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The quality of any research journal is dependent on the services of a strong Editorial Board and that is certainly true for the *Journal of Career and Technical Education*. The Board has provided guidance to the manuscript review process and the publication of JCTE and the Editors rely on them to provide quality reviews of several manuscripts each year. We express our appreciation to each EB member for their contributions to JCTE.

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NOTES FROM THE EDITOR

The *Journal of Career and Technical Education* can be obtained in both paper and electronic form. The printed journal is mailed to members and other subscribers around the world and is indexed in the Education Resources Information Clearinghouse (ERIC). The electronic journal is available worldwide on the Internet and can be accessed at the following case sensitive URL:

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Prior to Volume 16, Number 2, the *Journal of Career and Technical Education* was published as the *Journal of Vocational and Technical Education*. These issues can be found at the following case sensitive URL:

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It would not be possible to publish a refereed journal such as the *Journal of Career and Technical Education* without a distinguished group of reviewers. I would like to take this opportunity to acknowledge and thank the following colleagues for giving their time and expertise in providing timely reviews of manuscripts.

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The *Journal of Career and Technical Education (JCTE)* is a non-profit, refereed, national publication of Omicron Tau Theta, the national, graduate honorary society of career and technical education. Manuscripts submitted for consideration by *JCTE* should focus on career and technical education philosophy, theory, or practice. Comprehensive reviews of literature and reports of research and methodology will be considered. All articles should relate to current issues and have direct implications for career and technical educators. It is intended that *JCTE* serve as a forum for discussion of philosophy, theory, practice, and issues in career and technical education. Manuscripts submitted for review should not have been published or be under current consideration for publication by other journals.

Publication Style

The *Publication Manual of the American Psychological Association (*APA*)*, 5th Edition (2001), is the standard of style for *JCTE*. Place figures and tables in the appropriate place in the manuscript. Underlining should not be used anywhere in the manuscript. Statistics and titles in the reference list should be italicized according to APA 5th Edition Style. Manuscripts not adhering to the style manual will be returned to the authors without review.

Figures and Tables

Tables and figures should provide only information essential to understanding the article. Authors should avoid reporting the same information in both text and tables. In the preparation of tables and figures, authors should use APA guidelines for format and include the tables and figures in text where they should appear. Tables and figures are to be prepared as a part of the word processing file. Tables must be developed in columns using the table-formatting feature in the word processor so that they will translate to HTML. Each item in a table should be placed in an individual cell. Do not use tabs to format tables because they will not translate properly. Tables and figures will not be published on oversized or foldout sheets.

Submitting Manuscripts

Manuscripts accepted for publication normally may not exceed 20 pages of printed, double spaced text, including title page, abstract page, tables, figures, and references. Margins should be 1" all around and use Times New Roman 12-point for all text, tables, and figures. Use the line numbering feature of the word processor to number each line of the manuscript.

Electronic submissions are preferred, although mailed copies will be accepted.
Submit the following:

1. a separate **title page** with the manuscript title, author(s), institution(s), complete address(es), telephone number(s), and the author(s)' e-mail address(es); and

2. one double-spaced copy of the manuscript with the abstract placed immediately after the manuscript title and the lines numbered; author(s) must ensure that all references to the author(s) and their institutions are removed from the manuscript according to APA guidelines to facilitate the double-blind peer review process; the abstract should succinctly describe the manuscript's contents and cannot exceed 960 characters and spaces (150 words).

The manuscript and title page can be submitted via e-mail to tdbbns@clemson.edu, or it can be mailed on a 3.5" diskette or CD to Dr. Thomas Dobbins at the address on page 2. Diskettes become the property of *JCTE* and will not be returned. The electronic files must be in Microsoft Word format. The use of Rich Text Format (rtf) is acceptable.

Review and Publication

JCTE is published twice a year, spring (about June 1st for the hard copy) and fall (about December 1st for the hard copy). All accepted articles will be published in both traditional hard copy and in the electronic journal, which is currently available at the following case sensitive URL:

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The review process for the *Journal of Career and Technical Education* normally requires six weeks to three months. The Editor will notify you as each stage in the review process is completed. The decision of the reviewers will be one of the following:

1. **Accept** (publish as submitted, very minor editorial revisions may be needed - this is very rare for initial submissions);
2. **Accept Conditionally**, with minor revisions (revisions are reviewed by editor, not resubmitted to review panel);
3. **Accept Conditionally with Major Revisions** (revised manuscript will be sent back to the same reviewers for reconsideration);
4. **Reject but Invite Major Revision and Resubmission** (fundamental changes are needed, and the revised manuscript will go back to the same reviewers for reconsideration-this is a very common decision on the initial review and should not be considered as a final rejection); or
5. **Reject** the manuscript for *JCTE* (the manuscript will not be considered again).

The manuscript review process for *JCTE* is a "double-blind" peer review in that the reviewers are not informed of the identity of the author(s) and the author(s) are not informed of the identities of the reviewers. The reviewers of the manuscript are recognized scholars with appropriate professional and educational preparation and are selected for their specific expertise relative to the topic of the manuscript being reviewed. At least one of four reviewers on each manuscript must be a member of the *JCTE* Editorial Board. The final acceptance rate for *JCTE* is usually 35-45%. Authors who persevere through requested revisions are generally the authors whose manuscripts are eventually published in selective, refereed journals such as *JCTE*.

Book Reviews/Thematic Issues

Book reviews will also be considered for publication in the *JCTE*. Persons interested in publication of a book review should contact the Editor-Elect (see inside front cover, page 2). A thematic issue of the *JCTE* may be published at least once every two years. Themes for upcoming issues will be announced in both the hard copy and electronic journal.

Competencies and Traits of Successful Agricultural Science Teachers

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ABSTRACT

The purpose of this mixed-methods study was to identify the required competencies and traits of successful agricultural science teachers. Data was collected from focus groups of agricultural science teachers and a content analysis of existing research. Results identified 47 unique traits or competencies that were divided into the categories of Instruction; Student Organization; Supervised Experience; Program Planning and Management; School and Community Relations; Personal Traits; and Professionalism. One newly discovered competency, "working with diverse groups," transcended categories. A model depicting the traits and competencies was developed.

INTRODUCTION

Today's school climate is saturated with accountability mandates at every level. For example, current federal legislation requires that by the end of the 2005-2006 academic school year all teachers are "Highly Qualified" (No Child Left Behind, 2002). The law operationalized "Highly Qualified" using three criteria: full certification, a bachelor's degree, and competence in subject knowledge and teaching. Full certification and having a bachelor's degree are easily determined. Competency in subject matter and pedagogy is more subjective, and thus more difficult to measure.

The importance of understanding competencies required for a career is authenticated by the Trait and Factor theory of career selection (Parsons, 1909). According to this theory, three factors contribute to a person's success and happiness in a career: 1) the person's traits, which include aptitudes, abilities, interests, ambitions, resources, and limitations; 2) knowledge of the factors or competencies required for a given career; and 3) the closeness in match between the two. Thus, understanding the competencies and traits requisite of a successful agricultural science teacher is critical.

From a programmatic perspective, the American Association for Agricultural Education (AAAE) (2001) developed the *National Standards for Teacher Education* to describe what a teacher education program in agricultural science education should look like. The standards provide an input-side framework for assessing the quality of a preservice agricultural science teacher program. For example, Standard 2 indicates that a preservice agricultural science program should consist of a balanced curriculum that includes general education, technical agriculture content, and pedagogy professional skills. The document goes further to indicate topics in each respective area that students should receive instruction. However, the standards stop short of indicating the desirable outcomes of the program. Specifically, what competencies and traits should graduates possess?

Much research exists on skills, competencies and traits of effective teachers, in the general sense. Most notably is the work of Rosenshine and Furst (1971), who synthesized other research and identified

five fundamental characteristics of effective teachers: clarity, variability, enthusiasm, student opportunity to learn material, and task oriented/business like behavior. According to Suydam (1983), effective teachers also offer encouragement, engage students, minimize distractions and wasted time, establish and follow rules, monitor behavior, give clear directions, and move through the classroom. Richardson and Arundell (1989) added that effective teachers use a variety of examples, effectively plan for instruction, and are knowledgeable of both subject matter and pedagogy. Young (1990) further added that effective teachers plan and execute interesting lessons using a variety of methods, monitor student learning and behavior, and maintain rapport with students.

The above-mentioned characteristics begin to establish the competencies and traits needed by agricultural science teachers, particularly related to those in the formal setting of the classroom. However, teaching agricultural science extends beyond the classroom (Phipps & Osborne, 1988). Agricultural science teachers are expected to facilitate student projects, advise student organizations, administer adult groups, as well as plan and operate the agricultural science program. What competencies and traits are needed to accomplish these tasks?

Identification of a list of competencies and traits can serve as a guide for the desired outcomes of preservice agricultural science teacher programs. Additionally, if specific competencies and traits are innate, they could be used to identify individuals for recruitment into preservice agricultural science programs. As a result, graduates of preservice programs will possess competencies and traits that match those requisite of an agricultural science teacher, thus increasing their happiness and success as agricultural science teachers.

Two previous studies have explored the competencies or traits of effective agriculture science teachers. Roberts and Dyer (2004) utilized a Delphi approach to identify characteristics common across teachers that were identified as being effective in their field. This study used an expert panel of agricultural science teachers, administrators, state agricultural education staff, and university teacher educators in Florida. Many years earlier, Shippy (1981) identified 246 competencies needed by beginning teachers of agricultural science teachers. Using a list of 250 potential competencies developed from a thorough review of the literature, Shippy surveyed beginning and experienced agricultural science teachers, along with local agricultural education supervisors in Delaware. These two studies provided a basis for identifying the competencies of successful agricultural science teachers and were used as data sources for the current study. Their respective results are discussed in greater detail in the findings section of this manuscript.

PURPOSE AND OBJECTIVES

The purpose of this mixed-methods study was to identify the required competencies of successful agricultural science teachers. Three objectives guided this inquiry: 1) Identify competencies and traits of successful agricultural science teachers from the perspective of both preservice and inservice teachers; 2) Identify competencies and traits reported in the literature; and 3) Synthesize the results from Objective 1 and Objective 2 into a working model.

METHODS

The purpose of this study was accomplished using multiple inquiry methods. Objective one was met using a focus-group approach with preservice and inservice teachers, objective two was met using content analysis, and objective three was met using a constant-comparative method. The above was conducted by a research team that included two faculty members directly involved in preservice teacher education and two faculty members in the same department, but not directly involved in teacher preparation.

Multiple focus groups were conducted with preservice and inservice teachers to achieve objective one. Focus group interviewing is a guided discussion about a particular topic of interest or relevance to the group and the researchers (Edmunds, 1999). Focus group sessions are moderated and should be kept to small groups in order to capture collective thoughts, opinions, and feelings of the respondents (Berg, 2001). Research team members involved in preservice teacher education identified current (preservice teachers)

and former students (inservice teachers who graduated within the last five years) to participate in the focus groups. The other research team members facilitated the focus groups sessions to eliminate bias or coercion of participants. Four focus groups were held, two for preservice teachers and two for inservice teachers (n = 40). One additional inservice teacher who was unable to attend either session provided data via a telephone interview. Informed consent was obtained by all participants.

The focus groups with preservice teachers were conducted during a regularly scheduled session of a required agricultural education class and lasted approximately one hour. Open-ended questions presented through a PowerPoint presentation were used to guide group discussion. One research team member served as the facilitator, while the other took field notes. Each session was audio recorded and transcribed to ensure accuracy of the data.

Given the geographic distance between participants, the focus group sessions held with inservice teachers were conducted using an online conferencing system that allowed for audio and textual communication between participants and researchers. The same open-ended questions delivered with PowerPoint were used to guide the discussion. Data was collected using field notes and audio recordings of the focus groups.

Data collected from the focus groups and interview was analyzed using the constant comparative method (Lincoln & Guba, 1985). Researchers analyzed transcripts of all four focus group sessions and the one phone interview to determine trends in the data. Each unit (idea) was initially listed, without placement into categories. Tacit knowledge was employed in making initial judgments for categorization. Colored markers were used to identify themes so that the data could remain in context and provide a visual indication of emerging categories. The researchers summarized the findings into comparison tables to provide a snapshot of both preservice and inservice teacher perspectives framed by the focus group/interview protocol. A peer debriefing was held with the entire research team to review and provide feedback on findings. Debriefing and analysis allowed the research team to further identify themes.

The second objective was accomplished using content analysis. Patton (2002, p. 453) posited that "content analysis is used to refer to any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings." This was operationalized in the current study by examining previously published agricultural education research that addressed traits or competencies of agricultural science teachers. The *Journal of Agricultural Education* (previously published as the *Journal of the American Association of Teacher Educators in Agriculture*) and the *Journal of Career and Technical Education* (formerly the *Journal of Vocational and Technical Education*) are widely accepted as the premier outlets for agricultural education research and were thus chosen as the data source for conducting the content analysis.

