect Storm* (Kirsh et al, 2007), there are three forces converging:

The first contributing force to our country's perfect storm is the wide disparity in literacy and numeracy skills among our school-age and adult population. The second force comprises the seismic changes in our economy that have resulted in new sources of wealth, novel patterns of international trade, and a shift in the balance between capital and labor. The third force involves seeping demographic changes. Our population will become increasingly older and more diverse, with immigration having a significant impact on the composition of the workforce, as well as of the general population (Kirsh et al, 2007, pp. 3-4).

Development of a new workforce means that schools need to provide the core curriculum in concert with the skills that are needed to work in industry and/or attend college (Krieger & Appel, 2009). Accordingly, as a nation, we must develop policies that draw us together, increase skills, and lessen the gaps so that all citizens have the opportunity to improve (Kirsh et al, 2007).

## CHAPTER THREE: METHODS

The purpose of this qualitative case study was to investigate the professional development opportunities offered to educators and the relationship of those offerings to the development of 21st century workforce skills among students in the 31 component school districts of the WSWHE BOCES.

This study was accomplished by using document reviews to identify the offerings and by follow up interviews to ascertain the degree of alignment between professional development plans and regional workforce needs.

The major research question for this study was: *Are educators receiving the professional development they need to prepare students for the regional workforce in the WSWHE BOCES area of New York State?*

### Design

In this qualitative case study, the researcher triangulated different data sources. The researcher collected and reviewed publicly available documents, including professional development plans and specific demographics, including size and designation of the six participating school districts. In addition to document review, the researcher conducted interviews which added meaning to the findings of the study.

## Review of Documents and Plans

To investigate the professional development opportunities for educators in each of the 31 school districts of the WSWHE BOCES, the researcher reviewed 22 of the 31 professional development plans against a researcher-developed Rubric for Professional Development Plans and 21<sup>st</sup> Century Skills Preparation (see Appendix A), which the researcher extracted from the United States Department of Labor, Occupational Information Network, (O\*NET). The rubric delineated Basic Skills (active learning, active listening, critical thinking, learning strategies, mathematics, monitoring/assessing performance, reading comprehension, science, speaking, and writing). The rubric further addressed Complex Problem Solving Skills and Resource Management Skills (management of financial resources, management of material resources, management of personnel resources, and time management) (United States Department of Labor, n.d.). The rubric's basic purpose was to determine if the individual district plans addressed each identified skill subset.

## Establishing Reliability

To establish reliability of the rubric and use the rubric in assessing the professional development plan, the researcher requested, from a district outside of the WSWHE BOCES, its professional development plan and reviewed it against the

rubric. The researcher requested the assistance of another professional school administrator to review the plan for comparative interpretation purposes. No discrepancy was found between the judgment of the researcher and the judgment of the professional of equal experience. It was therefore determined by the researcher that there was no need to adjust the rubric. In reviewing the professional development plans against the researcher-developed rubric, a determination was made as to whether or not a training opportunity existed for each of the designated skills. When an existing determination was made, a check was placed in the existence column, and when a non-existing determination was made, a check was placed in the non-existing skills column on the worksheet that was used for the 21<sup>st</sup> century skills identification.

#### Procedures

Once there was consistency in the review of the outside professional development plan, the researcher reviewed 22 of the 31 component districts' plans against the rubric. The researcher then selected six districts for participation in the interview phase of this study. To ensure diversity in the pool of participating districts, the researcher selected two urban districts, two suburban districts, and two rural districts. The researcher interviewed a total of 12 professionals including superintendents, directors or coordinators of professional

development, directors of special education, and principals. The participants were responsible for the planning and/or the delivery of professional development in each of the six districts. Identical questions were asked of each participant in a 45 minute interview. The questions were:

1. How are professional development plans created and is consideration given to teacher preparation in 21<sup>st</sup> Century instructional practices?
2. What professional development is currently in place to train educators in 21<sup>st</sup> century skills that will prepare students for the workplace?
3. Does the district professional development plan coincide with the 21<sup>st</sup> Century needs of the region?
4. What is the vision of educational leaders in the WSWHE BOCES as it pertains to 21<sup>st</sup> Century skills preparation and the regional business needs?

In reviewing the data surrounding the professional development plans and the data gathered through interviews with superintendents and professional development personnel, the researcher aligned the outcomes of the research and analyzed the content.

#### Confidentiality and Generalization

During interviews with the twelve participants in the study, the researcher maintained the confidentiality of their



identities by assigning each of the twelve participants an identification code. The identification codes that were used to describe statements made by participants in this study included: (Y1), (Y2), (B1), (B2), (G1), (G2), (BR1), (BR2), (O1), (O2), and (P1), (P2). The identity of the individual participants in the study was only known by the researcher and the participant. To bring clarity to the reader, the researcher used quotation marks to identify direct quotes and only the identification code of the participant was used at the end of paraphrased statements. The researcher provided a brief description of the six participating districts for the purpose of generalization.

