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Chapters of Omicron Tau Theta	2
Editorial Board Members	2
Notes from the Editors	3
Guidelines for Authors	5
Parental Perception of the Education of their Adolescent Children: Evidence from Greek Secondary Education <i>Anna Saiti and Eugenia Mitrosili</i>	9
The Impact of Settable Test Item Exposure Control Interface Format On Postsecondary Business Student Test Performance <i>Allen D. Truell, Jensen J. Zhao, and Melody W. Alexander</i>	31
The Impact of Block Scheduling on Agricultural Education: A Nine Year Comparative Study <i>Elizabeth Wilson, Sarah Looney, and Kristin Stair</i>	43
A Retention Study of Career-Based Intervention Teachers in Ohio <i>Chris Zirkle and Amy Winegardner</i>	55

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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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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 jbartii@aol.com, or it can be mailed on a 3.5" diskette or CD to Dr. James Bartlett 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.

PARENTAL PERCEPTION OF THE EDUCATION OF THEIR ADOLESCENT CHILDREN: EVIDENCE FROM GREEK SECONDARY EDUCATION

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ABSTRACT

The purpose of this paper is to attempt to specify and investigate the determinants of parental intention through data collected from 200 parents of youths aged fifteen years. Results showed that Greek parents guide their children to follow upper secondary education rather than technical education for a number of reasons but mainly: technical education prevents children from continuing in higher education, Greek technical secondary education provides a low standard of education, and there are few career opportunities. Since the Greek parents believed that the Greek educational system does not prepare children for entry into an appropriate profession, the paper identifies that the school vocational program is an important issue in improving labor performance. The updating of the school curriculum and the recruitment of good teachers is urgently needed so as to respond to the increasing demands for effective school management.

INTRODUCTION

In most countries, the transition from compulsory secondary education to post-compulsory secondary education is the most critical phase of the education process. The choices made by adolescents have direct consequences not only for individuals but also for the whole of society. Moreover, this particular choice significantly affects the function of the whole education system and the socio-economic system. The choice of job occupation is a critical decision that young people are usually obliged to take at the age of fifteen. In order to assist with the decision-making, reliable information and channels of communication appear to be necessary. Clarification of individual objectives, the specification and interpretation of future work opportunities in terms of satisfaction and career development, is usually a painful process not only for the adolescents but also for their families since they play a key role in the decision-making process.

Parental involvement in their children's education and choice of career has gained momentum recently and has been a concern of education policy makers. The education system is an area where the relationship between the consumer (parents) and the producer (schools) tilts the balance of power between the two towards the former (Munn, 1998).

Research indicates that parental influence on a student's choice of education and career, is an important issue for the general welfare of the school system (Eliophotou-Menon, 1997, 1998; Hobbs, Docecki, Hoover-Dempsey, Moroney, Shayne & Weeks, 1984; Hoover-Dempsey, Walker, Jones & Reed, 2002; Hoover-Dempsey & Sandler, 1997; Kassotakis, 1991, 1999; Kazamias & Kassotakis 1995; Kotlik & Harrison, 1989; Papanastasiou & Michaelides, 1988; Splete & Freeman-George, 1985). Parental involvement, through the creation of associations and governing bodies in which parents were represented, is a mechanism that encouraged educational planners to pay attention to the key matter of pupil achievement. These bodies, including other out-of-school participants, allow society to express a view on education and “drive” the education system towards improved standards in education. Recent work of Hoover-Dempsey and Sandler (1997) describes the main reasons for parental, teacher and school involvement, seeing this involvement as an important part of the school system that functions to create positive outcomes for children of all ages. In particular, parental involvement is considered the most important influence on a student's progression through education and related development that has major outcomes for child learning.

The strong trend towards general secondary education in Greece has been a concern for Greek education policy-makers that identify a serious problem in the area of technical-vocational education and fear that this problematic area of the education process will continue to exist in the future. According to researchers (Eliophotou-Menon, 1997; Kassotakis, 1991, 1999; Kazamias & Kassotakis 1995; Kokkotas, 1978; Koyzis, 1989; Moustaka & Kasimati, 1984; Lampiri-Dimaki, 1974; Reppa & Fotiadou-Zahariou, 1997; etc.), parental influence on adolescent education and career decisions in Greece is the subject of a number of institutional, social, economic and employment factors. Of the various social factors, parents are often the most crucial (Evans Hairston, 2000; Lee, 1984). The structure, socioeconomic characteristics, status, attitudes and the development (through time) of the Greek families favor the receptiveness towards general secondary education.