The final objective of this study was achieved using a constant-comparative method (Lincoln & Guba, 1985). Traits and competencies identified from the focus-groups (objective one) and from the content analysis (objective two) were placed into a category with similar items or into a new category if it was sufficiently different to not fit into an existing category. These categories were used to create a visual representation of the competencies and traits required of successful agricultural science teachers.

FINDINGS

The findings of this study pertaining to all three objectives are presented together to create a coherent discussion about the competencies and traits of successful agricultural science teachers. An examination of the *Journal of Agricultural Education* and the *Journal of Career and Technical Education* revealed two articles that addressed traits and competencies of agricultural science teachers, one written by Shippy (1981) and one written by Roberts and Dyer (2004). Shippy's results were from agricultural science teachers in Delaware. Roberts and Dyer's results were from agricultural science teachers and state staff in Florida. The current data were from preservice and inservice agricultural science teachers in [state].

Shippy (1981) identified "Program Planning, Development, and Evaluation" as a separate category from "Management." Roberts and Dyer (2004) grouped these items together into one area

identified as “Program Planning and Management.” Data collected from this study supported the importance of this category. Respondents identified “Visioning/Strategic Planning (Program Improvement)” as an important area. While the wording is different, the researchers feel the meaning behind the words is equivalent to those of previous studies. One inservice teacher responded, “The program is growing and sometimes you can’t do all the changes you want in one year—it takes time.” Another teacher reported that they had built their program from 28 to over 200 students by using these competencies. Therefore, the ability to plan for the future, develop effective programs, and evaluate the effectiveness of the program is an important aspect of the profession. These skills are necessary for continuous improvement of school-based agriculture programs. A summary of findings can be seen in Table 1.

The area of “Instruction” as identified by Roberts and Dyer (2004) was placed in association with five categories identified by Shippy (1981) (Planning of Instruction; Execution of Instruction; Evaluation of Instruction; Guidance; and Management). Analysis of the data revealed that while this category maintains a strong importance – the data should be sub-divided into three areas including knowledge, skills, and attributes as they relate to instruction. The researchers believe that separation of instruction into these areas provides for a clearer picture of the competencies required of an effective agriculture science teacher. A summary of findings related to instruction can be seen in Table 2.

Table 1

Program Planning and Management Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study
Program Planning, Development, and Evaluation	*Program Planning/ Management*	*Program Planning and Management*
• Develop and write general objectives for the vocational agriculture program offerings	• Effectively manages, maintains, and improves laboratories	• Visioning/strategic planning (Program improvement)
• Identify competencies needed for entry into an agriculture operation	• Effectively manages, operates and evaluates the agriculture program on a continuous basis	
• Participate in the identification of the school’s vocational agriculture program purposes and goals	• Effectively manages finances, grants, and special projects	
Management		
• Provide approved safety apparel and devices for vocational agriculture assigned to hazardous equipment		

Table 2

Instructional Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study

Planning of Instruction

- Plan the content of a lesson
- Determine student needs and interests
- Plan the summary of a lesson

Execution of Instruction

- Give an assignment in a clear and concise manner
- Reinforce learning
- Direct students in applying problem-solving techniques

Evaluation of Instruction

- Formulate a system of grading consistent with school policy
- Establish criteria for stud performance
- Determine students' grades based on related instruction and laboratory or on-the-job experience

Guidance

- Demonstrate a regard for and an interest in students as individuals
- Develop constructive working relationships among students
- Demonstrate concern for the student

Management

- Uphold standards of student behavior
- Carry out approved disciplinary action when warranted

Instruction

- Effectively plans for instruction
- Effectively evaluates students
- Communicates well with others
- Effectively recognizes achievements
- Effectively motivates students
- Has a love of agriculture
- Effectively manages student behavior; maintains discipline
- Encourages, counsels, and advises students
- Effectively determines students needs
- Uses a variety of teaching techniques
- Incorporates science and other areas of the school curriculum into the agriculture program
- Has excellent knowledge of the subject matter
- Is innovative; uses technology; adapts well to change
- Is capable of solving problems and multi-tasking
- Is knowledgeable of teaching and learning theory

Instructional Knowledge

- Content specialization
- Broad knowledge of agriculture

Instructional Skills

- Instructional/teaching skills
- Classroom management
- Ability to motivate and persuade others
- Facilitation skills

Instructional Attributes

- Recognize individual differences
- Multi-tasking skills
- Decisiveness/decision-making skills
- Conflict resolution
- Mentoring skills

Analysis of the data related to the knowledge area of instruction reveal that respondents believe that effective teachers should be well-rounded with both a content specialization and a broad knowledge about the field of agriculture. Respondents expressed specific needs related to content specialization, mentioning animal science, horticulture, agricultural mechanics, leadership education, and knowledge of agriculture careers as critical areas. Leadership education was mentioned in both the context of teaching leadership content and modeling leadership behavior. This might be expected given the recent focus on this topic within the agriculture science field. The area of agricultural careers was expressed as being a critical component primarily due to the "urbanization" and more broadly defined aspects of agriculture being taught in the schools today. One preservice teacher mentioned that teachers should "know the diverse aspects of agriculture, not just farming."

The skills area of instruction is related to teaching methods and delivery. This area includes instructional/teaching skills, classroom management, the ability to motivate and persuade learners, and facilitation skills. Respondents felt strongly that these skills would cause a teacher to be successful or unsuccessful. It was noted that effective teachers use a variety of in-class instructional techniques and must have the "ability to involve everyone." "The good ones motivate and persuade students and dedicate time" and have the "ability to use different teaching materials well." "The most important part is the education of the students in the classroom – interesting lessons and a willingness to put the time in— [it is a] very time consuming job."

The attribute area of teaching effectiveness relates to the teacher's attitude or abilities that can impact the instructional environment. Items such as recognizing individual differences, multi-tasking, decision making, conflict resolution and mentoring skills were identified by the researchers as being associated with the category. The category "guidance," identified by Shippy (1981) complements the concept of mentoring directly and has been grouped with instruction as a result of Roberts and Dyer (2004). Specifically, respondents mentioned that a teacher must be a planner because there are so many things going on and have the ability to "switch to different content for different classes using different approaches with different students." It was noted that a teacher should "realize that you're a teacher AND a mentor."

The two areas, "student vocational organization" and "supervised occupational experience" (Shippy, 1981) and FFA and SAE (Roberts & Dyer, 2004) were supported in this study. The terms "working with teams" and "record book skills" and "experience showing/ working with animals" were used by respondents to identify this area. There was recognition that these activities take a considerable amount of time and commitment outside of the classroom and a belief that the most effective agriculture science teachers were involved in FFA when they were in high school. A summary of findings related to working with student organizations and SAE can be seen in Table 3 and Table 4, respectively.

Table 3

Student Organization Facilitation Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study
Student Vocational Org.	*FFA*	*Student Organization*
• Provide advice for student entries in state and national FFA contests • Conduct an organizational meeting for the local FFA chapter • Acquaint prospective members & their parents with the purposes, activities, and values of the FFA	• Has a sound knowledge of FFA, actively advises the FFA chapter, and effectively prepares students for CDEs and other FFA activities	• Working with teams

Table 4

Supervised Experience Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study

Supervised Occupational Experience	Supervised Agricultural Experience	Supervised Experience
• Make instructional visits to students concerning their projects • Supervise students in identifying and planning appropriate projects • Select and supervise student use of an appropriate record system	• Has a sound SAE knowledge, actively supervises, and encourages SAE projects	• Record book skills • Experience showing/working with animals

The researchers believe that the area identified by Shippy (1981) as "school-community relations" can be directly related to the categories of "community relations" and "marketing" which were identified by Roberts and Dyer (2004). Respondents supported the concept of community involvement and expanded that involvement to include educating and communicating with others. Respondents felt that effective teachers should "be active with community development and outreach" and need to be able to "educate others about what we do." A summary of findings related to school and community relations can be found in Table 5.

Professionalism was supported as an important category in the current study. Both Shippy (1981) and Roberts and Dyer (2004) identify "professional role and development" and "professionalism / professional growth" as characteristics of effective teachers. Respondents expanded upon this area by identifying lifelong learning and a commitment/willingness to work after hours as important traits of an effective teacher. One preservice student indicated that effective teachers "stay current by attending professional development activities, including learning new technologies." An inservice teacher responded, "You can't know everything. You learn as much as you can in college and get the most out of your student teaching, but you need to be a continuous learner and able to learn things on your own." Respondents also indicated that a "willingness to travel" was a critical component of effective teachers. A summary of findings related to professionalism can be seen in Table 6.

Table 5

School and Community Relations Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study

School-Community Relations	*Community Relations*	*School and Community Relations*
• Maintain working relationships with the school administration and faculty • Maintain working relationships with the school supporting staff • Maintain good relations with other schools	• Works well with parents • Establishes and maintains good community relations • Works well with alumni and advisory groups *Marketing* • Works well with other teachers and administrators in his/her school • Maintains an effective public relations program • Effectively recruits new students	• Community involvement • Educating and communicating with others

Table 6

Professionalism Competencies Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study
Professional Role and Development	*Professionalism/Professional Growth*	*Professionalism*
• Maintain ethical standards expected of a professional educator • Keep up-to-date through reading professional literature • Acquire new occupational skills and information needed to keep pace with technological advancement in vocational agriculture	• Puts in extra hours; is dedicated to doing a good job • Displays a professional image • Enjoys teaching and exhibits a positive attitude towards the teaching profession • Improves professionally by seeking opportunities for continued learning • Takes actions to prevent burnout and to re-energize himself/herself	• Lifelong learning • Commitment/willingness to work after hours

The area of "personal qualities" identified by Roberts and Dyer (2004), while not listed by Shippy (1981), were strongly supported by the current study. Respondents identified responsibility, internal motivation, creativity, enthusiasm, time management, patience, caring/understanding, planning/organizing skills, resourcefulness/flexibility, open-mindedness, and people skills as important traits of an effective teacher. One respondent indicated that an effective teacher must have "personal organization with a focus on getting things done." An effective teacher is "organized and always has a 'to-do' list." Some respondents mentioned that effective teachers enjoy what they are doing but others felt their high school teachers were extremely burned-out, thus providing a non-example role model. It can be summed up with these quotes: "It takes extreme commitment" and "expect the unexpected." A summary of findings relate to personal traits can be seen in Table 7.

Table 7

Personal Traits Required of Agricultural Science Teachers.

Shippy (1981)	Roberts & Dyer (2004)	Current Study
No Competencies Indicated	*Personal Qualities*	*Personal Traits*
	• Cares for students	• Caring/understanding
	• Is motivated	• Internal motivation
	• Is enthusiastic	• Enthusiasm
	• Is open-minded	• Open-mindedness
	• Is well organized; has excellent time management skills	• Planning/organizing skills

	• Is resourceful	• Time management
	• Is self-confident	• Resourceful
	• Has an understanding and supportive spouse/family	• Responsibility
	• Is honest, moral, and ethical	• Creativity
		• Patience
		• People skills

A new competency discovered in the current study focused on the "ability to work with diverse groups." This concept does not directly relate to ethnic diversity but rather to diversity among students relating to interests, focus, and overall program objectives. Both inservice and preservice teachers mentioned this category with comments such as "the ability to tailor to each student" and "dealing with kids that don't know anything about Agriculture." One particular teacher was working in an affluent school district in an urban area and shared that many students entering their program have no previous knowledge of agriculture. Many inservice teachers noted that they have several special needs students in their classroom. "We aren't necessarily a dumping ground but we have a vast variety of academic levels in our classes." Another point relevant to this competency was that many student lack "passion" about agriculture and thus the teacher has to be able to "change from year to year depending on the students and school."

Based on the reported findings, a visual model was constructed to provide greater understanding of the competencies and traits required of successful agricultural science teachers. Given that seven categories were identified (Instruction; Student Organization; Supervised Experience; Program Planning and Management; School and Community Relations; Personal Traits; and Professionalism), a heptagon was chosen for the general shape of the model (see Figure 1). The newly identified competency, "working with diverse groups" was deemed by the research team to transcend and interact with all seven categories. Thus, this competency was placed in the center of the heptagon with double arrows extending to each category.

