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**CAREER AND TECHNICAL EDUCATION TEACHER PREPARATION TRENDS:
A PILOT STUDY**

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Introduction

In any nation an education system and its inherent programs must be related to its political, social, and economic life (McCaslin & Park 2002). It then follows that the general purpose of education is to equip individuals with skills and knowledge that helps them secure employment as well as improve the society in which they live. Traditionally, Career and Technical Education (CTE) as a program has been accountable for preparing individuals to enter into and succeed in the workforce. Scott and Wircenski (2004) described Career and Technical Education as a large and diverse educational field that comprised a number of programs (agriculture, family and consumer sciences, marketing, health, trade and industry, and technology education) designed to prepare students for employment.

In the contemporary education system, Career and Technical Education refers to an undergraduate major with instruction in one of the following 13 career/technical fields: agriculture and natural resources; business management; business support; communications and design; computer and information sciences; education; consumer (or personal) services; engineering, architecture, and science technologies; health sciences; manufacturing, construction, repair, and transportation; marketing; protective services such as fire protection, corrections, and public, legal, and social services. In some cases, courses are combined into larger groupings (e.g., business management, business services, and marketing combined into “business and marketing”) (National Center for Education Statistics, 2002).

Since its inception as a field of study many organizations have played a major role in supporting CTE advocacy. Organizations include - the Association of Career and Technical Education (ACTE), International Technology and Engineering Educators Association (ITEEA), National Association for Workforce Improvement (NAWI), National Association of

State Directors of Vocational Technical Education Consortium, (NASDCTE), National Business Education Association (NBES) and the National FFA Organization (National FFA).

Of particular note is the work of the National Association of State Directors of Career Technical Education Consortium (NASDCTE). In 2002 NASDCTE stated that Career and Technical Education is administered in a variety of settings and levels notably at middle school career exploration and high school programs, postsecondary certificates and degrees, and customized training for employees in the workplace. According to NASDCTE, Technical Education programs provide students and adults with: (a) the technical skills and knowledge necessary to succeed in occupations and careers by virtue of drawing its curricula, standards, and organizing principles from the work place; and (b) the cross-functional or workplace basics necessary for success in any occupation or career (such as problem solving, teamwork, and the ability to find and use information) as well as skills for balancing family and work responsibilities. This is a critical and integral component that is build into CTE courses and offers career oriented benefits to all students, and (c) the context in which traditional academic skills and a variety of more general educational goals can be enhanced, due to CTE being robust and flexible enough to respond to the multiple needs of educational environments, customers and levels of specialization. In its initial and current work, NASDCTE continues to contribute to the development of a new vision for CTE through development of 16 career clusters that seek to mirror all aspects of industry and allow students to pursue a full range of careers with vertical and lateral mobility (Ruffing, 2006).

The 2010–2011 *Occupational Outlook Handbook* from the Bureau of Labor Statistics website documents the fastest growing careers are in CTE areas including wind energy jobs (U. S. Department of Labor, 2010). Health occupations will account for some of these increases

in employment, as will occupations in education, sales, and food service. Office and administrative support services occupations specifically the following areas under CTE will experience numerical growth over the 2008-18 period: registered nurses, office clerks, general, postsecondary teachers, construction laborers, carpenters, computer support specialists, truck drivers (heavy and tractor trailer), networks systems and data communication analysts, dental assistants, self enrichment education teachers, and computer programmers. These forecasts state that occupations requiring some postsecondary education are expected to experience higher rates of growth than those with on-the-job training..

Occupations in the associate degree category are projected to grow the fastest, at about 19 Percent. In addition, occupations in the master's and first professional degree categories are anticipated to grow by about 18 percent each (U.S. Department of Labor, 2010). Further, data from the National Center for Education Statistics report of 2003-04 indicated that the number of postsecondary undergraduate institutions awarding career education endorsement increased from 5,573 to 6,120 from 1997 to 2006; and 4-year public institutions increased from 578 to 615. These projections will cause an even greater demand for teachers at the community and technical college level (U.S. Department of Education, Institute of Education Sciences, n.d.).