In order to maintain confidentiality of the participating school districts, the researcher did not provide specific demographic data. Districts across the state that have similar structures in terms of professional development plans may find this study useful, especially if they hold interest in preparing students for the 21<sup>st</sup> century workforce.

## CHAPTER FOUR: RESEARCH FINDINGS

Chapter four provides information on the findings of the four interview questions. The purpose of this qualitative study was to discover the professional development opportunities offered to personnel and the relationship of those offerings to the development of 21st Century workforce skills among students in the 31 component school districts of the WSWHE BOCES. This study was accomplished by using document analysis, analysis of professional development plans to identify 21<sup>st</sup> century skills offerings and follow up interviews to ascertain their degree of alignment with regional workforce needs.

The researcher met with the District Superintendent of the WSWHE BOCES and, at that time, was provided with two studies which were conducted by the Center for Governmental Research, Rochester, New York: Study One - *Technology Needs Assessment: Preparing for Tech Valley Occupations in the School Districts of the Washington-Saratoga-Warren-Hamilton-Essex BOCES*, dated November 2006, and Study Two - *Strategies to Develop a 21<sup>st</sup> Century Workforce, Regional Analysis*, dated May 2008.

Study One researched and assessed the courses offered by the regional high schools and their alignment to the regional high tech workplace needs. The study further provided

recommendations for aligning curriculum and the needs of businesses.

Study Two provided six recommendations to assist schools in meeting workforce demands. They are:

1. Craft a regional vision for regional 21<sup>st</sup> century workforce preparation;
2. Develop career pathways for students K-12;
3. Develop design specs for curriculum to support 21<sup>st</sup> century learning;
4. Promote professional development that encourages application of the 21<sup>st</sup> century knowledge, skills and abilities;
5. Promote partnerships with business, government and higher education; and
6. Conduct an awareness campaign throughout the region to garner support and enthusiasm for this work, (Mitchell, 2008).

These studies provided the researcher with current information and a framework for understanding the regional needs emerging as a result of the realization of the Tech Valley initiative. Further, they support this doctoral study which seeks to answer the research question: *Are educators receiving the professional development they need to prepare students for*

*the regional workforce in the Washington-Saratoga-Warren-Hamilton-Essex BOCES area of New York?*

Part One: Professional Development Plan Review Findings

Part one of the study was an analysis of the review of the professional development plans from 22 school districts and provides information on the selection of interview participants representing six school districts in the WSWHE BOCES as part of this study.

*Description of Participating School Districts*

Twenty-two of the thirty-one school districts of the WSWHE BOCES participated in part one of this study. The New York State Education Department designation and the size of the districts were considered for the purpose of selection. As displayed in Table 1, the majority (14) of the districts were rural, six (6) were suburban, and two (2) were city districts.

Table 1

*Categories of Twenty-Two Participating Districts*

<u>Category</u>	<u>Number of Districts</u>
Rural	14
Suburban	6
City	2

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All 22 districts in this study were designated in *Good Standing* in accordance with the New York State School Report Card documents (New York State Department of Education, 2009). Many of the districts serve small numbers of students, while others serve thousands of students. The sizes of the districts ranged from 688 students to 6,910 students (New York State Department of Education, 2009). The mean number of students in the 22 participating districts was 1530 students, with six of the districts educating more students than indicated by the mean and sixteen districts below the mean. The specific demographic information of the six participating school districts displayed in Table 2 (below) indicates that at the time that this study was conducted one district was larger than the mean of 1530 and five were less than the mean.

Table 2

*Demographic Information of the Six Interviewed Districts*

<u>District Code</u>	<u>Size</u>	<u>Category</u>	<u>Designation</u>
P	< 1530	Rural	Good Standing
Y	< 1530	Suburban	Good Standing
BR	< 1530	Suburban	Good Standing
G	> 1530	City	Good Standing
B	< 1530	City	Good Standing
O	< 1530	Rural	Good Standing

### *Analysis of Professional Development Plans*

Professional development plans were required to be developed and written by each school district in the State, per the New York State Education Department (New York State Department of Education, 2009).

As part of the methodology for this study, the researcher reviewed the 22 plans to judge the alignment of each one with the professional development rubric. In analyzing the components of each plan, the researcher was able to determine the topics addressed in teacher trainings that offered 21<sup>st</sup> century skills development opportunities.