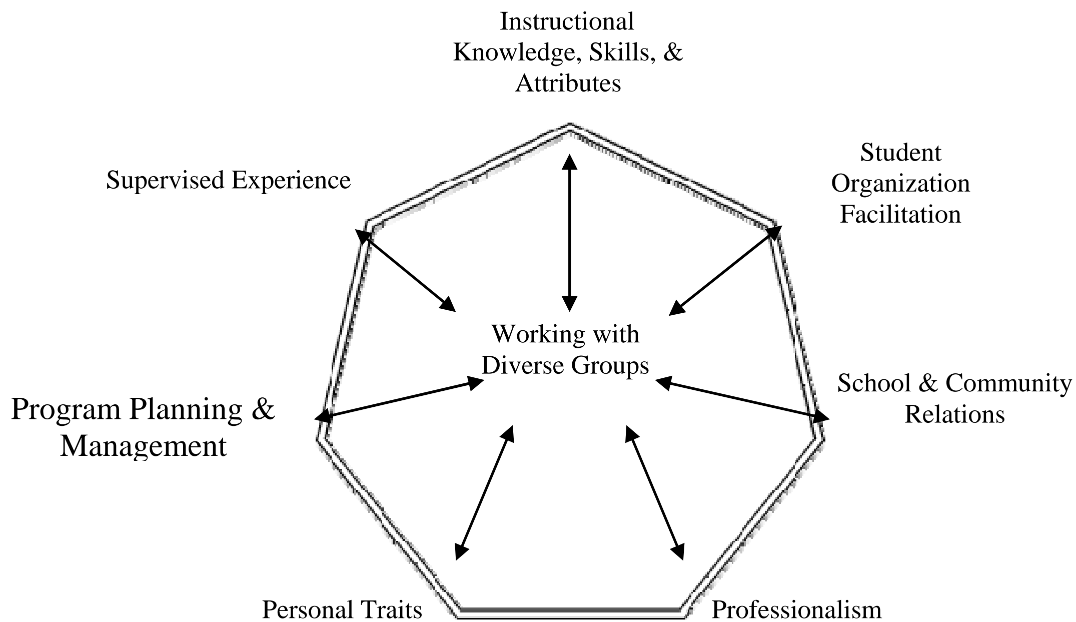

Figure 1. Model of Competencies and Traits of Successful Agricultural Science Teachers

SUMMARY AND CONCLUSIONS

Based on the findings of this study, it was concluded that successful agricultural science teachers cluster around 47 competencies or traits. Forty-six of the competencies or traits can be divided into the categories of Instruction; Student Organization; Supervised Experience; Program Planning and Management; School and Community Relations; Personal Traits; and Professionalism. “Working with diverse groups” is a competency that has importance to all seven categories and thus isn’t easily assigned to any specific category.

Eleven competencies were identified in the instructional category. It was concluded that successful agricultural science teachers are competent in instructional knowledge, instructional skills, and instructional attributes. Instructional knowledge competencies included: 1) content specialization and 2) broad knowledge of agriculture. Instructional skills competencies include: 3) instructional/teaching skills; 4) classroom management; 5) ability to motivate and persuade others; and 6) facilitation skills. Instructional attribute competencies included: 7) recognize individual differences; 8) multi-tasking skills; 9) decisiveness/decision-making skills; 10) conflict resolution; and 11) mentoring skills.

Successful agricultural science teachers also are competent in working with student organizations. Specific competencies include: 1) preparing students for competitive events and other activities; 2) providing instruction about the student organization; and 3) actively advising the student organization. It was also concluded that successful agricultural science teachers must be capable of facilitating supervised experiences. Identified competencies include: 1) actively supervising student projects (planning and visiting); 2) assisting with student record keeping; and 3) prior personal experience in the types of projects that students undertake.

With respect to program planning and management, six competencies were identified. It was concluded that successful agricultural science teachers are competent in: 1) visioning/ strategic planning; 2) identifying competencies needed for entry into an agriculture operation; 3) providing approved safety apparel and devices for hazardous equipment; managing, maintaining, and improving laboratories; 4) managing, operating and evaluating the agriculture program on a continuous basis; and 6) managing finances, grants, and special projects.

Maintaining effective school and community relations is a proficiency requisite of successful agricultural science teachers. Identified competencies are: 1) establish and maintain good relations within the school; 2) establish and maintain good relations within the community; 3) establish and maintain good relations with parents and booster members; 4) recruitment of new members; and 5) educating and communicating with stakeholders about the program.

Thirteen personal traits or competencies are displayed by successful agricultural science teachers. These include: 1) caring; 2) motivated; 3) enthusiasm; 4) self-confidence; 5) balances time with family; 6) honest/moral/ethical; 7) open-minded; 8) organized; 9) resourceful; 10) responsible; 11) creative; 12) patient; and 13) intrapersonal skills.

Successful agricultural science teachers are also professionals. Specific identified competencies include: 1) exhibiting professional ethics; 2) continually improving professional knowledge (lifelong learning); 3) working beyond normal school day; 4) displaying a professional image; and 5) exhibiting a positive attitude about the profession.

RECOMMENDATIONS, DISUCSSION, AND IMPLICATIONS

The findings from the focus-group portion of the current study are remarkably similar to those of Shippy (1981) and Roberts and Dyer (2004), even though the studies varied in geographic location (Delaware, Florida, and [state]), research design (survey, Delphi, and focus group), and research sample (beginning teachers, established “experts,” and preservice/ inservice teachers). This triangulation of the findings supports the premise that the competencies, and particularly categories of competencies, requisite

of successful agricultural science teachers are somewhat stable, at least over the quarter century that this research spans.

Of great importance, the newly identified competency related to working with diverse groups goes beyond the earlier research and likely indicates that agricultural science programs are beginning to reflect the broader, diverse population of the United States. However, further research is needed to investigate this phenomenon. [State] is a state with much diversity; do agricultural science teachers in other states also need competence in working with diverse groups? How is competence in working with diverse groups operationalized? How are preservice agricultural science education programs preparing graduates to work with diverse groups?

The major recommendation stemming from the conclusions drawn in this study is that these 47 traits and competencies should provide a benchmark preservice agricultural science education programs and inservice teachers. Such an suggestion raises more questions: Do graduates possess the traits and competencies? If not, can they be developed as beginning teachers mature? What courses or activities are best at developing the traits and competencies in preservice teachers? What activities should inservice teachers undertake to develop and maintain these competencies? To what extent are preservice education programs encompassing the traits and competencies? Would examining "successful" agricultural science teachers in multiple states validate the traits and competencies? Are the "personal traits" identified attainable, as Roberts and Dyer (2004) suggest, or should they be present in individuals prior to admission?

REFERENCES

American Association for Agricultural Education. (2001). National standards for teacher education in agriculture. Retrieved June 27, 2005, from: http://aaae.okstate.edu/Reports/ncatestds.pdf.

Berg, B. L. (2001). *Qualitative research methods for the social sciences*. Needham Heights, MA: Allyn & Bacon.

Edmunds, H. (1999). *The focus group research handbook.* Thousand Oak, CA: Sage.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Parsons, F. (1909). *Choosing a vocation.* Garrett Park, MD: Garrett Park Press.

Patton, M. Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.

Phipps, L. J., & Osborne, E. W. (1988). *Handbook on agricultural education in public schools* (5th ed.). Danville, IL: The Interstate Printers and Publishers, Inc.

Richardson, A. G., & Arundell, A. (1989). *Characteristics of the effective teacher as perceived by pupils and teachers: A Caribbean case study*. (ERIC Document Reproduction Service No. ED 311 013).

Roberts, T. G., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education*, *45*(4), 82-95.

Rosenshine, B., & Furst, N. (1971). Research on teacher performance criteria. In B.O. Smith (Ed.), *Research in Teacher Education – A Symposium* (pp.37-72). Englewood Cliffs, NJ: Prentice Hall, Inc.

Shippy, R. D. (1981). Professional competencies needed by beginning teachers of agriculture/ agribusiness. *Journal of the American Association of Teacher Educators in Agriculture, 22*(1), 29-34.

Suydam, M. (1983). Teaching effectiveness. *Arithmetic Teacher, 31*(2), 3.

Young, M. (1990). Characteristics of high potential and at-risk teachers. *Action in Teacher Education, 11*(4), 35-39.

Career Aspirations of Women in the 20th Century

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ABSTRACT

Women have increasingly become more involved in the workforce following World War II. Paid employment of women has shifted from primarily traditional female-oriented jobs to more non-traditional, and previously male-oriented careers. Women's participation in the workforce has lead to the study of career aspirations of women. Career aspirations are influenced by factors such as gender, socioeconomic status, race, parents' occupation and education level, and parental expectations. This review of literature presents an overview of women's participation in the workforce and the progress of women's career development and career aspirations in the latter half of the 20th century.

INTRODUCTION

At various times throughout history, working women were viewed as immoral and unfeminine objects of pity. Some critics accused working women of being negligent mothers. Frequently, women employees were not taken seriously by their bosses, colleagues, or society (Nieva & Gutek, 1981). Having a career posed challenges for women due to their family responsibilities (Valdez & Gutek, 1987). Women were expected to perform duties as wife and mother, in addition to fulfilling their professional responsibilities. Some women experienced feelings of guilt or selfishness if they put their career interests first (Heins, Hendricks, & Martindale, 1982). Because women's work and family demands were simultaneous, these demands had a significant impact on women's careers (Valdez, & Gutek). As stated by Heins et al., "Achieving professional status may be more difficult for women than for men" (p. 455).

Despite their increasing numbers, women have tended to enter the workforce in lower-status, lower-paying jobs, and remain clustered in a limited number of conventional careers (Tinklin, Croxford, Ducklin, & Frame, 2005). Low-paying traditionally female careers, including administrative support, sales, service, nursing, teaching, social work, and clerical jobs, reflected society's persistent attitudes regarding stereotypical occupational roles for males and females (Rainey & Borders, 1997; Sellers, Satcher, & Comas, 1999; Stephenson & Burge, 1997; Watson, Quatman, & Elder, 2002). Because women's career choices were restricted, their earnings lagged behind their male counterparts with comparable education and experience (Farmer, 1985; Stephenson & Burge). Income earnings have been found to increase with educational level and years employed (Day & Newburger, 2002). However, women earned roughly two-thirds the income of their male counterparts. This discrepancy in income was partially attributed to the disparity between traditionally male and traditionally female occupations. For example, women are less likely to be employed in science or engineering jobs, as these are considered traditionally male occupations. However, females who are employed in these jobs earn roughly 20% less their male counterparts (Graham & Smith, 2005). Factors narrowing women into traditional role occupations included social and familial influences, a lack of awareness regarding nontraditional options, an unwelcoming environment in many male-dominated fields, discrimination within career fields, high turnover rates for women, and less seniority in given occupations. These factors also contributed to earning gaps between men and women (Stephenson & Burge).

Women's Participation in the Workforce

The view of a woman's role in the workforce has changed significantly throughout time. Historically, society believed a woman's place was in her home, caring for her husband and children, as opposed to the workplace. Valued feminine traits such as a meek nature and submissiveness were feared to be lost if women entered the workforce (Astin, 1984; Nieva & Gutek, 1981). The earliest cases of women working outside the home date back before the Industrial Revolution. Women commonly assisted their husbands with maintaining the family or acted as a business partner, although they often received no pay. If they were paid for their work, women earned less than their male counterparts (Nieva & Gutek).

Eventually, women began extending their work outside the home in the form of domestic and other jobs such as clerical workers. The integration of women into the workforce was a slow process and was often viewed unfavorably by society (Nieva & Gutek, 1981). Although some women were beginning to experience life in the workforce, they were frequently regarded as temporary employees. Their jobs were expected to take second place next to marriage and childbearing (Gutek & Larwood, 1987; Tinklin et al., 2005). By the middle of the nineteenth century, more women became involved in teaching, nursing, and clerical work. These jobs were perceived as feminine, and society deemed them appropriate for single women (Nieva & Gutek).

In 1890, less than 3% of married women worked outside the home. By 1900, 25% of all women were participants in the labor force. This percentage gradually rose over the next decade, and by 1910, nearly 7.5 million women worked outside the home. These numbers remained fairly stable until the beginning of World War II (Nieva & Gutek, 1981). The onset of World War II sparked a sharp increase in labor participation among women. In addition to the typically female-oriented jobs, women were hired for skilled jobs and union jobs, positions which were previously unavailable to them (Nieva & Gutek).

Following World War II, women continued to enter the workforce in growing numbers, regardless of their marital or parental status (Rainey & Borders, 1997; Watson et al., 2002). Labor market participation among women increased from 30% in 1950 to more than 50% in 1980 (Astin, 1984; Farmer, 1985; Stephenson & Burge, 1997). By the late 1970s, nearly 50% of all married women and 40% of all women over age 16 were working (Nieva & Gutek, 1981). However, they still viewed employment as secondary to their domestic responsibilities (Tinklin et al., 2005). In 1990 approximately 57 million adult women ages 16 and older were in the paid workforce (Rainey & Borders; Watson et al.). Despite a brief stall in the early 1990s, women's workforce participation rates were on the rise once again by 1994 (Hayghe, 1997).