A steady increase of students enrolled in general secondary education is also attributed to the fact that the Greek economy was unable to keep pace with the rate of unemployment, and to the concern of Greek parents regarding the high rates of unemployment. General secondary education is seen by parents as the means of securing a comfortable and well-paid occupation (Demetriades, 1989; Eliophotou-Menon, 1998). The economic value of education is obvious from the stream of skilled and trained individuals entering the labor market. The rise of the unemployment in Greece is attributed to a great extent to the slow response of the education system to the continually changing technological environment of the labor market (Pesmatzoglou, 1987; Saiti, 2000).

Institutional forces have also a significant effect on the future pathway navigated through education by secondary school students. These include the status of secondary education, streaming methods and points of transition within the education system as well as the development of the secondary school curriculum (Eliophotou-Menon, 1998). Technical and Vocational education possesses a significant meaning and contributes to the improvement and development of a country. It helps education to adjust to the needs of the present socio-economic environment. The Greek education system, and more particularly the secondary school curriculum, prepares adolescents for enrolment in

general secondary education (lyceum). Given the need for additional information and improvements in Greek secondary vocational programs, the objectives of this study were:

- To investigate the parental role in the vocational guidance of children
- To determine how parents view work and their role in influencing their children's education and consequently their future career
- To define the socio-economic family factors such as family status, attitudes of parents towards work, those affecting children's career decisions, and parental perception of career choices for their children
- To determine the degree to which the existing curriculum responds to the needs of the pupils
- To investigate whether technical vocational schools and lyceums deal with the labor challenges and are able to equip young pupils with the necessary skills of the labor market, and finally
- To assess the Greek education system in terms of its technical and vocational education and to recommend strategies for improving the effectiveness of vocational education.

EDUCATIONAL AND SOCIAL FORCES IN GREECE

Greek Educational forces

According to the 1975 Constitution (article 16) amended in 1986, education in Greece is under the supreme supervision of the State (Ministry of Education) and is conducted at the State's expense. It is important to note that Greek educational policy has two main purposes that can be described as follows:

- To maintain the structure (that is made by the Ministry of Education) of the socio-political system and at the same time attempt to solve possible problems coming from this structure (such as equal opportunities);
- To reproduce the socio-political system and to contribute to economic development through the introduction of new scientific programs and new technologies.

The Pedagogical Institute is responsible for the formulation of guidelines, the preparation of time-tables and curricula, the commissioning and approval of textbooks, the provision of vocational guidance, the introduction of new subjects and the application of new teaching methods. The Greek education system is organized into three main areas.

Primary education. Primary education in Greece is compulsory at the age of 5 1/2 years and lasts for six years. Apart from the large public education sector (which includes primary and secondary levels) there is also a small private education sector (fee-paying schools) which provides both primary and secondary education.

Secondary education (gymnasia and lycea). Three years of lower secondary education (gymnasium) is also compulsory and the second level of secondary education consists of two types of schools: the three year general lyceum and the three-year technical and vocational lyceum who do not wish to continue their studies in a general lyceum. The path from elementary education to secondary is without examinations. Those who have attended lyceums (encompassing 12 years of formal education) are allowed to continue

their studies in Higher Education after a successful participation in the general nation-wide examinations (Greek Parliament, 1983, 1985). Those who graduated from technical and vocational lyceums are allowed to continue their studies only in Technological Education Institutions after successful participation in the general nation-wide exams.

Higher education (Universities and Technological Institutions). By contrast to elementary and secondary education, tertiary level education is provided only by public institutions.

The education system of a country needs to prepare young people with skills and abilities that are considered necessary for increased labour productivity and economic development (Blaug, 1987; Colman & Nixon, 1994; Psacharopoulos & Woodhall, 1986; Saiti, 2000; Schultz, 1961; Todaro, 1996). However, the Greek education system does not bring educational and occupational needs closer together and thus cannot contribute effectively to the vocational guidance of the students. The most significant problems that the Greek education system have been faced with in recent years are excessive competition for ensuring a place in higher education, the large number of enrollments in higher studies abroad, and the emergence in the labor market of a large number of high school graduates that do not have any marketable qualifications (Kassotakis, 1991, 1999). In spite of good planning and support, according to the Organization of Economic Cooperation and Development (1997, p.117), the School Vocational orientation program in Greece has not been able to win any credibility among teachers and their parents and the public in general.