The plans ranged from specific to vague identification of 21<sup>st</sup> century skills for teacher preparation. All of the 22 plans addressed teacher development in those skills that relate to the New York State Standards and Assessments. In 21 of the plans, there existed specific trainings that support academic learning strategies. The Basic Skills section of the rubric identified learning strategies as a sub-set of 21<sup>st</sup> Century skills. In nine of the plans, there was planning for Differentiated Instruction. Also, there was planning for Curriculum Mapping in nine school districts. Some of the plans addressed both Differentiated Instruction and Curriculum Mapping topics. This planning trend, while a comprehensive effort by each district, was consistent with the findings described in the CGR report, *Study Two* -

*Strategies to Develop A 21<sup>st</sup> Century Workforce* report which says, “. . . it appears that academic standards are typically related to scores on the state proficiency tests for grades 3-8, and scores on the state Regents tests at the secondary level” (Mitchell, 2008, p. 38).

The professional development plans addressed the academic training that is needed by teachers to advance the achievement of students in high-stakes testing. “Thus the significant investments made by districts revolve around the topics discussed under rigor, relevance and relationship: differentiated instruction, articulated curriculum, use of data, use of technology, and learning communities” (Mitchell, 2008, pp. 48-49).

The plans which focused on training that builds teaching skills in specific subject areas were consistent with 21<sup>st</sup> century skills and meet the definitions as outlined by the Department of Labor. In 15 of the plans, mathematics training was addressed; in 19 of the plans, reading was addressed; in 11 of the plans, science development was addressed; in 12 of the plans, speaking was addressed, and in 16 of the plans, writing was offered. Only five of the plans specifically spoke to critical thinking, and complex problem solving was addressed in only four of the professional development plans. As a visual, Table 3 (below) shows that seven of the plans addressed active

learning development, and in nine of the plans active listening was a training opportunity for professionals.

Table 3

*21<sup>st</sup> Century Skills in Professional Development Plans*

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<u>Basic Skills Description</u>	<u>Existence in 22 Plans</u>
Active Learning	7
Active Listening	9
Critical Thinking	5
Complex Problem Solving	4
Learning Strategies	21
Mathematics	15
Monitoring/Assessing	20
Reading Comprehension	19
Science	11
Speaking	12

---

Resources were limited across most of the districts and several districts were providing training opportunities for educators in grant writing. This training touched on helping teachers gain knowledge in managing financial resources, material resources and personnel resources but did not necessarily provide specific skills that could be imparted as part of student instruction.



While the skill of time management was inherent in classroom management and instruction, training teachers in time management was an unaddressed component in the 22 plans that were reviewed.

While not all of the skills outlined as 21<sup>st</sup> century skills in the rubric were present in the professional development plans, there were trainings that served as a basis for preparing students for the future workplace. In the plans, technology was a strong component of teacher development. It was addressed in several ways in 17 of the 22 professional development plans, while the remaining five only indicated that they had technology plans. In these plans districts were offering training in the use of data management systems and supportive software.

Mentoring was part of each of the plans. Its main focus was on teachers who were either new to the field of education or new to the district. According to Sugar and Kester (2007), teachers who are willing to assist their colleagues in the advancement of practical new strategies further assist in the advancement of student learning. Several districts encouraged mentoring of colleagues and had made allowances for teachers to meet and work collaboratively in an effort to develop learning communities. "Educators who are building a professional learning community recognize that they must work together to achieve their collective purpose of learning for all" (DuFour et al, 2005, p.

36). Some districts had *tech buddies* who assisted teachers in learning new technology and who assisted in trouble shooting for teachers who were not as skilled in using technology as a tool of instruction.

As displayed in Table 4, the 22 professional development plans were designed to advance academic achievement. These plans included: Technology, Mentoring, Differentiated Instruction, and Curriculum.

Table 4

*Professional Development Opportunities in Professional Development Plans*

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<u>Content</u>	<u>Number of Districts</u>
Differentiated Instruction	9
Curriculum Mapping	9
Technology	17
Mentoring - New Teachers, Administrators	11
Mentoring Colleagues	11

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In some plans there was an effort to provide teachers with professional development opportunities in classroom and behavioral management. Teaching appropriate behavioral strategies will enhance 21<sup>st</sup> century skills by readying students to comply with workplace procedures and behaviors.

## Part Two: Interview Findings

### *Background Information*

With permission of the six school districts and twelve interviewees, participating districts were selected for this study and this researcher had the privilege of interviewing two professionals from each of the six districts. These twelve highly knowledgeable professionals were selected because they held positions that are responsible for professional development. The participants included two superintendents, three special education directors, four director/coordinators of professional development, and three principals. As catalysts in the development of professional development plans, they all took great pride in their efforts to educate students. As professionals, they were keenly aware of the changing needs that were apparent in their BOCES region and they wanted to provide to each student a viable education in order to prepare them to take their place in the 21<sup>st</sup> century workplace. As educators they were aware that their districts needed to develop, in conjunction with the surrounding districts and the BOCES, a rigorous pathway for students to be prepared for the workforce of the future.