By the mid-1990s, approximately 46% of the American workforce was female (Stephenson & Burge, 1997). Such large numbers of working women defied the traditional stereotype of the stay-at-home housewife and breadwinning husband, which characterized only 7% of American families in the mid-1990s (Jalilvand, 2000; Stephenson & Burge; Tinklin et al., 2005). An estimated 48% or approximately 72 million of the labor force will be comprised of women by the year 2005 (Rainey & Borders, 1997; Stephenson & Burge; Tinklin et al.; Watson et al., 2002). In fact, Fullerton, Jr. (1999) projected a continued rise in women's workforce participation through the year 2015. Nieva and Gutek (1981) credited the increase in women's employment rates to more favorable attitudes toward working women, longer life expectancies, changing marriage patterns, and improvements in and acceptance of birth control methods. Today, there is no longer much question whether women will participate in the workforce. In addition, working women are no longer considered deviations from the norm, but rather they are the norm (Rainey & Borders).

Barriers to Women's Workforce Participation

A barrier is any obstacle that prevents forward movement or any event or condition that makes career progress difficult (Brown & Barbosa, 2001). Swanson and Woitke (1997) indicated barriers partially explain the gap between the abilities of women and their achievements, or these barriers could explain the inhibitions of women's career aspirations. Barriers are significant factors in the career development process, and the onset of such barriers frequently begins when women are children. Barriers are reinforced throughout women's schooling, college, and work, and they become more complex over time (Brown & Barbosa; Stephenson & Burge, 1997). Swanson and Woitke acknowledged barriers could be overcome, although successfully conquering a barrier depended on the type of specific barrier and the individual's personality.

Women often perceive barriers and role conflicts as obstacles in their career development process (Albert & Luzzo, 1999; Brown & Barbosa, 2001; Luzzo & McWhirter, 2001; Stitt-Gohdes, 1997). Common barriers faced by women included sex-typing of occupations and sex discrimination, both of which women felt they were unable to control (Stitt-Gohdes). Inadequate occupational skills, poor academic achievement, and lack of transportation were also found to be major reasons women failed to succeed in the workforce. Childcare was another issue women saw as a potential barrier to career success (Brown & Barbosa; Stitt-Gohdes). Despite these perceptions by women, findings from recent studies revealed that females showed an interest in a greater number of careers and exhibited more gender-role flexibility in their career aspirations than males (Francis, 2002; Mendez & Crawford, 2002; Wahl & Blackhurst, 2000).

Female Heads of Household

The number of single parent families headed by women rose from 11% in 1970 to 16% in 1985 (Stephenson & Burge, 1997). As a result, many women needed to work to support their families. Farmer (1985) estimated one-half of the women in the labor market were single heads of households due to divorce, separation, or widowhood. Statistics showed these women earned considerably lower salaries compared to men with similar training, meaning a large number of these women and their families lived below the poverty level (Farmer; Stephenson & Burge).

Career Aspirations of Women in the 20th Century

Gutek and Larwood (1987) defined a career as "a series of related jobs within an organization or different jobs within various companies" (p. 9). Career development refers to the many jobs a person holds, and it should represent progress, whether through increased recognition or salary, or the respect one receives from colleagues. The more a person's career progresses in this manner, the more he or she will be judged successful (Gutek & Larwood).

Career aspirations represent an individual's orientation toward a desired career goal under ideal conditions. More simply stated, career aspirations "provide information about an individual's interests and hopes, unfettered by reality" (Hellenga, Aber, & Rhodes, 2002, p. 200; Rojewski, 1996). Adolescence would be an ideal time to study the career development of young women, as many changes occur during this time that strongly influence the formation of career aspirations and preferences (Watson et al., 2002).

Factors Influencing Women's Career Aspirations

Career aspirations are influenced by factors such as gender, socioeconomic status, race, parents' occupation and education level, and parental expectations (Khallad, 2000; Watson et al., 2002). Researchers examine such factors to determine their role in career behavior and how they affect individuals' career decisions (Osipow & Fitzgerald, 1996; Rojewski & Yang, 1997). In recent years there has been an increased awareness of the impact of socioeconomic status, race, gender, and on the career decision-making process and career development (Stitt-Gohdes, 1997).

Gender influences. Osipow and Fitzgerald (1996) stated, "Gender is clearly one of the most powerful of all influences on vocational behavior" (p. 63). In the past, fewer occupational choices were available to women due to factors such as sexism, discrimination, and limited education. Studies on gender and career aspirations in the 1970s revealed girls had more restricted career aspirations than boys, and girls often opted for a narrow range of occupational categories (Looft, 1971a; Mendez & Crawford, 2002; Wahl & Blackhurst, 2000). Additionally, Heins et al. (1982) reported that families often encouraged the educational and career aspirations of male children but not those of female children. Thus, not only did sex differences in career aspirations develop early in childhood, girls appeared to learn quickly that certain adult statuses were available to them, reflecting societal sex-role expectations (Looft, 1971b).

Replications in the 1980s of earlier studies showed girls had broadened their career preferences, yet their expectations for career attainment remained low, especially for high status, traditionally male jobs (Wahl & Blackhurst, 2000). Recent studies refuted earlier findings and asserted that females demonstrated an interest in a greater number of careers and displayed more gender-role flexibility in their career aspirations than males (Francis, 2002; Mendez & Crawford, 2002). Jones and Womble (1997) revealed that female secondary students had more positive attitudes toward work than males. However, Watson, et. al. (2002) noted adolescent females were more conflicted between their future careers and commitment to marriage and family.

Occupational status and educational level of parents. The occupational status and educational level of females' parents have had a significant impact on their career aspirations and career choice (Burlin, 1976). Wahl and Blackhurst (2000) indicated children's career aspirations were more closely related to parental occupations. Among adolescent females in particular, career choice was strongly influenced by the mother's occupation (Burlin; Wahl & Blackhurst). The mother's occupation was credited with impacting children's aspirations because children often attended work with their mothers and were more likely to know what their mothers did for a living. Likewise, Burlin (1976) deduced career choices and aspirations in females were significantly predisposed by the mother's type of work. In an early study of college women, Burlin determined daughters of working mothers chose a life pattern comparable to their mothers more often than life patterns comparable to their fathers. Burlin's findings reiterated the importance of mothers as role models in the development of their daughters' career goals and aspirations. Similarly, Signer's and Saldana's (2001) study found the social status of mothers' occupations, as opposed to the social status of fathers' occupations, had a stronger correlation with the social status of female students' career aspirations. The researchers attributed this finding to the fact that mothers exhibit a greater presence in many homes.

Parents' educational level has been positively related to aspirations of youth (Mau & Bikos, 2000). Burlin (1976) stated that both parents' education level wielded a strong influence on career choices of their daughters. Signer and Saldana (2001) noted the positive relationship between adolescent females' career aspirations and their mothers' educational achievement. Jones and Womble (1998) found that students whose mothers completed either a two-year or four-year postsecondary degree had higher perceptions of work and career-related issues.

Women's education gains in the workplace. Research supports the idea that the more education a woman receives, the more likely she is to engage in paid employment (Nieva & Gutek, 1981; Schiffler, 1975). Increases in post-secondary enrollment among females have been the result of changing roles and expectations of women in society and a growing interest among women in professional careers (Bronstein, Black, Pfenning, & White, 1987; Tinklin et al., 2005). Over a 31-year period from 1970 until 2001, women have steadily become the majority of the undergraduate population in degree-granting institutions in the U.S. (Peter & Horn, 2005). Even though women's enrollment in postsecondary education is expected to comprise 57% of the undergraduate population by 2013, their incomes continued to be lower than their male counterparts. This is especially true for men employed in fields that are traditionally less female-oriented, including mathematics, science, and engineering (Peter & Horn, 2005). While men earned the majority of professional and doctorate degrees, women earned more degrees than men overall (Troumpoucis, 2004).

A woman's educational level has also been a strong predictor of the number of years she will be employed. With more women choosing majors that require continuous employment, women are extending

their participation in the workforce (Nieva & Gutek). In addition, women themselves have tended to associate a postsecondary degree with success and increased salary, thus perceiving a greater payoff to pursuing postsecondary education than men (Troumpoucis, 2004).

Race. Race refers to a subgroup of individuals who share a distinct combination of physical attributes and genetic origin (Osipow & Fitzgerald, 1996). Results of studies examining the effects of race on career aspirations have been mixed (Mau & Bikos, 2000). Hellenga et al. (2002) noted that previous research typically found African Americans to possess lower career aspirations than their European American counterparts. Osipow and Fitzgerald (1996) supported this notion, stating African Americans, Hispanics, and Native Americans exhibit considerably lower educational and occupational outcomes than Caucasians. Further studies asserted people from minority groups, especially those from lower class backgrounds, had more limiting factors influencing their career aspirations compared with Caucasian persons from lower class backgrounds (Farmer, 1985; Gottfredson, 1981). In contrast, a study conducted by Arbona and Novy (1991) determined there were no ethnic differences with regard to their career aspirations.

Socioeconomic status. Although few studies exist regarding effects of socioeconomic status on career choice, researchers agree socioeconomic status influences career choice (Gottfredson, 1981; Sellers et al., 1999). Mau and Bikos (2000) cited previous findings showing a positive association between a family's socioeconomic status and aspirations. Youth from higher socioeconomic statuses were more likely to be knowledgeable of and choose professional occupations (Sellers et al.). In contrast, Brown and Barbosa (2001) found career aspirations of young females who came from low-income families were confined to experiences of their relatives and friends. Influential siblings are thought to play a key role in the career development of adolescents from lower socioeconomic backgrounds (Ali, McWhirter, & Chronister, 2005).

Herr and Cramer (1996) stated socioeconomic status affects information about work, work experience, and occupational stereotypes, which influences vocational interests. Studies show a positive association between high school students' aspirations and their family's socioeconomic status, which is frequently related to parental education levels (Mau & Bikos, 2000; Signer & Saldana, 2001). Trusty (2002) indicated that a low socioeconomic status resulted in reduced and unrealized expectations. Additionally, socioeconomic status had a direct effect on unequal aspirations and expectations. Compared with middle and upper class individuals, lower class individuals faced more obstacles that limited their career aspiration levels (Gottfredson, 1981; Farmer, 1985). Regardless of socioeconomic status, Stitt-Gohdes (1997) stressed that the career aspirations of all individuals are important in the career development process.

IMPLICATIONS FOR CAREER AND TECHNICAL EDUCATION

Despite the fact that women represented almost half of the workforce in the 1990s, they were still clustered in 20 of 400 occupational categories and 70% of female secondary CTE students were preparing for low-wage jobs (LeBrenton & Loevy, 1992). These statistics, coupled with the findings of research on self-esteem and identity formation, mandates included in the Carl D. Perkins Act, motivated renewed emphasis on the creation of an environment in which individuals consider career options and make career choices based on their abilities rather than on stereotypes and expectations (Nash, 1991). A set of issues accompanied the renewed interest in gender equity, including attitudes and stereotypes, sexual harassment, equity and males, learning and communication styles, and accountability.

The most important issue, however, appeared to be that of how gender equity could be achieved (Robin, Flansburg, & Eisenberg, 1992). CTE has been traditionally characterized as gender biased in favor of males (Wonacott, 2002). Unfortunately, gender bias has still been evident in CTE in areas such as program enrollment, level and quality of classes available in traditionally male and traditionally female CTE programs, and wages earned by female versus male graduates. Such disparities have limited females' access to the benefits of CTE (Wonacott). An annotated bibliography

of 15 print resources for vocational educators interested in accelerating gender equity in education and work was published regarding issues related to gender equity in career and technical education (Kerka, 1993).

CONCLUSION

Women's career aspirations have evolved steadily during the twentieth century, resulting in their increased workforce participation rates. A multitude of factors have influenced and inhibited women's career aspirations and career development over the years (Nieva & Gutek, 1981). The types of careers women choose and factors influencing their choices are relevant issues to examine, especially since most research reveals women continue to work in lower-paying, traditionally female-oriented jobs (Rainey & Borders, 1997; Watson et al., 2002). Continued research on the lifelong processes of women's career aspirations and career development is necessary to explain their unique occupational paths (Rainey & Borders, 1997; Schoon, 2001). Of equal importance is the need to study female adolescents in the early stages of career development, as aspirations are often crystallized during this time (Hellenga et al., 2002; Rainey & Borders). It is necessary to continue studying the career interests and career development processes of women, as they will remain an important sector of America's workforce (Gutek & Larwood, 1987). Gaining insight into career aspirations and career interests may also be useful in expanding career options available to young women (Rainey & Borders).

REFERENCES

Albert, K. A., & Luzzo, D. A. (1999). The role of perceived barriers in career development: A social cognitive perspective. *Journal of Counseling & Development, 77*, 431-436.

Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for adolescents of lower socioeconomic status: A pilot study. *Journal of Career Assessment, 13*, 40-58.

Arbona, C., & Novy, D. M. (1991). Career aspirations of Black, Mexican American, and White students. *Career Development Quarterly, 39*, 231-239.

Astin, H. S. (1984). The meaning of work in women's lives: A sociopsychological model of career choice and work behavior. *Counseling Psychologist, 12*, 117-126.

Bronstein, P., Black, L., Pfennig, J. L., & White, A. (1987). Stepping onto the academic career ladder: How are women doing? In Gutek, B. A., & Larwood, L. (Eds.). *Women's career development* (pp. 110-128). Newbury Park, CA: Sage.