Although there has been an increase in CTE endorsements awarded, today, research documents that teacher education programs are facing an ongoing and worsening teacher shortage in all disciplines. The National Education Association (2008) reported that a historic turnover has been taking place in the teaching profession. While student enrollments rose rapidly more than a million veteran teachers were nearing retirement. Experts have predicted that overall the nation will need more than 2 million new teachers in the next decade.. In the

field of Career and Technical Education the picture is even worse. Lynch and Ruhland (2007) stated that the 1980s and 1990s, witnessed a significant decline in the CTE teaching force. Many colleges and universities closed their CTE teacher education programs, fewer CTE colleges graduates with certification chose to teach, but rather went to work in industry and large numbers left the teaching field.

Hartley, Mantle-Bromley, and Cobb (1996), Lynch (2000), Walter and Gray (2002), Wright (2001) and Headrick (2003) among others have documented that CTE focused teacher preparation programs are in an awkward stage all over the country. Bruening, Scanlon, Hodes, Dhital, Shao, and Liu, (2001a) conducted a study to update Lynch's 1996 study, "The past, present and future of vocational and technical education". They found that CTE programs had declined by at least 11% during the period 1991 to 2001, and that for every new program implemented there seemed to be at least 4 programs being phased out. This decline has further been compounded and precipitated by CTE teachers who on average are significantly older than non-CTE teachers. CTE teachers are comprised of the baby boomer generation, which constitutes a significant share of the teaching force that is set to retire in the next five years (Gaurino, Brewer, & Hove, 2000).

Though teacher preparation in contemporary society is being fraught with great uncertainty, especially in an environment that has witnessed closures of programs. These studies, in addition to anecdotal evidence presented by experts in the field, suggest that CTE teacher preparation programs have and are significantly reducing their commitment and capacity to prepare teachers. A review of CTE teacher preparation literature since the Bruening et al. (2001a), Bruening, Scanlon, Hodes, Dhital, Shao, and Liu (2001b), and Levesque, Laird, Hensley, Choy, Cataldi, and Hudson (2008) studies revealed that very little has been done to

continuously update the status of CTE teacher preparation. To this end, it is essential for policymakers, stakeholders, educators, and those that are interested in CTE to work together to reinvent and position CTE teacher education as a program that is proactive and seeks to prepare individuals for the world of work. It is arguable to state that there is a need to conduct a thorough review of the status of CTE teacher preparation programs every five years.

Conducting such a study will not only provide a clear picture of CTE teacher preparation practices at 4 year colleges, but continuously help the field to strategize, invent new programs, and update CTE curriculums to meet the challenges of a changing economy and workforce.

Purpose of Study

The key research question guiding this study was, what is the state of CTE teacher preparation programs in the last five years? This inquiry was designed as a pilot study to examine trends in CTE teacher preparation programs in the last five years with regard to (a) program enrollment requirements, (b) CTE certification areas, (c) enrollment in CTE areas with regard to gender, (d) completion rates, and (e) alternative teacher certification process at 4-year colleges.

Philosophical Framework

This study is informed by the democratic utilitarian experiential values of pragmatism in harmony with the values of Humanism as the basis for the principles for Career and Technical Education (Martinez, 2007). Martinez (2007) stated that the interlacing of these two philosophic constructs could be realized when the following fundamental questions are asked: What is true? (The human experience which is in a constant state of change). What is good? What is useful for

human beings and allows for self-actualization; and what is right? (Democratic ideals and the values of freedom, justice, and self worth). Further, Martinez stated that if one accepted the Pragmatic Humanist philosophic view, then the next task was to explore the fundamental values that should be used as touchstones to guide the development of principles. Historical principles and legislative trends that have served to guide Career and Technical Education have yielded the following values (a) accessibility, (b), accountability, (c) equity, (d) learning, (e) usefulness, and (f) safety. This study seeks to articulate that these principles should be the cornerstone by which CTE teacher preparation programs are re-evaluated and redesigned in order to attract the best pool of students as well as prepare individuals who are adept to the demands of a changing workforce and economy of the 21st century.

Teacher Development Practices

According to the U. S. Department of Education (2001), teachers across the United States are prepared in more than 1,300 large and small, public and private colleges and universities, as well as through alternative programs offered by districts and states. While effective teacher preparation programs do exist, there has been no systematic way to ensure that all teachers acquire and continue to develop the knowledge and skills they need (McRobbie, 2000). Program designs and teacher preparation practices vary widely. In modern schools, the population of school-age children in the U.S. is becoming increasingly diverse, but the pool of potential teachers is not, furthering the need to prepare teachers to work with students different from themselves.