Greek Social Forces

Parent attitudes towards the educational and career decisions do not appear in an empty socio-economic environment. Demographic, cultural and environmental approaches have confirmed the interrelationship between the family and the socio-economic environment (Hoover-Dempsey & Sandler, 1997; Osipow, 1968; Reagor & Rehm, 1994; Smith, Beaulieu & Israel, 1992; Splete & Freeman-George, 1985). Factors like family size, the parents' level of education, the parents' workplace expectations, homework supervision, as well as ambitions and expectations, determine the extent of parental involvement in their children's choice of education and job/career.

Looking at the Greek family it can be observed that it remains fundamentally the conservative and basic unit of society with deep roots in the past. However, in the last few years the Greek family has been undergoing radical changes along with the wider society. The supplementation of family care by social care agencies is a common feature in Greek society. Life-choices of young pupils continue to be strongly influenced by the family (Kokkotas, 1978; Moustaka & Kasimati, 1984). The major changes in Greek families that occurred after 1960 are (Apostolopoulos, 1996; Georgas, 1994; Mastoraki, 1994; Papadioti, 1994; Theodoropoulou, 2002):

- The increased participation of women in the labor force that arises from the need to contribute to the household income
- The decline in the number of marriages
- The significant drop in birthrates
- The alternative trends of cohabitation (companionship)

- The increase in the number of divorces
- The increase in the number of single family units.

In Greek society, despite these changes, the family "plays an important role in organizing the life of children as well as in affecting, up to a certain degree, choices of future occupation" (Moustaka & Kasimati, 1984, p.49). The consistent economic environmental pressure, such as high rates of unemployment, forces Greek families to discourage children from job-choices according to their interests since the labor market has limited opportunities. "In their pursuit of fame and fortune, the best and brightest high school students have little time for elective vocational courses" (Silberman, 1986, p.6). Children and their parents usually avoid economically productive professions in favor of "more comfortable and prestigious paper entrepreneurial positions in law and finance" (Catri & Barrick, 1996, p.1).

However, most of the time interference from parents is likely to generate conflict and negative results since work may be associated with failure when it is not substantially creative to boost self-respect, esteem and satisfaction. On the other hand, so long as any conflict over appropriate parental behavior does not occur, parental involvement in their children's decision over education and job/career can yield a very positive outcome since parents can help their children to choose a profession according to the children's own interests (Epstein & Dauber, 1991; Hoover-Dempsey & Sandler, 1997).

Several researchers (Dimitropoulos, 1986, 1989, 1998; Kassotakis, 1991, 1999; Kazamias & Kassotakis, 1995; Lampiri-Dimaki, 1974; Reppa & Fotiadou-Zahariou, 1997; etc.) have attempted to investigate the role of the Greek family in adolescent education and occupation choices. Results showed that the influence of the Greek family has gone through variations over the years, that vocational guidance of students is not an efficient tool so as to develop the necessary knowledge of the increased needs of the labor market, and that several family characteristics, mostly socio-economic, have a significant position on the decision-making regarding career choices.

Parents usually believe that a university degree is a golden key to greater opportunities in life. The data in Table 1 below indicate the strong competition for entry into higher education in Greece.

It is clear from the above Table that, until 1999, a considerable number of students did not succeed in entering higher education in Greece and, as a result, a large number of them enrolled in studies abroad. Until 1999, candidates competed in only four core subject areas selected from among the subjects of high school curriculum. Scoring was based on performance in these core subjects only irrespective of previous high school grades. The selection and acceptance of students to higher education was determined by combining the candidate's score on the entrance exam with the higher education institutions preferences.

After 1999 there were changes in the process system of graduating from upper general secondary education and the number of written subjects taken in the nation-wide entrance exams. These changes occurred in 2000. With the new entrance examination system, applicants for higher education compete in nine subjects in total, for which they prepare

during the final year of lyceum. The new entrance examination system is based entirely on the high school curriculum.

Table 1. *Number of Applicants to Higher Education in the years 1968, 1974, 1977, 1981, 1984, 1985, 1990, 1995, 1997 - 2002.*

Year	Applicants	Successes (N)	Successes (%)
1968	33,086	9,191	27.78
1974	54,955	14,262	25.95
1977	72,481	13,223	18.24
1981	75,206	14,746	19.61
1984	129,374	23,598	18.24
1985	149,268	23,666	15.85
1990	124,658	22,890	18.36
1995	157,525	45,356	28.79
1997	144,450	51,600	35.72
1998	161,507	62,289	38.56
1999	166,288	71,265	42.85
2000	136,675	85,045	62.22
2001	118,738	88,284	74.35
2002	93,607	68,600	73.29

Note. The structure of the entrance examination was consistent up to 1999, when it was revised. The statistics for the later years reflect a mix of students, some continuing with the old entrance examinations and others adopting the new. Hence, the old system is gradually fading away, with a natural depletion of those using the old entrance system (Greek Parliament, 1997, 2001).