Brown, S. G., & Barbosa, G. (2001). Nothing is going to stop me now: Obstacles perceived by low-income women as they become self-sufficient. *Public Health Nursing, 18*, 364-372.

Burlin, F. D. (1976). The relationship of parental education and maternal work and occupational status to occupational aspiration in adolescent females. *Journal of Vocational Behavior, 9*, 99-104.

Day, J. C. & Newburger, E. C. (2002). The big payoff: Educational attainment and synthetic estimates of work-life earnings. ERIC Clearinghouse on Adult, Career, and Vocational Education. Columbus, Ohio.

Farmer, H. S. (1985). Model of career and achievement motivation for women and men. *Journal of Counseling Psychology, 32*, 363-390.

Francis, B. (2002). Is the future really female? The impact and implications of gender for 14-16 year olds' career choices. *Journal of Education and Work, 15*, 75-88.

Fullerton, H. N., Jr. (1999). Labor force participation: 75 years of change, 1950-98 and 1998-2025. *Monthly Labor Review, 122*, 3-12.

Gottfredson, L. S. (1981). Circumscription and compromise: A development theory of occupational aspirations [Monograph]. *Journal of Counseling Psychology, 28*, 545-579.

Graham, J. W., & Smith, S. A. (2005). Gender differences in employment and earnings in science and engineering in the U.S. *Economics of Education Review, 24,* 341-354.

Gutek, B. A., & Larwood, L. (1987). Introduction: Women's careers are important and different. In B. A. Gutek & L. Larwood (Eds.), *Women's career development* (pp. 7-14). Newbury Park, CA: Sage.

Hayghe, H. V. (1997). Developments in women's labor force participation. *Monthly Labor Review, 120*, 41-46.

Heins, M., Hendricks, J., & Martindale, L. (1982, April). The importance of extra-family support on career choices of women. *Personnel & Guidance Journal*, 455-459.

Hellenga, K., Aber, M. S., & Rhodes, J. E. (2002). African American adolescent mothers' vocational aspiration-expectation gap: Individual, social, and environmental influences. *Psychology of Women Quarterly, 26*, 200-212.

Herr, E. L., & Cramer, S. H. (1996). *Career guidance and counseling through the lifespan: Systematic approaches* (5th ed.). New York: Harper Collins.

Jalilvand, M. (2000). Married women, work, and values. *Monthly Labor Review, 123*, 26-31.

Jones, K. H., & Womble, M. N. (1997). Perceptions of urban trade and industrial students in the South-eastern USA: School and career-related issues. *Journal of Vocational Education & Training, 49*, 409-429.

Jones, K. H., & Womble, M. N. (1998). At-risk students' perceptions of work and career-related issues. *Journal for Vocational Special Needs Education, 20*, 12-25.

Kerka, S. (1993). Gender equity in vocational education: Trends and issues alerts. ERIC Clearinghouse on Adult, Career, and Vocational Education. Columbus, Ohio.

Khallad, J. (2000). Education and career aspirations of Palestinian and U.S. youth. *Journal of Social Psychology, 140*, 789-792.

LeBrenton, L. W., & Loevy, S. S. (1992). Breaking new ground: Worksite 2000. Chicago: Chicago Women in Trades.

Looft, W. R. (1971a). Vocational aspirations of second-grade girls. *Psychological Reports, 28*, 241-242.

Looft, W. R. (1971b). Sex differences in the expression of vocational aspirations by elementary school children. *Developmental Psychology, 5*, 366.

Luzzo, D. A., & McWhirter, E. H. (2001). Sex and ethnic differences in the perception of educational and career-related barriers and levels of coping efficacy. *Journal of Counseling & Development, 79*, 61-67.

Mau, W. C., & Bikos, H. (2000). Educational and vocational aspirations of minority and female students: A longitudinal study. *Journal of Counseling & Development, 78*, 186-194.

Mendez, L. M. R., & Crawford, K. M. (2002). Gender-role stereotyping and career aspirations: A comparison of gifted early adolescent boys and girls. *Journal of Secondary Gifted Education, 13*, 96-107.

Nash, M. A. (Ed.). (1991). Changing roles of men and women: Educating for equity in the workplace. Madison: Vocational Studies Center, University of Wisconsin.

Nieva, V. F., & Gutek, B. A. (1981). *Women and work: A psychological perspective*. New York: Praeger.

Osipow, S. H., & Fitzgerald, L. F. (1996). *Theories of career development* (4th ed.). Boston: Allyn & Bacon.

Peter, K. & Horn, L. (2005). *Gender differences in participation and completion of undergraduate education and how they have changed over time.* Washington, D.C.: National Center for Education Statistics. (ERIC Document Reproduction Service No. ED484429)

Rainey, L. M., & Borders, L. D. (1997). Influential factors in career orientation and career aspiration of early adolescent girls. *Journal of Counseling Psychology, 44,* 160-172.

Robin, D. J., Flansburg, S., & Eisenberg, S. (1992). Gender equity in vocational education. *WEEA Digest*, Newton, MA: Women's Educational Equity Act Publishing Center.

Rojewski, J. W. (1996). Occupational aspirations and early career-choice patterns of adolescents with and without learning disabilities. *Learning Disability Quarterly, 19*, 99-116.

Rojewski, J. W., & Yang, B. (1997). Longitudinal analysis of select influences on adolescents' occupational aspirations. *Journal of Vocational Behavior, 51*, 375-410.

Schiffler, R. J. (1975). Demographic and social factors in women's work lives. In S. H. Osipow (Ed.), *Emerging woman: Career analysis and outlooks* (pp. 10-22). Columbus, OH: Charles E. Merrill.

Schoon, I. (2001). Teenage job aspirations and career attainment in adulthood: A 17-year follow-up study of teenagers who aspired to become scientists, health professionals, or engineers. *International Journal of Behavioral Development, 25*, 124-132.

Sellers, N., Satcher, J., & Comas, R. (1999). Children's occupational aspirations: Comparisons by gender, gender role identity, and socioeconomic status. *Professional School Counseling, 2*, 314-317.

Signer, B., & Saldana, D. (2001). Educational and career aspirations of high school students and race, gender, class differences. *Race, Gender, & Class, 8*, 22-34.

Stephenson, M. B., & Burge, P. L. (1997). Eliciting women's voices: Vocational choice and educational climate for women in nontraditional occupational programs. *Journal of Vocational Education Research, 22*, 153-171.

Stitt-Gohdes, W. L. (1997). *Career development: Issues of gender, race, and class*. Columbus, OH: Center on Education and Training for Employment, The Ohio State University. (ERIC Information Series No. 371)

Swanson, J. L., & Woitke, M. B. (1997). Theory into practice in career assessment for women: Assessment and interventions regarding perceived career barriers. *Journal of Career Assessment, 5*, 443-462.

Tinklin, T., Croxford, L., Ducklin, A., & Frame, B. (2005). Gender attitudes to work and family roles: The views of young people at the millennium. *Gender & Education, 17*, 129-142.

Troumpoucis, P. (2004). Women reap more benefits from higher education, study finds. *Black Issues in Higher Education, 21,* 9.

Trusty, J. (2002). African Americans' educational expectations: Longitudinal causal models for women and men. *Journal of Counseling & Development, 80*, 332-345.

Valdez, R. L., & Gutek, B. A. (1987). Family roles: A help or hindrance for working women? In B. A. Gutek & L. Larwood (Eds.), *Women's career development* (pp. 157-169). Newbury Park, CA: Sage.

Wahl, K. H., & Blackhurst, A. (2000). Factors affecting the occupational and educational aspirations of children and adolescents. *Professional School Counseling, 3*, 367-374.

Watson, C. M., Quatman, T., & Edler, E. (2002). Career aspirations of adolescent girls: Effects of achievement level, grade, and single-sex school environment. *Sex Roles, 46*, 323-335.

Wonacott, M. E. (2002). Equity in Career and Technical Education. Myths and realities. ERIC Clearinghouse on Adult, Career, and Vocational Education. Columbus, Ohio.

Examining Latinos Involvement in the Workforce and Postsecondary Technical Education in the United States

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ABSTRACT

In this article, the authors report the results of two studies examining the participation rates of Latino students in postsecondary technical education (CTE) programs in community colleges and two-year proprietary institutions in the United States in 1994 and 2000. It is believed that the quality of the future U.S. Labor market will depend, to a great extent, on this group's education and job skills. Although Latinos are the fastest growing minority group in the United States, they are also the poorest and most undereducated when compared to other minority groups. Results of both studies show that few Latino students enroll in and graduate from postsecondary CTE programs. Of those students that do enroll in and complete CTE programs at the postsecondary level, very few complete programs that are considered high-skill, high-wage.

INTRODUCTION

Latinos are an increasingly vital part of the national economy and the fastest growing segment of the U.S. population. Because of immigration and high birth rates, Latinos have displaced African Americans and become the largest minority population in the United States (U.S. Census Bureau, 2003). Now constituting 14% (41.3 million) of the total population (U.S. Census Bureau, 2006), Latinos have high participation rates in America's labor force, but tend to work in jobs that pay low wages, provide low economic mobility, are less stable, and are more hazardous. Moreover, many of the low-wage jobs do not provide health benefits, a major reason for increased poverty levels among Latinos. This participation is true for both male and female Latino workers and results from low educational attainment, decreased English language proficiency, and lack of work experience, training and/or other employability skills ("Deadly Trend," 2002). Although many Latinos enter the workforce at an early age, working in low-skill jobs diminishes the opportunity to gain the kind of general work experience that brings about opportunities for better paying low-risk positions.

In general, the low educational attainment for a large portion of this population contributes to employment outcomes described above. However, with the impending labor shortage (Carnevale, 2005) and the continuous growth of the Hispanic population, this segment of human capital will be increasingly important to the enhanced competitiveness of America's workforce. One of the ways that Latinos can participate in the high-skill – high-wage labor market is to get them to enroll and complete postsecondary programs which lead to a certificate/diploma or associate's degrees in technical fields. The purpose of this paper is to describe the results of two studies which investigate the participation of Hispanics in postsecondary technical education in the United States. The results presented will primarily include descriptive information and it will compare the involvement of Latinos in postsecondary technical education in 1994 and 2000.

Definition of Latino

The term "Latino" is used "to denote all U.S. persons whose origins can be traced to the Spanish-speaking regions of Latin America, including the Caribbean, Mexico, Central America, and South America" (Flores, et. al., 2002). It describes a very diverse group of people from all races and many

nationalities. According to the U.S. Census Bureau (2005), the Latino population is made up of Mexicans (65.9%), Puerto Ricans (9.5%), Cubans (4.0%), Central Americans (7.8%), South Americans (5.2%), and other Hispanics (7.6%). Vasquez (2001), in describing the differences within the Latino community, emphasized that there are differences in each group's ethnic background and racial composition and that there were social, economic, political, cultural and linguistic differences. Chappa (1991) stated that,

> Hispanics are not a monolithic group. Many called what is now a part of the southwestern United States (states such as Arizona, California, Texas, etc.) their home well before the founding of Jamestown. Yet some also arrived within the last few years. The historical experience of each subgroup as it has developed in the United States is different (p.11).

"However, because of their locations, education, and immigration histories, the various subgroups suffer in the labor market in different ways and to different degrees" (Arbona, 1995, p.39). For example, Puerto Ricans, as a result of their citizenship, do not face many of the obstacles faced by other Latinos. But still, these differences, as well as the level of acculturation and migration history, are important factors in understanding the career development of Latinos. Such factors ultimately predicate occupational choice. The terms Latino and Hispanic will be used interchangeably in this paper.

Latino Participation in the Labor Force

Success in the workforce specifically rewards those with postsecondary education (Ganderton & Santos, 1995). Latinos make up about 13 percent of the labor force in the U.S. (Kochhar, 2005). However, the concentration seems to be in occupations that have low wages and educational requirements (Kochhar, 2005; Perez, 2000; NCES, 2003). In 2000, almost one-fifth (19.4%) of Latino workers were employed in a "service" occupation, which includes food preparation, personal services, and cleaning/maintenance jobs as compared to one in nine non-Hispanic Whites workers (11.8%) (NCLR, 2001, p.18). Conversely, Latinos were less likely than non-Hispanic Whites to work in high-paying managerial and professional specialty occupations. In 2000, 14% of Latinos were in managerial or professional occupations, compared with 33% of non-Hispanic Whites. Among Latino subgroups, Mexicans (12%), were the least likely to work in managerial or professional occupations (NCLR, 2001, p. 18). Ganderton and Santos (1995) state that,

> Higher earnings favor college graduates, and postsecondary training is increasingly important in our economy. For Hispanics, failure to obtain postsecondary education represents a major obstacle to their economic improvement, and their increasing participation in the workforce suggests a decline in the level of education among workers in the United States (p. 44).