The challenges in improving teacher education programs and practices in the U.S. are

enormous, and a qualified teaching force is an unquestionable necessity (U.S. Department of education, 2001). Darling-Hammond (2010) stated that a good teacher education program, first of all, is coherent. That is, it has an idea about what effective teaching is, and then it organizes all of its course work and all of the clinical experiences around that vision. It is not just a random assortment of courses and experiences for people. The courses are very much connected to practice, as well as, to theory. Such programs have students in the classroom working constantly with expert master teachers, while they are also teaching students about how students learn, how to assess their learning, effective teaching strategies that will allow them to build a repertoire. To effectively ascertain that teacher programs are of quality and are preparing as well as retaining exceptional talented individuals, continuous research investigating the following questions will need to be conducted. That is: what characterizes efficient and effective practice in initial preparation as measured by beginning and practicing teacher quality and retention? How do school and district context influence beginning teacher quality and retention? How does policy context affect the content and process of teacher education?

These questions span all fields of teacher preparation, specifically Career and Technical Education. Today, CTE curricula is posed with questions about future directions due to changes in the social, economic, political, and technological forces affecting each and every sector of our lives. Twenty-first century jobs will need team players, problem solvers, people who are flexible and possess high levels of interaction skills to exploit the new technology of this century. According to Leask (2001), these rapid changes have illustrated the necessity for regular review of curricula and the need to constantly upgrade as well as retrain teachers' knowledge and skills; for example, CTE programs such as carpentry, which emphasized employment in a specific trade, are evolving into programs that now educate students for a range of careers in the broader

construction industry. New CTE programs such as computer networking and pre-engineering are being created to educate and prepare students for careers involving sophisticated scientific and technological skills and knowledge.

In contemporary society, research studies have documented various issues in Career and Technical Education teacher preparation, including certification/licensure requirements, the declining number of teacher education programs in Career and Technical Education nationwide, and problems of retention (Bartlett, 2002). This tends to lead to the question: who are CTE teachers and how are they prepared? Walter and Gray (2002) stated that describing who CTE teachers were, was and is still a difficult question and perhaps a reason why reforming CTE teacher preparation has not progressed far beyond the talking stage. Nonetheless, Levesque, Lauen, Teitelbaum, Alt, and Librera, (2000) stated that most Career and Technical Education teachers are characterized to be generally older than academic teachers, as they enter the teaching profession after obtaining industry experience. They tend to have personal experiences in skill based occupations and are constantly working to keep on top of trends in their specific field as they help students develop those same skills.

According to the National Center for Education and Statistics (2004), roughly 50.1 % of secondary-level teachers are classified as CTE teachers. The Public 4 Year College Teacher Survey of teaching faculty in CTE fields identified 11 different types of CTE teachers. Listed in order by the total percentage of all teachers they are: (a) Health sciences 10.5%; (b) education, 9.1%; (c) business and marketing, 7.9%; (d) engineering, architecture, and science technologies, 4.9%; (e) computer and information science, 4.5%; (f) public, legal and social services, 3.5 % (g) consumer services, 3.3%; (h) communications and design, 2.7%; (i) protective services, 1.5%; (j) manufacturing, construction, repair, and transportation, 1.4%; and

(k) agriculture and natural resources, 1%. Unknown was documented as 0.5%.

With CTE having a diverse set of programs with differing divisions, Walter and Gray (2002) noted that many teachers within CTE program areas do not view themselves as vocational Educators. As a consequence, CTE teacher programs will continue shrinking if high school students do not have mentor figures that can advise and encourage them to pursue particular fields of CTE. We as career and technical educators have a responsibility of encouraging young people to become the next CTE teachers for future generations, in addition to preparing them for tomorrow's jobs.