Each interviewee willingly participated in the study. Participants signed a statement of informed consent. At the beginning of each interview, the researcher shared information

about the study and gave each participant time to review the rubric used to review each of the professional development plans. In addition, each participant was given a review of the definitions of the 21<sup>st</sup> century skills specifically identified by the researcher in the rubric that was extrapolated from the Department of Labor. A list of basic skills definitions is located in Chapter One.

Once each participant understood the proposed study and its components, the researcher asked four identical questions of each interviewee. These educators responded with an eye toward future endeavors that they deemed necessary to increase student preparedness in 21<sup>st</sup> century skills and to accelerate the opportunities for their students to join the workforce of the region, the state, the nation and the world as productive workers in a global market.

All interviewees provided their thoughts and opinions based on their knowledge of the future of the region and the educational needs that exist in and among the districts of the region. The participants were well steeped in the culture of the area and their student populations. They were aware of the financial situations of their families and they deeply sensed the goals that parents hold for their children. A sense of urgency emerged from these professionals as they readily expressed the needs of their districts in terms of professional

development that addresses 21<sup>st</sup> century skills instruction. They quickly cited the needs that must be addressed to bring about student preparation for this changing area of New York State.

The open-ended design of the four questions uncovered a multitude of perceived information. While the participants initially answered the questions, their interpretation of the questions allowed them to focus on the needs of their district and to articulate those needs that were well beyond the question itself. The interviewees revealed their beliefs, opinions, and critical thoughts surrounding the professional development plans in their districts.

#### *Compendium of the Interviewee Responses*

*Question one: How are professional development plans created and is consideration given to teacher preparation in 21<sup>st</sup> century instructional practices?*

The response to the first part of the question was unanimous indicating that the participants have professional development committees comprised of administrators and teachers in each of their districts (P1, O2, Y1). "The plans are developed by a team of educators including teacher assistants, teachers, and administrators" (B2).

Across the board, the charge of these committees is to review the school report cards and longitudinal data which

identify areas of need in terms of student performance (P1, O2, Y1). "Committees look to data as a source of direction and they look to teacher inclination in the planning process" (BR1).

Some districts survey their teachers to determine the areas of greatest interest and personal development. The results of the surveys then drive the course offerings for professional development and teachers have the opportunity to choose in accordance with their own personal needs (Y2, BR2, B1). The guiding principles and beliefs that are held by the participating professionals in the region support the committee model of plan development, but they clearly communicated that district needs must be met while considering teacher inclination. "There needs to be embedded in professional life a system that people still think of as choice in professional development, and professional development plans need to be the foundation of what districts do" (G2).

In the second part of the question, which asked if consideration was given to teacher preparation in 21<sup>st</sup> century skills, a variety of responses indicated that currently districts are updating their professional development plans and updating the designs for future teacher training. To that end, participants talked about the need for greater specificity in their plans, in particular, the integration of 21<sup>st</sup> century skills (B2, G1).

Currently, several of the interviewees agree that technology is viewed as a 21<sup>st</sup> century skill (G1, G2, B2, B1, O2, Y2). As districts update their professional development plans, "there needs to be a continuum of learning and an analysis of 21<sup>st</sup> century skill trends because our students need to be exposed to the world of local business, unique macro/micro systems, and technology enhanced communications" (B2).

Question two: *What professional development is currently in place to train educators in 21<sup>st</sup> century skills that will prepare students for the workplace?*

While there was some variance in responses, all the representative districts engage their teachers in trainings that address academics. The twelve participants all indicated that professional development should be relevant, and the need to increase student performance on standardized assessments has been a driving force in the offerings provided to teachers. In addition, the participants indicated that perhaps the most widely provided training is Curriculum Mapping because curriculum initiatives are ongoing. Across the board, but with some variation, districts presently provide training in Curriculum Mapping, Differentiated Instruction, grant writing, technology, math, collaborative teaching, reading/ literacy, Response to Intervention, and active learning (Y1, Y2, G1, G2, P1, P2, O2).

Traditionally, professional development plans have also included trainings that focus on interactions with students, behavior, and technology (O1, B1, B2). In considering their present plans, interviewees regarded technology efforts as their 21<sup>st</sup> century teacher training initiatives. In practice, technology use has been identified and defined in the computer lab concept, but two participants believed that it is time to move away from the computer lab concept and really use technology as a tool for both directed-learning and self-learning (B1, O2). Teachers need to be kept up to date in new computer technology because the industry is growing so fast and in some instances the kids know more than the adults (B1). Expanding technology offerings for teachers expands the opportunities for students to learn in a wired world, thus preparing them for the 21<sup>st</sup> century marketplace (B1). "With technology, people can teach themselves, so students need more technology to learn" (Y2).