Latinos trail other ethnic groups in postsecondary attendance and completion. However, they have contributed to the nation's social and economic prosperity. Perez (2000) believes that the biggest disparity between Latinos and other groups is their social economic position. A share of Latinos, according to NCLR (2001), have not reaped the benefits of the economic boom, which means that access to improved education, health, and economic status elude some Latinos. When compared to non-Hispanic Whites, Latinos have a large gap to close. Rand, one of the most influential think tanks in the country, conducted a study that analyzed the economic impact of Hispanics' lack of education.

> The analyst found that if the nation were to invest one dollar toward having Hispanics receive a college degree, the return on investment would be 4:1. This means that the benefit of having college-educated Hispanics in higher paying jobs available only to college graduates would represent higher taxes, contributions to social security, and disposable income that Hispanics would be able to plow back into the economy (as cited in Rodriguez-Valladares, 2002, p. 37).

Carnevale (1999) states, "an education's role in determining jobs and earnings has grown and Hispanics have lost ground by not increasing college attendance at the same rate as other groups" (p. 27).

Language proficiency has a powerful impact on the type of work to which one has access, as well as economic mobility. English language skills are necessary for almost all jobs in the United States. Data analyzed by Siles & Pérez (2000) indicate that “a notable proportion of Latinos who speak Spanish do not have a level of English language ability that permits them to enter high-paying jobs in the current labor force” (p.6). In addition, they state that “…lack of English language skills can affect employment paths or job opportunities early in a worker’s career” (p. 8) and “…chances to move into high-wage jobs and industries projected to experience growth, are small if their English language skills are not at the level expected by the marketplace” (p.8).

With potential worker shortages being a concern for most U.S. businesses and as companies increasingly view their human capital as their greatest asset, such enterprises must concentrate more on employee development to maintain competitiveness in the market. Such development predictably will include the nation’s largest ethnic minority group, as in the future, it will potentially form the largest segment of the workforce.

Latino Education

Going to college and earning a degree is a significant predictor of earning potential and occupational choice (Morales, 2000). Nearly 60% of jobs today require college-level skills. These jobs are the fastest growing, and they replace those that previously required only high school diplomas [or less] (Carnevale, 1999). In general, Latinos have low educational attainment and lag behind non-Hispanic groups in high school and college degree completion (Pew Hispanic Center, National Survey of Latinos: Education, 2004). Large education gaps exist for Latinos, even beginning at pre-school age, perpetuating low educational attainment and reduced employment opportunity. As a result, Latinos are overrepresented in high-risk, low-skill/low-wage work. Due to various factors, Latinos are the group with the least education and experience the highest high school dropout rate among all ethnic groups (U.S. Census Bureau, 2000; NCLR, 2001). This high dropout rate limits their ability to pursue postsecondary education and obtain associate, bachelor, advanced degrees, and other kinds of training that lead to advanced employment.

Educational attainment, as reported by the U.S. Census Bureau (2000), indicates that the Hispanic population age 25 and over has attained less education than their non-Hispanic White counterparts. Latinos are lagging behind the educational attainment of non-Hispanic Whites – 27% of Latinos have less than a ninth grade education compared to 4.2% for non-Hispanic Whites, 15.7% have not completed high school versus 7.3%, 27.9% have diplomas which is less than the 34.1%, and 29.1% have more than a high school education as compared to 54.4%. These numbers are staggering especially since the Latino population is growing faster than any other group and has the highest (35.5%) number of people younger than age 18 (NCLR, 2001). This group will, in the near future, be the largest segment of our workforce and will contribute more to a tax base upon which all Americans will be increasingly dependent. Denying Latinos any opportunity for increased education or training hampers their future preparedness as they seek to make their mark as employers, employees, and entrepreneurs. Dependency upon the economic contributions of Latinos to our society is projected to increase as society ages and more baby boomers retire.

Latinos and Community Colleges

Latinos, more than other groups, tend to enroll in community colleges. In 2000, Latino students accounted for 14% of all students enrolled in 2-year colleges and 7% of those in 4-year institutions (Llagas & Snyder, 2003). When looking at Latino subgroups, for example, Mexican students have the highest enrollment in community colleges. According to Fry (2002), some 46% of Mexican college students who are high school graduates and are 18 – 24-years old enrolled in community colleges as compared to 31% of Puerto Ricans and Cubans.

Although community colleges may serve as the entry point for postsecondary education for Latinos, research indicates that students who enroll in community colleges often attend on a part-time basis, prolong their college education into their mid-20s and beyond and often have gaps in their attendance. Brown,

Santiago and Lopez (2003) describe most Latino students as, "first-generation college students, are low-income, have a less academic high school education than their peers, and enroll in community colleges" (p.41). They continue by adding that "a large number of Latinos in higher education are also nontraditional students. They are older, work, attend college part-time, and often are also caring for family – all characteristics that influence the decisions Latino students make in participating in and completing higher education" (p.42). These descriptions also represent several of the seven "risk factors" identified by the U.S. Department of Education that negatively relate to persistence and degree attainment. The risk factors are delayed postsecondary enrollment, part-time enrollment, not having a regular high school diploma, working full-time, being financially independent, having children or dependents, and being a single parent (Fry, 2003). Such factors cause the incidence of transfer to four-year universities to decrease (Fry, 2002, 2004; Ganderton & Santos, 1995) or contribute to non-completion of postsecondary education.

Although the majority of the research on postsecondary educational outcomes have reported that community colleges deter the completion of a 4-year education for Latinos (Rendon & Nora, 1994; Arbona, 1990), Gray & Herr (1995) report

> …the largest and fastest growing ranks of technical workers are not college-trained professionals; they are blue-collar technicians educated at the pre-baccalaureate postsecondary level, in high school vocational education programs, or in formal training programs in the workplace (p.30).

They also indicated that many technical fields in which credentials are awarded at the postsecondary associate degree level and below had the largest projected job openings between 1990 and 2005. This statement continues to be true today. Two-year postsecondary institutions have the best potential for directing the Latino population into lucrative technical fields, namely the "blue collar" technical occupations (Gray & Herr, 1995). Some of these fields include: agricultural business and production, agricultural sciences, business, communication technologies, computer and information sciences, construction, engineering, engineering technologies, health professions, home economics, mechanics and repair, personal services, precision production, protective services, science technologies, or transportation (Community College Research Center, 2004).

The Community College Research Center (CCRC) (2004) which looked at demographic characteristics of students in occupational programs using the National Postsecondary Student Aid Study (NPSAS) 1996 and 2000 survey data indicated some of these trends: there was a large increase in the proportion of computer and data processing majors among occupational community college students; there was an increase in community college students with previously earned degrees; and, there was a shift in the primary reason for enrolling among community college students. Gray and Herr (1995) stated that more students should consider the two-year college because "two-year technical education has the best potential for a positive return and is critical for the future economic competitiveness of the United States" (p.6).

CONCEPTUAL FRAMEWORK

The conceptual framework for both studies was based on the state of-the-art principles in C. Arbona's work, Career Development and Vocational Behavior of Racial and Ethnic Minorities (1995). Career development is a lifelong process and a determinant of educational attainment that leads to occupational attainment. According to Arbona (1995),

> the career development of Latinos has become a salient issue in the social sciences literature because it is believed that the quality of the future U.S. Labor market will depend, to a great extent, on this group's education and job skills (p.38).

Although Latinos are the fastest growing minority group in the United States, they are also the poorest and most under educated when compared to other minority groups. The level of acculturation and migration history plays an important role in understanding the career development of Hispanics. According

to Olmedo (1979), “Acculturation is most often used to refer to the process by which immigrants adapt to the sociocultural and psychological characteristics of the host society” (cited in Arbona, 1995, p.43) and Keefe and Padilla (1987) state that “the level of acculturation is often interpreted as a measure of the person’s capacity to function and interact in the larger society” (cited in Arbona, 1995, p. 43).

Migration history refers to the length of time the immigrant has spent in the new country. Two factors expected to influence how well Latinos are able to function effectively between their culture and the dominant culture, are the group’s migration history and socioeconomic status. Differences occur within Latino subgroups as well. “However, because of their location, education, and immigration histories, the various subgroups suffer in the labor market in different ways and to different degrees” (Arbona, 1995, p. 39). For example, Latinos of Mexican decent make up more than 75% of all Latinos in the United States (Kao & Thompson, 2003). Educational attainment for Latinos born of Mexican decent, especially for those that are first generation immigrants, is lower than those that are born in the United States (Kao & Thompson, 2003). However, other research indicates that “U.S. born children of Latino immigrants had higher levels of educational attainment than comparable second generation children of U.S. born parents” (as cited in Kao & Thompson, 2003, p. 560-561).

The framework is comprised of three generation levels that represent migration history and three levels of socioeconomic status (low, medium, and high) representing “occupational standing and educational level” (Arbona, 1995, p.41). Operational definitions for each generation level are:

> first generation immigrants are people (both parents and child) born in their country; second generation immigrants represent children born in the U.S. whose parents (one or both) were born in another; and the third generation consists of both parents and children born in the U.S. (Arbona, 1995, p.42).

Table 1

Framework for Latino Career Development

Socioeconomic Status	Generation Level 1	Generation Level 2	Generation Level 3
Low	I	IV	VII
Medium	II	V	VIII
High	III	VI	IX

Note: Based on generation level and socioeconomic status (Arbona, 1995, p. 42).

Abona (1995) describes how Latinos can be categorized within the framework based on socioeconomic background and length of time in the United States (see Table 1). Cell I represents persons who are first generation immigrants (born in their country of origin) of low SES compared to Cell IX, which represents third generation (or later) immigrants with high SES. How this framework relates to theories of career development depends on the individual’s level of acculturation. The higher the level of acculturation, the better it is to facilitate the process of career development. Arbona (1995) states, “that it is expected, then, that Hispanics from second and later generations (Cells IV to IX) will be more acculturated than first generation Hispanics (Cells I to III), and that among first generation Hispanics, those of higher socioeconomic classes and educational levels (Cells II and III) will be more acculturated than their more disadvantaged counterparts (Cell I)” (p.43).

METHODOLOGY

Population and Sample

For both studies the researchers used secondary data from the National Education Longitudinal Study (NELS). The National Education Longitudinal Study of 1988 was the first longitudinal study conducted by the National Center for Educational Statistics. Some 25,000 eighth graders and their parents, teachers, and school principals were surveyed in 1988. These same students were resurveyed in 1990, 1992, 1994 as part of the first, second, and third follow-ups of NELS:88 (National Center for Education Statistics: National Education Longitudinal Study of 1988, Base Year Student Component Data File User's Manual, March 1990, p.1). The fourth follow-up surveyed the same sample of students in the year 2000, when many of these individuals would have completed college and were 8 years out of high school (Curtin, Ingels, Wu & Heuer, 2002).

The general purpose of NELS was to produce a comprehensive data set for the development and evaluation of educational policy at all governmental levels by studying the educational, vocational, and personal development of students at various grade levels, and the personal familial, social, institutional, and cultural factors that may affect that development (National Center for Education Statistics: National Education Longitudinal Study of 1988, Base Year Student Component Data File User's Manual, March 1990, p.1).

The first study utilized data from the second and third follow-ups (NELS: 88/94) to investigate Latino students' participation in postsecondary technical programs in community colleges and two-year proprietary institutions in the U.S. The follow-up study utilized fourth follow-up data (NELS: 88/00) to examine Latino college completers and the differences in completion rates of Latino subgroups when they were classified by their generation status. Although the purposes of each study was somewhat different, the follow-up study looked at the number of Latinos who completed a postsecondary credential (certificate/diploma and higher) as well as the number who completed postsecondary technical education programs – a similar goal of the first study.

First Study. The NELS Second follow-up in 1992 surveyed students in their second term of their senior year. The second follow-up measured learning throughout high school and also collected information that provided insight into the transition into the labor force and postsecondary education. A total of 21,188 (unweighted) students were surveyed.

The NELS Third follow-up in 1994 included a total of 15,875 (unweighted) respondents who provided insight into the effect of eighth grade and high school curricular experiences on postsecondary education choice and employment opportunities and choice. In addition, labor force participation, postsecondary persistence, curricular progress, and family formation also were explored. A total of 9,417 cases were selected. This number represented the number of respondents who identified themselves as White and Hispanic.

Follow-up Study. The NELS Fourth follow-up surveyed the same sample of students in the year 2000 when many of these individuals would have completed college and were 8 years out of high school (Curtin, Ingels, Wu & Heuer, 2002). It included a total of 12,144 (unweighted) respondents who were also members of all of the base year, first, second, and third studies. It provided insight into a new set of educational and social issues about the NELS: 88 respondents who were at the time of the interview, 26 years old. "The focus was on postsecondary education and employment, and especially the transitions experienced by young adults as they moved from educational systems (secondary and postsecondary) into the labor market" (NCES, 2002, p.7). This study looked at the fourth follow-up respondents (N=12,144) who were Hispanic (n=1,360) and who were members of the base year, and all follow-up studies.