So how are CTE teachers prepared? Although, it is not easy to determine exactly how many U.S. colleges and universities actually offer baccalaureate degrees that prepare teachers for CTE. A primary reason for this difficulty is that the words, "*Career and Technical Education*" or "*Vocational Teacher Education*" are not always the descriptors used to identify such programs. Rather, programs are more apt to be called by their subject specific names, e.g., technology. Education, business education, home economics, agricultural education (Lynch, 1996). Although it is difficult to establish the different programs all over the country that prepare CTE teachers, Gordon (2007) highlighted the following five factors to impact the preparation of CTE teachers; industry experience and academic background, teacher shortages, alternative routes to licensure, professional development, and recruitment.

In a study of where CTE teacher education graduates go, Miller, and Wolosyk, (2002) reported that CTE degree or programs, the curriculum and practice of CTE teacher programs at Western Michigan University prepared students based on the following premises believing that:

1. Education for employability, broadly conceived and for the long term, and as generally and specifically provided through CTE is within the purview of public education at the secondary, post secondary, and adult levels-.
2. The design and delivery of CTE programs is intellectually grounded in subject matter content, liberal studies, pedagogy, and clinical experiences..
3. Professional preparation in CTE is student centered and relevant to the changing nature of work, changes in the workplace, new and emerging technology and the needs of the employment community.
4. Learning experiences in CTE are conducted in collaborative with area technical center, public school, and community colleges. Public school, area technical centers and community colleges accommodate individuals with varying levels of occupation preparation and experiences.
5. CTE programs are staffed with personnel from a broad array of clientele appropriate to the subject matter to be taught and congruent with the egalitarian goals of society.

Reflecting on the philosophical framework guiding this study, it can be assumed that these beliefs do reflect the tenets of most CTE teacher programs in the country. Walter and Gray (2002) stated that the majority of CTE programs -business -education, technology education, agriculture education, family and consumer sciences, and marketing/distributive education -all use the traditional four-year baccalaureate model similar to those used for elementary, middle school and secondary education teachers. Trade and Industrial (T&I) and Health Occupations Education (HOED) on the other hand, typically use an alternative preparation/certification model that stress work experience and occupational competence over academic credits and degrees earned. On average, T&I and HOED teachers will have nearly twice as much work experience

related to their teaching assignment (15 years) as other vocational teachers (8 years) and three times as much as academic teachers (6 years).

On a similar note, Zirkle, Martin, and McCaslin (2007), Lynch and Ruhland (2007), and Bartlett (2002) stated that across the United States, CTE teacher certification and licensure requirements are not only in constant flux, but also vary greatly from state to state and even within states. For example, Lynch and Ruhland reported that all states set their minimum requirements such as good health, no criminal record and some sort of determination of a predisposition to work with children or youth. Students seeking to be certified as CTE teachers through the traditional pathway often have the same requirements for certification/licensure as teachers in other subjects' disciplines. Students complete a specified number of hours in university general courses such as English and, college algebra. In addition, students develop a content specialty such as business education, mathematics etc through content area coursework. Finally, as part of teacher preparation, students take courses in teaching pedagogy and complete field experiences and supervised student teaching. An exit test may be required for initial certification /licensure for individuals in either alternative or traditional certification /licensure tracks.

Method

Research Design

The purpose of this study was to examine trends of CTE teacher preparation programs in the last 5 years. A second goal of the study was to argue that accessibility, accountability, equity, learning, usefulness, and safety principles as suggested by Martinez (2007) should be the cornerstone by which CTE teacher preparation programs are re-evaluated and redesigned. This

descriptive pilot study utilized a self-reporting survey methodology. Since the self-reported questionnaire collects factual data, this method of descriptive research was chosen as the most suitable for this project.

Participants

A list of schools offering Career and Technical Education teacher certification programs was obtained from the Vocational Information Center website directory (<http://www.khake.com/page50.html>). Lynch (1996) noted that it is not easy to determine exactly how many U.S. colleges and universities actually offer degree programs that prepare CTE teachers. A primary reason for this difficulty as noted by Lynch is that first, the words vocation teacher education are not always descriptors used to identify such programs and second, programs that do exist are administered in very diverse units in our colleges and universities. For example, at Southern Illinois University agriculture education is housed in the Department of Plant, Soil and Agricultural Systems College and not in the Workforce Education and Development Department which houses Career and Technical Education teacher preparation programs.