Student's preference for the institutions of the selected field of study is declared on the higher-education application according to priority. The selection and acceptance of students to higher education is determined by combining the candidate's score in the entrance exam with the higher education institutions preferences and number of places available in each institution. The candidate's score is the highest criterion followed by the other two in the sequence given. Using this procedure, it is difficult for any candidate not to meet the entrance requirement. For certain higher institutions students may have to take exams in an additional subject for example Architecture: Technical drawing. Thus, trend in the number of successes may seem distorted by the statistics for recent years.

Table 2 shows the number of the Greek students enrolls in higher education abroad for the years 1978-79, 1983-84, 1991-92, 1994-95 and 1997-98.

Table 2. *Number of the Greek Students Enrolled in Higher Education Abroad*

Countries	1978-79	1983-84	1991-92	1994-95	1997-98
Great Britain	6,655	6,499	7,476	10,374	25,267
Italy	16,042	13,753	5,505	7,046	11,392
France	4,175	5,348	2,263	2,806	2,716
USA	2,937	4,956	3,275	-	-
Other Countries	2,716	5,703	6,946	30,147	49,574

Note. Source: Ministry of Education, Statistical department, 1990, 1995, 2002. The numbers in the table includes both the under-graduate and the post-graduate students.

From the above statistics it can be concluded that the emigration of students remains a costly factor for Greece. Greece is a country that is characterized by relatively low participation in technical education and although there has been an increased interest in technical and vocational education, this area continues to be problematic (Kazamias, 1987; Kazamias & Kassotakis, 1995). Technical and vocational education has been reduced to a low status in Greece. The result has been an imbalance in the Greek market due to the lack of a technically trained labor force (Drettakis, 2001; Saitis, 1999). Although in recent years technical education gained some positive attention and has been able to contribute to the restoration of the Greek economy and the demands of international competition, the crucial problem of low demand for Technical and Vocational education remains. The main reason for Greek parents and adolescents to prefer general education to technical and vocational education is because they perceive the latter to cater for the needs of young people with lower abilities. Indeed, researchers (Kozol, 1991; Mortimer, Finch, Dennethy, Lee & Beebe, 1994; Rojewski, 1997; Tuma, 1994;) claim that students experiencing economic disadvantage usually enrol in secondary vocational education, although technical and vocational education results in a number of benefits such as less unemployment and better paying jobs for adults.

Both the structure and the character of the Greek family have a significant influence on the professional direction of young pupils and subsequently on their future. Greek families encourage young pupils to aim for traditional professions such as those of doctor or lawyer. Although recently Greek parents have started to come to terms with the idea of technical occupations (Lakasas, 2002), the general attitude of Greek parents has not changed a great deal and this decreases even further the socio-economic effectiveness of the Greek educational system. The lack of vocational orientation in the Greek school system leads to mismatch between the education system and the labor market. The most significant attempt towards vocational orientation for young pupils who have finished their upper secondary education was the development of Vocational Training Institutes (IEK) (Zarifis, 1996). In order to respond to the rapid changes in the labor market and to promote technical and vocational education, the Greek education system should be committed to working with families, providing students with initiatives for participation in secondary vocational education, and finally enhancing attitudes towards technical and vocational education.

DATA AND METHODOLOGY

A survey was conducted to collect primary source data for the paper. Questionnaires were administered to 200 parents of youths aged fifteen during the academic year 2000-2001. The sample size - 200 parents - was randomly selected from the Athens area (Prefecture of Attiki). The high response rate (all parents accepted to answer the questionnaire) resulted in the completion of 200 usable questionnaires. However, there may be many points where the chosen data for this particular prefecture are of limited use. Therefore, the data are not sufficiently rich to allow for a deeper analysis of parental perception of their adolescents' education and career choices. These "gaps" of data in the research have partly determined the interpretation of the results.

At the age of fifteen, children should make educational and vocational decisions that definitely affect their adult lives. The questionnaire contained 33 questions designed to

determine parent's perception toward their children's education and career decision. In particular, the questions of the questionnaire related to the:

- Personal and professional characteristics of the parents;
- Parental perception of the schools vocational program and their adolescents' school achievement;
- Parental perception and attitudes towards general and technical-vocational education and sources of vocational guidance;
- Parental expectations, intentions and attitudes towards the occupational career of their adolescents;
- Parental assessment of the Greek education system.