Considered as a 21<sup>st</sup> century skill, some of the districts engage in Smart Board training and interviewees support the use of Smart Boards in the classroom as a teaching enhancement. There is a sense of pride among the interviewees as they indicate that classrooms are equipped with Smart Boards. Some seasoned teachers resist the new technology and feel threatened. Each district has planned for addressing teacher barriers



through mentoring. In five of the six districts there are instructional technologists, turnkey trainers or *technology buddies* available to assist the teacher in the classroom: "We have an in-house techie who is really into it. We have used her to do trainings and presentations" (B1).

Question Three: *Does the district plan coincide with the 21<sup>st</sup> century needs of the region?*

While some districts address 21<sup>st</sup> century skills through technology training for teachers in the use of Smart Boards, in general the perception was that there is no direct planning for designated 21<sup>st</sup> Century skills. "The plan doesn't hone in on 21<sup>st</sup> century skills" (G1). Thus, as professional development plans are revised, there will need to be a greater focus on 21<sup>st</sup> century skills (BR2, B2, G2, O1, O2). "21<sup>st</sup> century skills must be consistently tied to other skills because nothing stands in isolation" (G2).

Most of the interviewees indicated that the professional development plans are born of the academic needs of the districts and are not formally connected to the needs of the regional businesses:

"We have not aligned with the workforce but with school needs" (P1).

"We have been pushing for the Regents so that students can go to college" (Y2).

With the coming of the Global Foundries, Inc., a resounding theme in interview responses was that greater concern must be given to 21<sup>st</sup> Century Skills in teacher preparation. All of these educators have identified that they need to know the local requirements in regional businesses so that appropriate professional development can be made available to teachers. Teacher discussions with businesses will help teachers better comprehend the role of 21<sup>st</sup> century skills in the workplace (B1, O1, P2). Local educators need to be able to relate to the future opportunities of the area:

"Knowing who to contact and where the resources are will help facilitate opportunities for students and teachers" (P2).

The coordination of business, technology, and math needs to be the focus and relationships with area colleges need to be strong. Regional colleges are instrumental in training new teachers and continuous dialogue with districts surrounding 21<sup>st</sup> century skills will provide meaningful information to the colleges (O1). To that end, districts need to build relationships with colleges that support academic needs (B2).

Opportunities to create seamless curriculum, advanced placement, and concurrent enrollment need to be continually developed: "Initiatives must be explored with local colleges in support of regional economic development" (Y1).

Deaney and Hennessy (2007) found that teachers who are exposed to new situations and new knowledge building, who reflect on their own learning, and who take their newly acquired skills directly to the classroom sustain and apply their training. Similarly, the researcher found that 100% of the interviewees felt that teachers who have the opportunity to be exposed to the practices of the workplace outside of the educational environment have a greater opportunity to understand and gain the knowledge that is necessary to teach and energize their students in the wider range of practical experiences and application (G2, BR1). Methods of professional development that create opportunities for teachers to rely on the expertise of each other and build learning communities help them to successfully motivate students (BR2).

*Question 4: What is the vision of educational leaders in the WSWHE BOCES as it pertains to 21<sup>st</sup> century skills preparation and the regional business needs?*

Each interview participant had a vision of what should happen and where their district should be when it comes to 21<sup>st</sup> century skills and professional development. All participants stated that a significant factor in advancing professional development and 21<sup>st</sup> century skills was on-going dialogue between educators, not only administrators, but also teachers and local businesses. They also noted that the region needs to be

prepared to develop students who are ready to meet the needs of the businesses in the area, and they feel that "the present professional development opportunities already put the schools behind" (O2).

According to the Tech Valley Consortium, a specific regional need is "the capacity to train new and re-train existing teachers so that they can impart the knowledge and skills students will need for success" (Tech Valley Consortium, n.d.).

The respondents of this study felt that 21<sup>st</sup> century skills must be implemented in a collaborative way in, among, and between the component school districts and BOCES:

"A regional vision needs to be implemented to address cohesive efforts in the planning of professional development which addresses the preparation of students in 21<sup>st</sup> Century Skills" (P2).

"Professional development plans need to be networked with BOCES" (G1).

"Across the 31 components there is a need to know where schools are moving and how that movement impacts education" (G2).

"It is essential that districts work together to establish a regional vision by sharing resources, and jointly

participating in professional development initiatives”  
(P1).

“Together, districts need more research, direction, and programs to provide students with the requisite skills to get jobs. A broader district view is needed, and across the region teachers need to collaborate” (P2).