Therefore, this list was not exhaustive. However it provided a starting point to explore the status of CTE programs. A total of 34 schools were identified from the list as documented on Vocational Information Center website. The researcher then proceeded to visit the Career and Technical Education departments of these schools on the World Wide Web. In doing so CTE program coordinators and departmental heads were identified. Their contact information i.e. phone number and email addresses was recorded and an invite to participate in the study was initiated via email.

Data Collection Procedures

A self-reporting email survey in addition to data from the website of each school selected to participate in the study formed the data collection method for this pilot study. The email survey used to collect data was developed using items from studies by Pucel and Flister (1996), Bruening et al. (2001a), and McCaslin and Parks (2002). The survey contained five questions that sought to collect descriptive data from respondents about CTE program enrollment requirements, CTE certification areas, enrollment with regard to gender, graduation rates, and alternative teacher certification in their respective schools. The content and face validity of the email questionnaire was established using a panel of experts, comprising three current CTE educators who were familiar with teacher preparation practices and requirements. The panel was asked to review the email questions for readability as well as clarity and provide suggestions on improving the survey questions and statements.

Upon receipt of approval to conduct the study from human subjects committee, the researcher sent out a cover letter and an attached self-reporting email questionnaire to CTE program coordinators of the 34 schools identified documented on the Vocational Information Center website. Where a CTE coordinator had not been listed, the departmental chair was contacted. Five participants responded to this initial email contact and two weeks later all non-respondents were sent a second email with the questionnaire attached. In response to this second inquiry four participants responded. A week later, the researcher then resorted to contact non-respondents by telephone as well as send another email request. Two weeks later there were four more respondents, in total out of the 34 schools contacted 15 schools responded..

Findings

The findings of this pilot study are based on departmental website information found on the World Wide Web in addition to data collected from 15 CTE programs that responded to an email survey. Six of the 15 schools notably, Delaware State University, University of Florida, University of South Florida, California State University – Long Beach, University of Illinois Urbana Champaign, and Clemson University reported that they no longer offered CTE teacher preparation programs. Findings are reported verbatim as described by program coordinators as well as what is documented on the school websites.

When examining the first question, (*What are the requirements for enrollment in CTE programs?*) each school had different standards set forth. However, the most common requirement was that to be admitted into the teacher education program applicants must have been admitted to the university in addition to meeting the standards set by the school of teacher education. In other words, admission requirements to teacher education programs were the same for all majors listed in the undergraduate catalog of each respective institution. In addition, prospective student teachers are required to meet the standards set by the school of teacher education. On average most schools required that individuals interested in the teacher education programs have a grade point average of 2.75, when declaring teaching as their major besides to passing a basic skills exam administered by the State. Other institutions stated an associate degree with a major in a vocational area would be considered for those students who did not meet the GPA requirement. Prospective student teachers also had to provide a high school diploma or an equivalent with a minimum of 4 years work experience in an occupational area. In addition the prospective student would be required to have at least a grade C in content and licensure areas. Half of the schools that responded to the survey stated that a last step would

require that applicants pass the state bureau background checks as well as a tax commission check.

The second question (*What instructional areas (16 career clusters) do you certify in CTE teacher programs?*) inquired about what areas of certifications were the schools offering. Since 2001 NASDCTE has advocated that states and schools adopt the 16 career clusters to address the academic preparation and career needs for all students. These newly identified careers clusters are thought to be organized better around today's occupations, workplaces and the U.S. economy (Ruffing, 2006). However, this initiative has proved to be a hard sell for schools that offer CTE programs due to various factors like differing State economies, lack of instructors to teach in certain fields etc. It was noted that the schools that participated in this study still offered and certified teachers in the traditional CTE areas of Technology Education, Trade and Industry, Business and Information Technology, Health Occupation Careers, Family and Consumer Sciences and Agriculture Education. The most popular area was Business and Marketing subjects followed by Technology Education. Family and Consumer Sciences and Trade and Industrial were also perceived to be of interest. The least popular area with regard to courses being offered at the 4-year college seemed to be Agriculture Education and Food and Natural Resources. The third question was: *What are the enrollment and graduation rates in CTE teacher preparation programs with regard to gender, and are the enrollment and graduation rates consistent in the last 5 years?* It was noted that in most career courses, enrollment is still based on gender purporting the traditional model of a particular gender in a particular area of study. For example, females tend to be drawn to areas like Family and Consumer Sciences, and Health Careers, while male students were inclined toward Technology Education and Engineering related content. The field of Agriculture as well as

Business, Marketing and Computer Applications had an evenly distributed mix of students. Further, when asked about completion rates in the last five years one school did not respond, another school reported that they had a 95% completion rate for all genders, and another stated that in courses that are predominantly male oriented like technology education, completion rates were low for females the rest of the schools indicated a 100% completion rate.