The statistical analysis includes descriptive analysis (percentages) and correlation tests with relevant data. The main research questions of the study that needed to be answered (through parental perception) were:

- Does school vocational orientation reflect the learning needs (both educational and occupational) of pupils and contribute to the implementation and extension of the school curriculum?
- Does technical-vocational education deal with the continuing changes in the labor market and prescribed academic standards?
- Is the connection between technical-vocational education and the labor market strong?
- Does the education system provide students with the appropriate skills and abilities for a successful career?
- Does the education system provide vocational guidance to both pupils and parents?
- Does the education system provide a basis for the creation of equal opportunities in education and occupation for every pupil?

The results of the present study are being published for the information of education policy-makers so as to improve the Greek education system through the promotion of technical-vocational education and its contribution to the development of the Greek economy.

Findings

From the sample of 200 parents in question, 59.5% were women and 40.5% were men. The age of the respondents were: 50.5% between the age of 40 and 49, 34.0% between 30-39, 10.5% between 50-59, 3.0% between 20-29 and finally only 2.0% were over 60 years of age. The number of children that the majority of the respondents had (60.5%) is two. Almost all the respondents (97.0%) and their partners (wives/husbands) (91.5%) had graduated from a public school (see Table 3).

The educational level of the majority of the respondents (39.5%) was high school education. Of those remaining, 29.0% had a university degree, 20.5% had received technological education, 6.0% had done post-graduate studies and 5.0% had only received elementary education. The respective percentages for their partners (wives or husbands) were as follows: 40.5% had received high school education, 28.0% were

Table 3. *Frequencies of the Socioeconomic Characteristics of the Respondents*

Variables	Absolute Frequency	Frequency (%)
Gender		
Women	119	59.5
Men	81	40.5
Total	200	100
Age of the respondents		
60 and over	4	2
50-59	21	10.5
40-49	101	50.5
30-39	68	34.0
20-29	6	3
Total	200	100
Educational level of the respondents		
High school education	79	39.5
University degree	58	29
Technological education	41	20.5
Post graduate studies	12	6
Elementary education	10	5
Total	200	100
Employment of the respondents		
Private employees	81	40.5
Public servants	44	22
Self-employed	23	11.5
Housework	20	10
Academic self-employed	18	9
Retired	10	5
Unemployed	4	2
Total	200	100
Annual family income of the respondents		
29,347 euros and over	30	15
23,500 euros to 29,500 euros	46	23.0
17,900 euros to 23,500 euros	52	26.0
12,032 euros to 17,608 euros	37	18.5
6,163 euros to 11,739 euros	28	14.0
0 to 5,869 euros	7	3.5
Total	200	100

graduates of a technological institution, 22.5% had a university degree, 6.0% had only finished primary school and 3.0% had post-graduates studies. A high percentage of the respondents (40.5%) were private employees whereas only 22.0% were public servants and 11.5% were self-employed. (see Table 3). When questioned whether or not "their job is relevant to the studies they received", the reply of most of the respondents (61.5%) was negative.

The most frequently reported annual family income was in the range from 17,900 euros to 23,500 euros - formerly 6,100,000 to 8,000,000 Greek Drachmas- (26.0%). The next

most reported annual family income was between 23,500 euros to 29,500 euros - formerly 8,100,000 to 10,000,000 Greek Drachmas- (23.0%) (see Table 3).

To the question "What is the role of the parents in the vocational guidance of their children" the majority of responses (86.0%) favored no parental involvement in their child's career or job decision. A high percentage of parents (90.5%) were aware of the existence of a school vocational program whereas 87.5% of them considered this program as important. Moreover, parents believe that the school's vocational guidance should begin from an early age. In particular, 86.5% of the respondents stated that the vocational guidance at school should take place between the ages of 12 and 15.

Table 4. *Frequencies of Parental Intention to Adolescent's Education and Parental Perception for the Greek Educational System*

Variables	Absolute Frequency	Frequency (%)
Parental intention to post-compulsory secondary education		
Parental intention to encourage their adolescent to follow general secondary education		
Yes	172	86.0
No	28	14.0
Total	200	100
Parental Statement that their adolescent intended to follow general secondary education so as to continue their studies in higher education		
Yes	177	88.5
No	23	11.5
Total	200	100
Parental Perception for the school vocational program as important issue in the educational procedure		
Yes	175	87.5
No	25	12.5
Total	200	100
Parental perception that the Greek educational System is ineffective		
Yes	158	79.0
No	42	21.0
Total	200	100
Children's grades at school		
Excellent	36	18.0
Very Good	109	54.5
Good	49	24.5
No Good	6	3.0
Total	200	100
Parental agreement with their adolescent intention		
Yes	192	96.0
No	8	4.0
Total	200	100