“Leadership must pull it all together so that a clear vision emerges and an agreed upon structure is fashioned for professional development” (G2).

Exploration and development of a regional vision must begin with dialogue and collaboration among the 31 components of the BOCES, and it must include dialogue with local businesses and the community at large. School districts need to work together and with BOCES to share resources, professional development opportunities and successful instructional implementation practices with each other:

“There already is a strong relationship with BOCES and the collaboration from the support staff at BOCES is wonderful” (BR2).

“There is a wealth of knowledge in school districts and it needs to be tapped to better help all students in New York State understand what they are capable of accomplishing” (B1).

"Externships for teachers will improve instructional practices that support 21<sup>st</sup> century skills" (O1).

"Emotion and politics get involved and school districts need to stop being territorial" and share resources for professional development (O1).

Finally, a consistent regional process needs to be in place between the districts and BOCES that includes dialogue, planning and implementation. A collective vision, one that develops clear expectations, needs to be created and there needs to be an agreement statement that is reflective of the collective vision (P1). Leadership is needed to advance professional development across the 31 component school districts. WSWHE BOCES is proactive in thinking and they seek input (BR2). "BOCES is appropriate to lead the way on this recommendation" (G2). With BOCES as the lead agency, the districts will be able to focus on their professional development needs while concomitantly building an academic infrastructure which will prepare students for the 21<sup>st</sup> century workplace.

#### Chapter Summary

All interviewees in this study felt the need to be proactive in terms of seeking an agreed upon vision for professional development and 21<sup>st</sup> century teacher preparation. They indicated that districts were currently upgrading their

professional development plans. Most wanted to see 21<sup>st</sup> century skills embedded in the curriculum and instructional delivery training for teachers that will enable them to provide relevant experiences for their students. Some of these leaders indicated that the instructional thrust driven by the Regents Standards had, in part, caused professional development plans to be basically devoid of 21<sup>st</sup> century skills.

As a result of two regional studies conducted by the Center for Governmental Research in concert with the WSWHE BOCES, the interviewees look for changes to be forthcoming. Most interviewees stated that they look to BOCES for leadership, direction, and shared resources, especially the smaller districts, because BOCES has been instrumental in bringing the 31 districts together to study the regional needs. There needs to be movement in developing a regional vision and implementing it across the 31 districts to make sure that students are afforded unique and diverse opportunities that will better ready them to meet employer expectations.

## CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

### Summary of Findings

This qualitative study's major research question was: *Are educators receiving the professional development they need to prepare students for the regional workforce in the WSWHE BOCES area of New York State?*

The major research question was explored by the researcher as study participants answered four research questions:

1. How are professional development plans created and is consideration given to teacher preparation in 21<sup>st</sup> century instructional practices?
2. What professional development is currently in place to train educators in 21<sup>st</sup> century skills that will prepare students for the workplace?
3. Does the district professional development plan coincide with the 21<sup>st</sup> century needs of the region?
4. What is the vision of educational leaders in the WSWHE BOCES as it pertains to 21<sup>st</sup> century skills preparation and the regional business needs?

Embedded in the interviewee responses were discussions about what is happening regionally due to globalization; what professional development is currently in place; what educators already know about the world of business and 21<sup>st</sup> century skills and what educators still need to know; what are the potential



barriers - time, limited resources, an resistance; what is needed in terms of regional professional development; and what the future holds in terms of professional development for educators. Embedded in these conversations were descriptions of what exists and what needs still remain in terms of regional professional development as it pertains to 21<sup>st</sup> century workforce skills in the WSWHE BOCES.

Educators who are responsible for professional development planning and implementation in their school districts desire to work collaboratively with BOCES and the regional businesses to better understand what is needed in professional development for area teachers. As these educators lead professional development initiatives, they are eager to have a clear regional vision that provides consistency in teacher training in and among the 31 component school districts of the WSWHE BOCES region of New York State. With the advent of the Global Foundry in Malta, and, as the region emerges as an intricate part of the global marketplace, they believe that there is an urgent need for greater understanding between the 31 component schools districts in the region and the businesses of the region in terms of preparation for students. The goal of these educators was to ensure that students emerge from local school districts ready and able to meet the expectations of institutions of higher education and/or the regional workforce. To accomplish this,

teachers must be prepared to meet the needs of the students they teach. Training in 21<sup>st</sup> Century skills and instructional practices that advance 21<sup>st</sup> century skills is not only necessary but an imperative to gain a competitive status in the global marketplace, and needed regionally are "New forms of instruction, training, and programming befitting the needs of companies that are part of or serve Tech Valley" (Tech Valley Consortium, n.d.).