The fourth and fifth questions examined alternative certification areas, enrollment with regard to gender, and completion rates. The fourth question read, *“Do you offer alternative teacher certification programs? If yes, what are the requirements for enrollment? If no, do you plan to offer an alternative teacher certification program?”* And the fifth read, *“What is the enrollment and completion rates with regard to gender in the CTE alternative teacher certification program? Has this completion rate been consistent in the last 5 years?”* The schools that participated in the study documented that they offered alternative certification and the requirements to enroll in the program varied significantly. Some schools reported that the requirements to enroll in alternative certification were similar to those required to enroll for a normal degree at the university level. To enroll, most schools required that at least students have a bachelor’s degree in a CTE content area with a grade point average of 2.75. Additionally, interested applicants had to have at least a minimum of 2 years of earning work experience, some schools required 5 years. In some instances applicants were also required to pass an occupational competency assessment or be currently employed by a school district and hold an occupational endorsement. The most popular content area was Business, Marketing and Computer Information Systems, followed by a skilled and technical science area like Technology Education, and Trade and Industry area. With regard to enrollment it was noted that overall male students were the majority in alternative certification areas in the schools that reported data,

however females were concentrated in Business and Marketing courses. With regard to completion and graduation from the alternative certification program, most of the respondents offered no response but for those who did they stated that they had a 90% completion rate. Further, some respondents stated that completion was dependent upon the applicant getting hired as a 1st year teacher. This phase comprised the final phase of the program. If the student is not able to secure employment as a teacher then the certification process would stall until the individual was hired.

Discussion

This pilot study sought to examine trends in CTE teacher preparation programs in the last five years. The findings of this study cannot be generalized. First, the questionnaire used to collect data was self reporting and could have been incorrectly reported by participants. Second, the list from the Vocational Information Center website (<http://www.khake.com/page50.html>) was not inclusive and did not include private institutions that certify teachers. Nevertheless, the findings of this pilot study could be used to indicate the status of CTE teacher preparation programs.

In most states, half of all high school students enroll in at least one CTE course and 25% to 40% complete the three or 4 courses that comprise a typical program of study (Harris & Wakelyn 2001). However, the findings of this pilot study and previous research Hartley, Mantle-Bromley, and Cobb (1996), Lynch (2000), Walter and Gray (2002), Wright (2001), and Headrick (2003) suggest that the field of CTE is at a critical juncture and hence wanting with regard to teacher preparation programs. To this end, these findings tend to lead to the question, where do we lose individuals interested in pre service CTE teacher programs and what basis

should CTE educators, design, develop, implement, appropriate, effective programs that can attract, recruit, retain and sustain talented individuals into CTE teacher education programs?

One way of revamping CTE teacher education preparation programs would be to assess the key principles of CTE as promoted by NASDCTE (2002), as well as, to implement the core values of accessibility, accountability, equity, learning, usefulness and safety as touchstones to guide the development of CTE programs as suggested by Martinez (2007). These key principles are built on the premise that CTE: (a) draws its curricula, standards, and organizing principles from the workplace; (b) is a critical and integral component of the total educational system, offering career-oriented benefits for all students; (c) is a critical and integral component of the workforce development system, providing the essential foundation for a thriving economy; (d) maintains high levels of excellence supported through identification of academic and workplace standards, measurement of performance (accountability), and high expectations for participant success; and (e) is robust and flexible enough to respond to the needs of the multiple educational environments, customers, and levels of specialization.

Career and Technical Education as a school program is a critical and integral component of an education system that seeks to offer career oriented benefits for all students. Therefore, accessibility to CTE oriented programs to all students is vital. According to Martinez (2007) accessibility implies that CTE programs are open to all and should be a part of the public system of comprehensive education. Thus, CTE enrollment program requirements should be streamlined to be uniform across all states or schools that offer CTE teacher preparation programs, in such a way that CTE programs are available to all. Further, high school students should be encouraged to declare a career major under guidance of a counseling officer. This

would further streamline recruitment efforts of talented individuals who comfortable meet entry requirements into CTE teacher programs.