Table 5. *Frequencies of Determinants for Parental Preference to Adolescents Education and Sources for Vocational Guidance*

Variables	Absolute Frequency	Frequency (%)
Determinants of parental preference to general secondary education		
Technical education usually limits opportunities for career development		
Yes	90	45.0
No	70	35.0
Total	160	80
Technical education prevents children from continuing in higher education		
Yes	85	42.5
No	75	37.5
Total	160	80
Technical education provides children with low quality education		
Yes	80	40.0
No	80	40.0
Total	160	80
Their children are achieving good grades at school, giving them the chance to continue their studies in higher education		
Yes	71	35.5
No	89	44.5
Total	160	80
Parental Information Sources for the vocational guidance of their children		
Books and information guides		
Yes	163	81.5
No	37	18.5
Total	200	100
Conversation and constructive discussions with teachers		
Yes	125	62.5
No	75	37.5
Total	200	100
Media		
Yes	92	46.0
No	108	54.0
Total	200	100
Internet		
Yes	49	24.5
No	151	75.5
Total	200	100

Note. The missing 40 cases from the determinants of parental preference to general secondary education are those parents that would have encouraged their adolescent to follow technical-vocational education.

Most of the parents in question (74.5%) answered that they want their children to have jobs that differ from their own. Only 25.5% of the respondents stated that want their children to have the same profession that they have. The most popular reason (14.5%) given by parents in the latter category was job stability. When questioned whether or not "the job they hold or have held was acceptable and according to the wishes of there own parents" the answer from the majority (67.5%) was positive.

A high percentage of the parents in question (88.5%) stated that their children wanted to follow upper secondary education so as to continue their studies in tertiary education. Most of the respondents (96.0%) answered that they agree with their child's decision about their career. When questioned whether or not they encouraged their children to follow upper secondary education (lyceum) the responses were mainly positive (86.0%). When questioned about the main reason for this choice, parents focused on four major points: technical education usually limits opportunities for career development (45.0%); technical education prevents children from continuing in higher education (42.5%); technical education provides children with low quality education (40%); their children are achieving good grades at school, giving them the chance to continue their studies in higher education (35.5%). Several studies (Catri & Barrick, 1996; Jacobs, 2001; O' Connor & Trussel, 1987; Reich, 1983; Silberman, 1986) showed that vocational education has a low status because it is not a requirement for admission to universities. Vocational and technical education seems to offer no path in children's career development (O' Connor & Trussel, 1987). Thus, the Greek parents' beliefs are reaffirmed by earlier studies.

Only a small percentage of respondents (14.0%) answered that they would advise their children to follow technical education. When this group of parents were asked why they chose this type of education for their children, responses centred around the opinion that the job their children wanted did not require studies in higher education (3.5%) and that it is "something specific" (3.5%).

Almost all the respondents (95.5%) affirmed that usually they talk with their children about their job career. When parents were questioned about the source of information they usually get regarding the vocational guidance of their children, the replies focused on four areas: books and information guides (81.5%), conversation and constructive discussions with teachers (62.5%), media (46%) and internet (24.5%). Many respondents (81.5%) indicated the belief that the main factor to determine their children's career decision is that it is "interesting". Another factor that appears to have significant influence on child's job decision, according to 71.5% of parents, is the family environment. The other two that received the highest percentages are the school environment (54.5%) and the idols (52.5%).

The main hope of respondents (88.0%) was that their children choose a job according to their skills and abilities. Many parents (72.5%) hoped their children would decide to do something they really like and interesting whereas many answers (65%) indicated that the job decision of their children should be based on labor demand.

A high percentage of the respondents (66.5%) are concerned about the future career of their children and the high unemployment rate that the labor market has experienced in recent years. Most parents (96.0%) supported the view that they do not guide or advise their children to follow a profession that will lead to unemployment.

Many said that the job did not matter as long as one could be satisfied with it and is something that made them happy (75%). Other significant statements were that the children should choose a job that pays more money (56%), that is stable (74.0%), or that secures career development (62.5%).

Many parents (68.5%) believe that there is no occupational segregation of the labor force. Finally a high percentage of parents (79%) shared the view that the Greek educational system is ineffective, does not prepare pupils for work and certainly does not guide them into an appropriate occupation.

Influences and Comparisons of Selected Variables

Correlations between parental perception in children's education and career decisions with four other variables are presented in Table 6.