Overall, the participants in this study recognized that in their respective school districts, the existing professional development plans address teacher training that is based on the New York State Standards and the achievement of students on New York State Assessments. As plans are updated, these professional development experts will be the catalysts for the advancement of 21<sup>st</sup> century skills in teacher training. They are ready to further integrate 21<sup>st</sup> century skills into the curriculum and to expand the knowledge, skills, and abilities of teachers so that they, in turn, can not only prepare students for college but can also advance student preparation for the regional workplace.

BOCES is viewed as the lead agency in the development of consistent intra-district and inter-district professional development opportunities in the region. With BOCES leading the

way, districts, as a part of a consistent system, will better ensure aligned opportunities for teachers and ultimately for students.

## Conclusions

As portrayed by the media, the perception of the citizens in the United States is that our schools are failing to prepare students in the 21<sup>st</sup> Century workplace and therefore causing the United States to be less competitive on the global market.

In the Northeast region of New York State, the complexion of business opportunities is changing. The Global Foundries Chip Fabrication plant, new to the Malta area, will spawn new employment opportunities, and there is concern about regional student readiness to meet the challenges of the local workplace and/or to proceed to college.

The WSWHE BOCES has joined with area school districts, institutions of higher education, other regional BOCES, and businesses to engage in a cooperative study to determine what is needed in workforce preparation and to develop a plan including professional development for teachers.

Educators are key catalysts in the advancement of the United States in terms of producing competitive workers to take their place in the global market. While the workforce changes, very often the instruction that takes place in the classroom

lags behind. The greatest resource any school district has is its teachers. Teachers are knowledgeable and influential and have the ability to motivate students. It behooves school districts to ensure that teachers are kept informed of regional changes, be a part of planning, and be trained in new strategies that will enhance the curriculum and accelerate student knowledge, skills, and abilities.

In response to the study's central question, *Are educators receiving the professional development they need to prepare students for the regional workforce in the WSWHE BOCES area of New York State?*, the researcher has drawn conclusions through interviews with area educators. The conclusions include the following: First, school staff who are responsible for professional development share some common language pertaining to 21<sup>st</sup> century skills, but they recognize that they need to become more proficient in the 21<sup>st</sup> century terminology. Second, all districts have professional development plans for teachers, but few have embedded 21<sup>st</sup> century skills (beyond academics and trainings in the utilization of instructional technology) into professional development offerings. Third, in general, districts have not and do not meet with post secondary educators to discuss the skills expected of students who will enter the teaching profession in terms of proficiency in 21<sup>st</sup> century skills and an understanding of the targeted needs of the

regional industries. Fourth, for the most part, districts have not and do not utilize direct feedback from the business community in the creating of professional development plans. Information about the needs of local businesses does not trickle down from the top. Fifth, professional development planning and delivery is accomplished in silos, rather than cross-district fertilization of skills, knowledge, and resources. Sixth, the WSWHE BOCES has been and continues to be a stabilizing force in advancing 21<sup>st</sup> century skills as part of the greater Tech Valley initiative. Seventh, the WSWHE BOCES region has rapidly become the focal point for statewide economic development in emerging high tech industries, including the recent ground breaking for the new chip fabrication plant at Luther Forest, Malta, New York and recent construction of high tech training centers by higher education institutions, such as Hudson Valley Community College's TEC-SMART (Training and Education Center for Semiconductor Manufacturing and Alternative and Renewable Technologies) facility. These initiatives have informed BOCES of the need for professional development of teachers in order to prepare students for the 21<sup>st</sup> century workplace.

As depicted in Figure 1, professional development opportunities must be continually explored and the cycle of professional development planning needs to be comprehensive if educators are to be current in their practices.

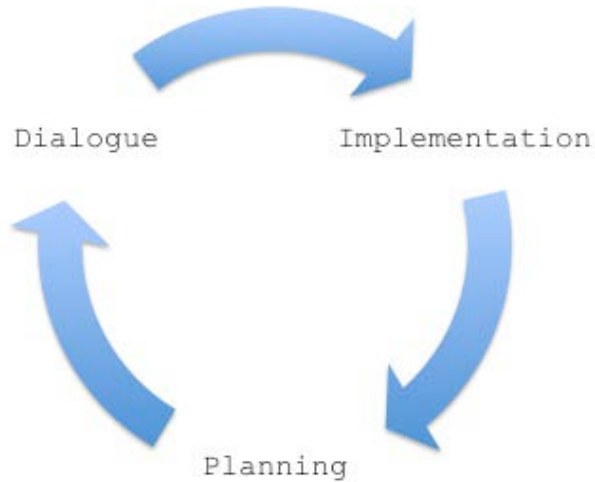


Figure 1. Professional Development System for 21<sup>st</sup> Century Skills

#### Recommendations

Born of this study, through document review, demographic information, and interviews with participants, are researcher recommendations. These recommendations are:

- *Across the region, a clear vision needs to be articulated for 21<sup>st</sup> century skills in professional development. At the present time, there are individual visions that need to be harnessed through dialogue with the schools, institutions of higher education and businesses in the region to develop a core set of skills and strategies that are consistent for student preparation for college and/or the workforce. Accomplishing this recommendation will require the formation of a task force which is representative of*

the component school districts and coordinated by a lead agency.