The economy of a country relies on a competent workforce that has been prepared by knowledgeable educators. CTE contributes directly to a society's economic engine by being a primary component of the workforce development system by providing the essential foundation for a thriving economy. Over the years Career and Technical Education programs have been accountable to its constituents and stakeholders with regard to this endeavor. In the last 20 years NASDCTE and its partners have been advocating for 16 career clusters that seek to address the changing perceptions of 21st century workplace and economy. These 16 careers are clusters are occupational categories with industry validated knowledge and skill statements that define what students need to know and be able to do in order to realize success in a chosen field. States and schools are cautiously embracing these career clusters. 23 states indicated that they are at the mid- level stage in implementation, three states are at the awareness level, and about a third are just getting started (NASDCTE, 2007). Though the majority of states are slowly embracing the concept of career clusters and are consistent in expanding and extending their implementation, teacher training schools are yet to fully integrate these clusters into their curriculum. The needs of the community should be reflected in CTE programs and experts in the field should continue to conduct research on a continual basis to inform the progress of CTE areas of specializations and clusters to reflect the needs of the global workplace.

The traditional model of a particular gender in a particular field is still prevalent. Such continues to support stereotypical thoughts, completion rates, as well as deter individuals who might be interested in pursuing a field that is not traditionally inclined to their population. Nevertheless, CTE offers benefits for all students ranging from providing a contextual

environment for developing higher level academic skills to providing specific industry certification in an occupational field. CTE contributes to the goal of high academic achievement, student retention and motivation, and the development of general workplace and life skills. Degree completion, elimination of gender bias as well as stereotyping should be a concerted effort of CTE educators and should continue being promoted throughout Career and Technical Education courses. Recruitment, enrollment and supporting of diverse students and perspectives are beneficial for the continued growth of Career and Technical Education in addition to providing a motivation platform for different gender audiences. Alternative licensure routes provide an opportunity for individuals with industry expertise to obtain licensure and teach in CTE classrooms. While this might be a noble cause geared toward meeting teacher shortages in CTE as well as promoting lifelong learning opportunities, Bartlett (2002), Walter and Gray (2002), Lynch (1998) noted that critics of this route stated that alternative licensure routes sometimes contribute to CTE image problems. They argued that it does short change standard because teachers with alternative certification do not need a degree to teach (as cited by Gordon, 2007). Further, findings of this study concurs with previous studies, Gray and Walter (2002), Bartlett (2002), Heath and Camp, (2007), Lynch (1996), Bruening et al., (2001a) that there are a wide variation of practices that exist in alternative certification programs.

CTE draws its curricula, standards and organizing principles from the workplace. The workplace provides the context, objectives, and organizing constructs for instruction and assessment. The workplace also defines the standards of performance necessary including those required for academic, technical and employability. Individuals with industry experience and those who pursue CTE alternative licensure bring real life work experiences into the classroom, hence an asset to CTE if they are prepared to comprehend that contextual and experiential

learning are at the constructive pedagogical roots of Career and Technical Education. Therefore, administrators should strive to provide leadership to teacher preparation programs and streamline admission requirements into alternative certification programs.

Concluding Thoughts

It is no doubt that if CTE programs fail to meet teacher shortages and this worrying trend continues we are looking at a scenario where individuals who do not have a background in CTE will one day supervise CTE programs. Experts in the field should strive to conduct research that will provide the very much needed data to convince policy makers, stakeholders, administrators in universities and colleges that CTE teacher education programs are needed to prepare qualified teachers for the global workforce, redesign and re-collapse CTE clusters to those that are relevant to our economy, reduce variations in enrollment requirements, in addition to developing an articulation pathway between community colleges and teacher education programs in 4 year schools. Designing our programs around accessibility, accountability, equity, learning, usefulness and supported by continued research CTE can be confident of attracting and retaining the best talents in our teacher education program as we revise and adopt curricula, implement strategies and utilize contextual and experiential learning instructional practices that will be sought to prepare individuals to be effective for 21st century workforce demands.

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