Table 6¹ *Parental Perception in Adolescents Education and Career Decisions as a Layer Factor for a Number of Selected Variables*

Variables	Pearson X^2	<i>P</i>
Children's grades at school	49.607	.000
Technical education provides children with low quality knowledge	4.444	.035
Technical education usually limits opportunities for career development	4.512	.034
Adolescents should choose a job that secures career development	5.360	.021

Correlation results confirmed the main determinants that lead Greek parents to guide their children to follow upper secondary education (lyceum), instead of technical education. These are the children's school achievements and that Greek technical secondary education provides low standard education and relatively few career opportunities. Indeed, Greek parents guide their adolescents to follow general education in order to secure job occupation, responsibility and social status (Kassotakis, 1991). In fact, our correlation results are consistent with those reached by Athanasou & Cooksey (2001). In their study it was found that the main determinant of an individual's interest in a subject is career interest. Thus, Greek parents' belief regarding technical education and their children's career decision is consistent with previous findings.

CONCLUSION AND POLICY IMPLICATIONS

The results of this study show that parents believe the school vocational program to be an important issue that gives opportunities to children to visit different workplaces and so to grasp the needs of a rapidly developing labor market. "Career development is seen as the

¹ A description of the variables included in the correlation is given in the Appendix.

process of matching individual and organizational needs and determining development needs that arise from that match" (Holton & Trott, 1996, p.3). A career development system is essential for our time since all individuals have a share in the responsibility for their future careers and "Education is the only social institution which has increasing individual options as a major goal" (Holton & Trott, 1996, p.5). Findings of this study imply that Greek parents strongly advise their children to follow upper secondary education (lyceum). This advice is in agreement with their children's intentions. Parental preference of general education to technical and vocational education can be attributed to four factors: technical education usually limits the opportunities for career development; it prevents children from continuing in higher education; it only offers children with low quality knowledge; children who produce good school grades have the opportunity to continue their studies in higher education.

All the parents in question shared the view that Greek education is ineffective. It does not develop children's skills and abilities nor does it prepare them for entry into an appropriate profession. More specifically, based on the above findings, the following recommendations are offered (taking into consideration parents suggestions):

- There should be a state-sponsored tuition program and specific training on vocational education for parents. The vocational instructors can be secondary teachers with special training and appropriate experience on vocational education. The Greek central government must raise the level of awareness and must urgently address the issue of parent training in the domain of the workforce.
- Since a large proportion of Greek parents (46%) are getting information concerning the vocational guidance of their adolescents from the media, it is crucially important for technical and vocational education to be promoted through the mass media. Drawing the media's attention to technical and vocational education is a challenge requiring dogged persistence. Reporters and editorial boards must be educated about the value of technical and vocational education and persuaded to give vocational documentaries and long term occupational trends the attention they deserve. Highlighting technical and vocational education, together with encouraging career development, might be an effective formula to influence job selection.
- The school curriculum of lower secondary education is preoccupied with elements of general education that do not leave resources available for vocational courses and workshops. It is a matter of urgency that the Greek central government put on a more firm and regular footing on the school vocational program. Greek educational policy needs changes and requires coordination with the rapid development and progress of the labor market. The school vocational program should provide children with job skills, career education and higher thinking. It should identify the kinds of skills needed by the labor market and prepare the children for a wide range of occupations and a broader base of education content. Moreover, it is highly recommended that the school vocational course should begin from the early age of twelve.
- Formal classroom vocational teaching is important but as Greek parents and the labor market pressurize education to respond to a changing market place, more effective and efficient tools are needed. Since "youth experience considerable difficulty securing employment and developing careers" (Womble & Jones, 1996, p.1), regular visits of children to different workplaces are important so as to strengthen the role of education as a core means of preparing youth for work.

- Organizations and private enterprises must reveal their demands and needs to the State in order to enhance Greece's competitiveness. Vocational education programs must be kept up-to-date on the latest developments in industry. A competency-based curriculum, structured around industry's needs and standards, can create an efficient social environment that will offer individuals prosperity and job satisfaction (Doolittle & Camp, 1999). "Effective occupational education program development requires the capacity to specialize forums and focus on the core competencies to fit the local labor market needs" (Jacobs, 2001, p.191). Hence, Greece needs to develop education programs geared specifically to the labor market rather than academic ones.
- Since Greek vocational and technical education does not seem to have a strong professional identity, teachers of the school vocational program should be well prepared to teach new work-based education. Teachers need to be trained in workforce development, together with the knowledge-base related to education for the workforce and thus receive more practical, field-based experiences (Jones & Black, 1994). Central government in Greece needs to create vocational teacher education programs so that teacher educators may be trained on a subject-specific area: workforce education.