Survey Flags and Weights

The selection of the proper participation flags and weights is a critical step in determining the appropriate sample. They should be used in selecting the subset of respondents the researchers intend to examine. The general purpose of using weights with survey data is to compensate for unequal probabilities of selection and to adjust for the effects of non-response (National Center for Educational Statistics: NELS: 88, Base-Year to Fourth Follow-up Data File User's Manual, July 2002, p. 65).

First Study. For this study, the flag (F3UNIV2D) from the third follow-up data set was used to select those students who had graduated and were in school at the time the survey was conducted. The weight variable F3QWT was employed. This weight was intended to be used with all members of the third follow-up sample who completed a questionnaire in 1994, regardless of their participation status in previous rounds. The weight allowed the researchers to generate national statistics for White and Hispanic students who were enrolled in college in 1994. When used with the appropriate flag, it allowed projections to the population (N=1,896,622) of spring 1992 twelfth graders who were eligible to complete questionnaires in 1992 and 1994.

Follow-up Study. For the follow-up study, the flag (F4PNLFL) from the fourth follow-up data set was used to select those students who were members of the base year, first, second, third and fourth follow-up. The weight variable F4PNLWT, the fourth follow-up complete panel weight was employed. The weight is used to estimate longitudinal parameters that describe the population of spring 1988 8th graders (NCES, 2002, p.84). This weight allows the researchers to generate national statistics for Hispanic students who completed a postsecondary credential in 2000. When used with the appropriate flag, it allows projections to the population (N=308,313) of Hispanic respondents who were 8th graders in 1988 and members of all follow-ups.

Data Analyses

The Statistical Package for the Social Sciences (SPSS®) software was used to analyze all data collected in both studies, although different versions of the software were utilized. The Crosstab function of SPSS® was utilized to generate frequencies and percentages to describe both sample populations. The analyses used in both studies are listed and described in Table 2 however, only the descriptive results for both studies are reported in this paper.

Table2

Data Analyses and Research Questions for First and Follow-up Studies.

Analyses		First Study Research Questions	Follow-up Study Research Questions
First	Follow-up		
Percentages/ Frequencies	Percentages/ Frequencies	1. What are the technical/occupational programs in which Hispanic students in the United States choose to enroll?	1. What percentage of Latino student subgroups identified as first, second, and third generation completed a high school diploma and a postsecondary credential?
Percentages/ Frequencies	Percentages/ Frequencies	2. What are the educational background factors for Hispanics pursuing postsecondary education?	2. What was the postsecondary completion rate of Latino student subgroups identified as first, second, and third generation, who were enrolled in programs that lead to a diploma, certificate, or associate degree? Which programs did they complete?
Logistic Regression	Chi Square	3. What relationships exist between selected independent variables and the dependent variable, which examine the	3. What is the difference in postsecondary completion rates for Latino students identified as first,

		selection of a technical or occupational career program over other higher education programs?	second, and third generation?

RESULTS

The purpose of this paper is to describe the results of two studies which investigate the participation of Hispanics in postsecondary technical education in the United States. The results presented primarily include descriptive information from two studies and will compare the involvement of Latinos in postsecondary technical education in 1994 and 2000. Table 3 describes the sample populations from both studies. Although the first study compared Latino subgroups to Whites, the frequencies for Whites are not reported in Table 3. However, a brief discussion comparing the two groups is included in the narrative.

Table 3.

Weighted Demographic Variable Frequency Distribution of Sample Populations from the First (1992 High School Graduates) and Follow-up (2000 Postsecondary Completers) studies by Subgroups.

Hispanic Subgroups %, n								
Student Characteristics by Subgroups	First Study (1994) (n=206,907)*				Follow-up Study (2000) (n=99,949)			
	M	C	PR	O	M	C	PR	O
SES								
Quartile 1 (low)	50.6	23.1	36.6	24.2	49.4	18.4	21.6	18.7
Quartile 2	21.9	25.2	34.5	25.5	21.9	30.0	35.2	20.4
Quartile 3	16.5	18.4	18.1	18.9	20.1	7.0	20.8	15.1
Quartile 4 (high)	6.0	33.3	10.8	25.5	8.6	44.6	22.4	45.8
Total	**125,104**	**9,725**	**21,181**	**46,996**	**56,144**	**7,226**	**10,480**	**24,632**
H.S. Status (1994)								
Recd. HS Diploma	95.6	96.0	94.7	97.6	90.1	100.0	90.1	96.6
Recd. GED	1.2	2.1	2.1	1.8	6.1	0	1.0	2.5
Recd. Cert. of Att								
Enrolled in HS	.2			.2	0	0	5.8	0
Work Equiv.HS Diploma	1.5		3.3	.4	1.9	0	3.1	1.0
Not Grad./Not Working on	1.4	1.9			1.9	0	0	0
Total	**125,104**	**9,726**	**21,181**	**46,995**	**56,145**	**7,226**	**10,479**	**24,632**
Degree Program Student Enrolled (1994)								
Cert./Dip./Assoc.	22.8	35.9	29.3	20.4				
Other Higher Ed. Program	56.2	41.6	47.4	54.3				
Combination 1 &2	11.2	16.4	15.8	11.2				
Undeclared	9.8	6.2	7.5	14.1				
Types of PSE degrees attained as of 2000								
Cert/License only					29.3	1.4	44.8	21.5
Assoc degree only					25.7	12.6	10.6	14.1
Bach degree only					33.0	54.4	36.2	40.8
Cert. and AA but not higher					4.3	12.7	5.0	2.0

Cert. and BA but not higher	1.8	1.1	1.0	3.8
AA and BA but not higher	3.2	4.6	0	10.6
Cert., AA, & BA but not higher	.3	0	1.0	.5
MA degree but not higher	2.2	13.3	1.4	5.5
Ph.D./Professional doc	.1	0	0	1.2
Total	**56,145**	**7,226**	**10,479**	**24,631**

Note: M - Mexican; C - Cuban; PR - Puerto Rican; O - Other Hispanic * includes missing cases

Results from First Study. The distribution of males and females within Latino subgroups was fairly equal (~48% male to ~51% female). When comparing socioeconomic status of Latinos to Whites, each of the Latino subgroups had the highest percentage represented in the two lowest quartiles (Quartile 1 and Quartile 2) except for the Cuban group (See Table 3). About 51% of Mexican and 37% Puerto Rican respondents were grouped in Quartile 1(Low) when compared to 12% of Whites. About 34% of Whites, 33% of Cubans and 25.5% Other Hispanics were grouped in Quartile 4 (high) as compared to 6% of Mexicans and 11% of Puerto Ricans.

Both mother and father expectations were analyzed. The data indicate that Latino parents had high aspirations for their children (as reported by the sample member). Most parents expected their children to earn at least a bachelor's degree. A low percentage of parents wanted their children in vocational/occupational programs. The Cuban group identified master's degree and Ph.D. degree or other professional degrees as expected educational levels (see Table 3 – Follow-up data).

Other results indicated that, overall, Latino enrollment in postsecondary education in 1994 was approximately 72% of the total Latino population in twelfth grade in 1992. The total number decreased from 206,907 to 149,815, a drop of about 28% which means that 72% went on to college. Of those Latinos in college, about 23% (34,595) identified themselves as pursuing technical and /or occupational programs. The largest Latino subgroup participating in technical/occupational programs was Mexican (63% - 21,840/34,595). Within each of the subgroups, the majority of students identified themselves as being enrolled in transfer programs, which mean that their intention is to attain a bachelor's degree: 68% Mexican, 63% Puerto Rican, 59% Cuban, and 66% other Latino. When looking at specific technical/occupational programs the findings revealed that the largest enrollment of Latino students were in the following programs: Protective Services (3.1%); Mechanic (2.6%); Education (2.4%); and Dental/Medical Technician (2.3%). Programs such as Precision Production (0.2%); Electronics (0.6%) and Engineering Technology (1.1%) remained low (<2%). Programs such as Child Care and Guidance, Textiles, and Dietetics had no Latino enrollment.

Results from Follow-Up Study. This study examined Latino college completers and the differences in completion rates of Latino subgroups when they were classified by their generation status as defined by Arbona (1995). Some of the background and educational characteristics of the sample weighted population (n=99,949) are listed in Table 3. This sample, now decreased by about 68% of the total Latino population (N=308,313) represents the number of Latino respondents with a postsecondary credential (32%).

The majority of the Mexican (49.4%) respondents fell in the lowest socioeconomic quartile compared to the majority of Cuban (44.6%) and Other Hispanic (45.8%) groups whose socioeconomic status fell in the highest quartile. Mexican (8.6%) respondents showed the greatest disparity in their socioeconomic status with the least number represented in the highest socioeconomic quartile. When examining the generation status of each subgroup, the majority of Mexican (51.6%) respondents were classified as

generation 3, while Cuban (62.8%) and Puerto Rican (68.6%) respondents were classified as generation 2; other Hispanics had an equal number represented in generation 2 (38.3%) and generation 3 (39.2%).

The greatest proportion of the respondents in most of the subgroups reported attaining a bachelor's degree only (Mexican, 33.0%; Cuban, 54.4%; and Other Hispanic, 40.8%) except for the Puerto Rican cohort which attained a certificate or license only, the greatest proportion of the time (44.8%). Cuban respondents had the greatest number (13.3%) of all subgroups completing a Master's degree (see Table 3).

Table 4 shows the percentage of Latino groups who completed both a high school diploma and postsecondary credential by subgroup and generational status. In generation one: Mexican (60%) respondents obtained a certificate/license only the majority of the time while both Cuban (49%) and Puerto Rican (78%) respondents obtained a bachelors degree only the majority of the time. The same groups in generation two shift. Mexicans (31%) obtained bachelors degrees the majority of the time while Puerto Ricans (54%) obtained certificates/licenses only the majority of the time. By the second generation, twenty-four percent of Cuban respondents obtained up to a Masters degree compared to the other groups (less than 6%). By the third generation, Mexican (21%) and Other Hispanic (13%) respondents were the only groups to obtain either a certificate/license or associate's degree only. Most groups (in the third generation) had the highest percentage of students who had attained a bachelor's degree only (Mexican 45%; Puerto Rican 86%; Other 46%). Cuban, third generation respondents had the highest number of respondents who attained a certificate and associate's degree (50%) followed by bachelor degree attainment (42%).

The following are the specific technical programs in which Latinos completed by generation status. Only first generation Puerto Ricans (Paralegal, 32.3%); second generation Mexicans (Allied Health, 8.5%), and Other Hispanics (Design, 7.6%); and third generation Mexicans (Nursing Assistant, 4.6%) have higher completion rates in programs that lead to a certificate, diploma, or associate degree. High skill-high wage programs, such as precision production and electronics, have very low completion rates (Gen1, 0%, 0%; Gen 2, .7% completion rates by Mexican and 0% by the other three groups & 1.1% Mexican, 2.5% Other Hispanic; Gen 3, 1.0% Mexican and 0% by the other three groups & 0% by all groups respectively).

In general, very few Latinos pursue vocational/technical fields as indicated by higher completion rates at the baccalaureate level. Latinos receiving credentials in some of the more lucrative technical or high-skill/high-wage fields such as precision production, electronics, and engineering technology are almost as non-existent today as they were in the first study (Maldonado and Farmer, 2001). A positive statistic from the follow-up study, however, is the growth of Latinos in health related occupations. Growth at both the associate degree level and below and at the bachelor's degree level is significant. While Mexicans in the first study were the most disenfranchised, as a group they made vast improvements in their completion rates. In terms of the subgroups within their generation status, this study showed that the longer the groups are in the U.S. (second and third generation), the better their educational attainment.