- *Professional development opportunities should lead educators to understand what 21<sup>st</sup> century skills are and must provide specific training in the application of 21<sup>st</sup> century skills. 21<sup>st</sup> century skills need to be defined and shared across the regional schools, and instructional delivery in the classroom must be consistent for all students. To equally educate students in 21<sup>st</sup> century skills, the component school districts must come to an agreement that will serve to assist in the accomplishment of this task.*
- *Teachers need to be exposed to the practices of 21<sup>st</sup> century skills in the workplace and more teachers need to serve externships in order to bring first hand knowledge of applications into the classrooms. If businesses truly seek a 21<sup>st</sup> century workforce, they must be engaged in preparing students to enter that workforce. By opening their doors to the educators who teach the students, they are, in fact, training the trainers. It is imperative that existing externship programs be expanded to include more teachers and involve more businesses. For this to occur, both schools and businesses must meet regularly and find common ground.*

- *Technology offerings for teachers should be expanded so that teachers can provide greater opportunities for students to gain practical application in the wired world, thus preparing them for the 21<sup>st</sup> century workplace. As districts adopt more advanced technology, all teachers must have the opportunity to be trained and have access to this technology in the classroom. It is especially important that in small districts where resources are limited, opportunities for collaboration with other districts are provided in concert with BOCES.*
- *A designated set of skills should be identified and strategies for the delivery of those skills should be part of a regional tool kit to support classroom teachers. While students need a core set of skills to be prepared, teachers also need a core set of skills that provide them with a strong knowledge base. In addition to knowledge, teachers need to know where to go for assistance and how to draw on strategies that are common in a regional tool kit that addresses instructional practices in 21<sup>st</sup> century skills.*
- *Teacher preparatory institutions should expand training on 21<sup>st</sup> century skills as part of the formal curriculum. Just as businesses need to inform districts of the skills that are needed to be successful in the job market, districts*



that are implementing 21<sup>st</sup> century skills should inform teacher preparatory institutions of what is needed for new teachers to be readily employable. In particular, the curriculum for elementary teacher preparation needs to be enriched with more math and science courses.

- *21<sup>st</sup> century skills should be integrated into the New York State Learning Standards and be included in state assessments.* BOCES as an arm of the State Education Department should work to achieve an integrated balance between business needs and the New York State Learning Standards, and BOCES should help to redirect and integrate 21<sup>st</sup> century skills into the Learning Standards. As 21<sup>st</sup> century skills are integrated into the Standards, appropriate strategies and tools should be developed to assess those skills.
- *Districts should continue to work closely with the WSWHE BOCES to share resources and expand professional development across all of the 31 component school districts.* All of the districts both small and large will benefit from working with BOCES. Clearly, BOCES is the best agency to lead districts in the achievement of a comprehensive regional vision.

## Suggestions for Future Research

This qualitative research project uncovered topics of interest and possible future research while interviewing the participants as they told of their visions for professional development. The researcher has made the following interpretations for potential future research:

- Identify national *Best Practices* in the delivery of 21<sup>st</sup> century skills.
- Discover business/school partnerships where businesses are engaged in developing teachers as well as the students in the classroom.
- Explore models in which businesses are engaged in the educational process by providing equipment and staff resources that are specific to the emerging technologies they utilize during manufacturing processes.
- Explore what kinds of public policies exist across the nation that could be adopted by New York State to support businesses being engaged with public schools.
- Expanded research is needed to address the three forces described in America's Perfect Storm. In this study the researcher only focused on those areas relative to professional development for educators of K-12 schools.

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Appendix A

<b>Rubric for Professional Development Plans and 21<sup>st</sup> Century Skills Preparation</b>		
Created by Researcher from the United States, Department of Labor - O*net on line		
School District Color Code:		
	Exists	Does Not Exist
<b>Basic Skills</b>		
Active Learning		
Active Listening		
Critical Thinking		
Learning Strategies		
Mathematics		
Monitoring/Assessing performance		
Reading Comprehension		
Science		
Speaking		
Writing		
Complex Problem Solving Skills		
<b>Resource Management Skills</b>		
Management of Financial Resources		
Management of Material Resources		
Management of Personnel Resources		
Time Management		

Extracted from source - using skills subset - (United States Department of Labor, n.d.)