Table 4

Weighted Percentage of Hispanic Student Subgroups with a High School Diploma by Type of Postsecondary Credential and Generational Status

Hispanic Subgroups by Generation	Cert/Lic. Only %	Assoc. only %	Bach. Only %	Cert. & AA %	Cert.& BA %	AA & BA %	Cert., AA, & BA %	MA %	Ph.D./ Prof. %
Generation 1 n=11,692									
Mexican	60.3	11.4	22.7	0	3.8	1.8	--	0	--
Cuban	0	29.8	48.6	0	0	21.6	--	0	--
Puerto Rican	6.3	16.2	77.5	0	0	0	--	0	--
Other	19.2	19.5	21.3	3.4	1.7	27.6	--	7.4	--

Hispanic Total	36.3	15.6	31.3	1.1	2.4	10.9	--	2.4	--
Generation 2 n=33,090									
Mexican	21.5	27.3	31.4	9.7	1.7	2.9	--	5.0	.5
Cuban	2.6	10.9	38.4	0	0	3.8	--	24.3	0
Puerto Rican	54.2	4.1	23.6	8.7	0	0	--	2.4	0
Other Hispanic	7.4	6.1	58.5	0	3.2	14.6	--	6.2	4.0
Total	22.0	17.7	39.3	6.2	1.5	5.1	--	7.1	1.1
Generation 3 n=34,511									
Mexican	20.8	25.0	45.1	2.3	1.5	3.7	0	1.4	--
Cuban	0	0	41.6	49.9	4.3	4.3	0	0	--
Puerto Rican	0	0	86.2	0	0	0	13.8	0	--
Other Hispanic	12.7	18.3	46.3	2.9	7.8	3.6	1.7	7.1	--
Total	17.3	21.5	46.2	5.1	3.0	3.6	.7	2.6	--

Summary

In summary, this paper described the results of two studies which investigated the participation of Hispanics in postsecondary technical education in the United States. The results presented in this paper primarily included descriptive information from each study and it compared the involvement of Latinos in postsecondary technical education in 1994 and 2000. One of the key findings of both studies was the lack of participation of Latinos in postsecondary technical education particularly in occupations considered to be high skill – high wage. Completion rates of such degrees are highest for first generation respondents and generally decline for most Hispanic subgroups in later generations. Additionally, attrition of Latinos from college in general, increased from 1994 to 2000 (down from 149,815 in 1994 to 99,949 in 2000). However, those that did persist and complete a postsecondary credential earned mostly bachelor's degrees.

Discussion

High performance workplaces are demanding higher level skills of their workers. A better educated workforce has higher fiscal impact on the economy (Carnivale, 2005). Education, therefore, is the basis for improving human performance at work "because the highest returns to employer training result from training the most trainable – those with the best educational preparation" (Carnivale, 2005, p. 40). Although much of the current research on college achievement support the attainment of baccalaureate degrees, the value of a postsecondary technical education cannot be ignored. According to a study conducted by National Assessment of Vocational Education (1994), "employers had a positive view of postsecondary education and that there was some empirical evidence that postsecondary occupational education completers received higher wages than community college program completers who failed to complete a vocational program" (cited in Jacobs, 2001, p. 175). The CCRC (2004) in their study indicated that there was an increase in community college students with previously earned degrees, possibly indicating that all bachelor's degrees do not lead to higher employment and wages.

There are many variables that impact educational attainment of Latinos. In addition, those variables can be different for each of the various subgroups. The educational attainment and the associated background factors are important considerations in Latinos' career development. Herr and Niles (1994), two distinguished scholars, stated that "…decision making, development of self-identity, and life choices do not occur in a vacuum. They occur within political, economic, and social conditions that influence the achievement images and belief systems on which individuals base their actions" (p182). Furthermore, "factors such as poverty, poor education, and racism often combine to affect negatively the individual's self-concept, ambition, motivation, and self-efficacy, thereby diminishing the perceived utility of engaging in long-range future planning" (p. 182). These factors and conditions demonstrate the complexities

surrounding career development and educational attainment of Latino students. It should be noted that career development among Latinos may vary depending upon how well an individual becomes acculturated to the dominant culture. Thomas and Alderfer (1989) described minorities as bicultural. Because they move between their culture and the dominant culture, most minorities experience difficulties functioning effectively. Latinos' ability to meet educational and occupational tasks are based on two predictors, migration history and socioeconomic background (Maldonado & Farmer, 2001; Arbona, 1995). As noted with both studies, there was a significant decrease in the number of Latinos who started their postsecondary education in 1994 (NELS: 88/94: n=149,815) to those that actually completed a postsecondary credential/s in 2000 (NELS: 88/00: n=99,949). The researchers believe that college attendance and graduation rates are directly affected by low educational attainment of the Latino population as a whole and the high percentage of drop-outs as a result of an educational system that does not promote excellence in an entire group of people.

Advocating that Latinos pursue postsecondary technical programs may be viewed as controversial to those who research college achievement and the attainment of bachelor's degrees. For those advocates, we respond by stating that a postsecondary technical education provides options for those who would otherwise "get stuck or spill out of the pipeline" (Schmidt, 2003). While the attainment of bachelor's degrees is not discouraged by the researchers, the decision to pursue such a degree should not be made haphazardly or without taking into account considerations such as future openings in the field and salary. Research reported by CCRC (2004) states that the number of people who are enrolled as occupational students held another degree (>30%) and "the gain was the highest among those who held a bachelor's degree as their highest prior degree (increased from 2% to 9%)" (p.5). In short the role of advisors at the community college and in high schools is critical in steering not just Latino students but all students in careers that the labor market will support. Additionally, the researchers believe that pursuing a career and technical education degree does not preclude a person from attaining a higher degree. In fact, they believe that success early on breeds the motivation to continue.

Both studies presented in this paper should set the stage for further research on the importance of consistent career development for Latinos throughout their educational life as well as provide educational policy makers with information needed to make future educational changes. In addition, academic advisors in middle schools, high schools and community colleges must reevaluate their practices and inform more students of the opportunities available through postsecondary technical occupations. For the Latino population, parents must be informed of those opportunities as well.

The Latino presence and graduation rate in today's institutions of higher education has improved but is no way keeping pace with the Latino American presence in the United States. If the United States wants to remain competitive in the global economy, the ability to produce high levels of skilled workers is critical to the overall performance of its economy (Carnivale, 2005). The contributions of Latinos to that performance will rest on how well the pipeline is sealed and graduation rates, at both high school and higher education increase.

REFERENCES

Arbona, C. (1990). Career counseling research and Hispanics: A review of the literature. *The Counseling Psychologist, 18*(2), 300–323.

Arbona, C. (1995). Theory and research on racial and ethnic minorities: Hispanic Americans. In F.T.L. Leong (Ed.), *Career development and vocational behavior of racial and ethnic minorities* (pp.37–66). Mahwah, NJ: Lawrence Erlbaum Associates.

Brown, S. E., Santiago, D., & Lopez, E. (2003, March/April). Latinos in higher education: Today and tomorrow [Electronic version]. *Change, 35*(2), 40–46.

Carnevale, A. (1999). *Education equals success: Empowering Hispanic youth and adults.* Princeton, N.J.: Educational Testing Services.

Carnevale, A. (2005, January). The coming labor and skills shortage. T&D, 59(1), 37–41.

Chappa, J. (1991). Special focus: Hispanic demographics and educational trends. In D.J. Carter & R. Wilson (Eds.), *Minorities in higher education: Ninth annual status report* (pp.11–17). Washington, DC, American Council on Education.

Community College Research Center. (2004, August). The characteristics of occupational students in postsecondary education (Issue Brief No. 21). New York, N.Y.: Author.

Curtin, T. R., Ingels, S. J., Wu, S., and Heuer, R. (2002, July). *Base-year to fourth follow-up data file user's manual (NCES 2002-323).* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

'Deadly Trend' of Hispanic worker deaths on top of agenda at OSHA. (2002, October, 17). *Labor Relations Week, 16*(41), 1257.

Flores, G., Fuentes-Afflick, E., Barbot, O., Carter-Pokras, O., Claudio, L., Lara, M., McLaurin, J. A., Pachter, L., Gomez, F. R., Mendoza, F., Valdez, R. B., Villarruel, A. M., Zambrana, R. E., Greenberg, R., & Weitzman, M. (2002, July 3). The health of Latino children: Urgent priorities, unanswered questions, and a research agenda. *Journal of the American Medical Association, 288*(1), 82–90.

Fry, R. (2002, September 5). *Latinos in higher education: Many enroll, too few graduate* [Electronic version]. Washington, D.C.: Pew Hispanic Center.

Fry, R. (2003, October). *Labor market outcomes of Hispanics by generation* (Report No. 188). New York, NY: ERIC Clearinghouse on Urban Education. (ERIC Document Reproduction Service No. EDO-UD-03-7)

Fry, R. (2004, June 23). *Latino youth finishing college: The role of selective pathways.* Retrieved March 1, 2006, from http://pewhispanic.org/files/reports/30.pdf

Ganderton, P. T. & Santos, R. (1995). Hispanic college attendance and completion: Evidence from high school and beyond surveys. *Economics of Education Review, 14* (1), 35 – 46.

Gray, K., & Herr, E. (1995). *Other ways to win*. Thousand Oaks, CA: Corwin Press.

Herr, E.L., & Niles, S. (1997). Multicultural Career Guidance in the Schools. In Paul Pedersen & John C. Carey (Eds.) *Multicultural counseling in schools* (pp.157-176). Boston, MA: Allyn and Bacon.

Jacobs, J. (2001). What is the future for post-secondary occupational education? *Journal of Vocational Education Research, 26* (2), 172 – 205.

Kao, G. & Thompson, J. S. (2003). Racial and ethnic stratification in educational achievement and attainment. *Annual Review of Sociology, 29*, 417-442.

Kochhar, R. (2005, December 15). *The occupational status and mobility of Hispanics.* Retrieved March 3, 2006, from http://pewhispanic.org/files/reports/59.pdf

Llagas, C. & Snyder, T. D. (Eds.). (2003, April). *Status and trends in the education of Hispanics (NCES 2003-008).* Washington, D.C.: National Center for Educational Statistics (NCES). Retrieved July 17, 2003 from Academic Search Premier Database.

Maldonado, C. & Farmer, E. (2001). Hispanic students' participation in postsecondary technical programs in the United States. *International Journal of Vocational Education and Training, 9*(1), 47-58.

Morales, R. (2000). What a worker finds in the U.S. labor market. In S. M. Pérez (Ed.), *Moving up the economic ladder: Latino workers and the nation's future prosperity. State of Hispanic America 1999* (pp. 35 – 60). Washington, D.C.: National Council of La Raza.

National Council of La Raza. (2001, August). *Beyond the census: Hispanics and an American agenda.* Washington, D.C: Author. Retrieved July 17, 2003, from www.nclr.org

Perez, S. M. (Ed.). (2000). *Moving up the economic ladder: Latino workers and the nation's future prosperity.* Washington, D.C.: National Council of La Raza.

Pew Hispanic Center and the Kaiser Family Foundation. (2004, January). *National Survey of Latinos: Education.* Retrieved April 1, 2004, from http://www.pewhispanic.org/site/docs/pdf/LatinoEducationSummaryandChartpackJan262004.pdf

Rendon, L. I., & Nora, A. (1994). A synthesis and application of research on Hispanic students in community colleges. In J.L. Ratcliff (Ed.), *Community colleges* (pp. 287-293). Needham Heights, MA: Simon & Schuster Custom Publishing.

Rodriguez-Valladares, M. (2002, December). The dropouts [Electronic version]. *Hispanic, 15* (12), p.36-39,42.

Schmidt, P. (2003, November 28). Academe's Hispanic future*. Chronicle of Higher Education, 50* (14), A8 – A13.

Siles, M. and Peréz, S. M. (2000). What Latino workers bring to the labor market: How human capital affects employment outcomes. In S.M. Peréz (Ed.), *Moving up the economic ladder: Latino workers and the nation's future prosperity* (pp. 1-34). Washington, D.C.: National Council of La Raza.

Thomas, D. A. & Alderfer, C. P. (1989). The influence of race on career dynamics: Theory and research on minority career experiences. In M.B. Arthur, D.T. Hall, & B.S. Lawrence (Eds.), *Handbook of career theory* (pp. 133-158). Cambridge, N.Y.: Cambridge University Press.

U.S. Census Bureau. (2000, March). *The Hispanic population in the United States: Population characteristics.* Retrieved July 17, 2003, from www.census.gov

U. S. Census Bureau. (2003, June 18). *Annual demographic supplement to the March 2002 current population survey.* Retrieved February 3, 2005, from www.census.gov/Press-Release/www/2003/cb03-100.html

U.S. Census Bureau. (2005, December). *The Hispanic population in the United States: 2004.* Retrieved July 17, 2003, from http://www.census.gov/population/www/socdemo/hispanic/cps2004.html

U.S. Census Bureau. (2006, January). *Population profile of the United States: Race and Hispanic origin in 2004.* Retrieved March 1, 2006, from http://www.census.gov/population/pop-profile/dynamic/RACEHO.pdf

U. S. Department of Education, National Center for Education Statistics [NCES]. (1990, March). *National Education Longitudinal Study (NELS: 88) Base year student component data file user's manual* (NCES 90-464). Washington, D.C.: S. J. Ingels, S. Y. Abraham, R. Karr, B. D. Spencer, and M. R. Frankel. J. Owings, Project Officer.

U.S. Department of Education, National Center for Educational Statistics [NCES]. (2002, July). *National Longitudinal Study (NELS: 88/00) Base-year to fourth follow-up data file user's manual* (NCES

2002-323). Washington, D.C.: T. R. Curtin, S. J. Ingels, S. Wu, R. Heuer, & Research Triangle Institute. J. Owings, Project Officer.

U.S. Department of Education, National Center for Education Statistics [NCES]. (2003, April). *Status and trends in the education of Hispanics*, (NCES 2003–008). Washington, DC: Author.

Vazquez, M. (2001). Latinos. Viva la diferencia! *CRM, 5*, 22-24.