It must be recognized that this study has limitations and thus other aspects will require further investigation. The findings of this study cannot be used to generalize about the whole of Greece as it only analyzes a small sample from the Athens region. Analysis of additional data from more prefectures with contrasts between rural and urban areas may be necessary for comparison and confirmation of the results. Although this study has been a correlation survey it is not enough to establish cause and effect. The present study gives a base line for further research into the role of Greek parents in the career-planning of their adolescent children, against which the effects of a policy change could be measured over time.

In order to bring about higher productivity and to meet increased social needs, countries should concentrate more of their resources on human development. An injection of investment in education, particularly in the expansion of technical and vocational schooling, would improve the productivity of the labor force, allow education to adapt to new technologies more readily, accelerate personal development and thus boost the national economy. This research supports the view that, only when the leaders of Greek education recognize how investment in technical and vocational education enhances profitability and productiveness, could words such as efficiency, effectiveness and productiveness be used to describe the Greek school system. Education can only contribute to the development and growth of a country if it is both productive and effective.

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APPENDIX

Frequencies for variables in the analysis are presented in Table A1. Description for the variables included in the correlation analysis also follows.

Table A1. *Frequencies of Parental Perception and Expectation to Adolescent's Occupation*

Variables	Absolute frequency	Frequency (%)
Parental perception for the influential determinants of adolescents occupation		
Adolescent's interests		
Yes	163	81.5
No	37	18.5
Total	200	100
The family environment		
Yes	143	71.5
No	57	28.5
Total	200	100
School environment		
Yes	109	54.5
No	91	45.5

Variables	Absolute frequency	Frequency (%)
Total	200	100
Adolescent's idols		
Yes	105	52.5
No	95	47.5
Total	200	100
Parental expectations of the future adolescents occupation		
Their children choose a job according to their skills and abilities		
Yes	176	88.0
No	24	12.0
Total	200	100
The children should choose a job that pays more money		
Yes	112	56
No	88	44.0
Total	200	100
Children should choose a job that is stable		
Yes	148	74.0
No	52	26.0
Total	200	100
Children should choose a job that secures career development		
Yes	125	62.5
No	75	37.5
Total	200	100
The job did not matter as long as one could be satisfied with it and it is something that make them happy		
Yes	150	75.0
No	49	24.5
Total	200	100

DESCRIPTION OF THE VARIABLES USED IN THE CORRELATION ANALYSIS

When parents encouraged their children to follow upper secondary education (lyceum) the variable took value 0, when not, it took the value 1. The variables used as main factors determining parental preference to upper general secondary education were: "technical education usually limits opportunities for career development" and "technical education provides children with low quality education". These variables took the value 0 when the parents said they would have encouraged their adolescents for one of the above reasons identified from the sample. When not, these variables took the value 1. The variable "adolescents should choose a job that secures career development" took value 1 when parents expected their adolescents to choose an occupation according in career development. When not, it took the value 0.

The variable "Children's grades at school" took the value 0 when the children's school achievement was "excellent", took the value 1 when the children's school achievement was "very good", took the value 2 when children's school achievement was "good" and finally, took the value 3 when children's school achievement was "no good".

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THE IMPACT OF SETTABLE TEST ITEM EXPOSURE CONTROL INTERFACE FORMAT ON POSTSECONDARY BUSINESS STUDENT TEST PERFORMANCE

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ABSTRACT

The purposes of this study were to determine if there is a significant difference in postsecondary business student scores and test completion time based on settable test item exposure control interface format, and to determine if there is a significant difference in student scores and test completion time based on settable test item exposure control interface format by gender. Results of the study indicate that there is no significant difference in postsecondary business student scores or test completion times based on settable test item exposure control interface format. When the variable gender was added, female postsecondary business students were found to achieve significantly higher test scores and to have significantly faster test completion times. Effect size and descriptive statistic analysis suggests that these differences by gender are too small to be of much practical difference.

INTRODUCTION

A search of the *ERIC* database reveals a keen interest in computer-based testing by researchers over the past 35 years. Indeed, a focused search of the *ERIC* database using the descriptor “computer assisted testing” from 1970 through 2003 returned 1,954 citations. More than half (55.6%, $n = 1,105$) of these 1,954 citations were dated from 1990 through 2003. This research interest in computer-based testing is likely a result of the many advantages associated with its use (Goldberg & Pedulla, 2002). A number of researchers have reported on the advantages of computer-based testing (e.g., Alderson, 2000; Alexander, Bartlett, Truell, & Ouwenga, 2001; Barkley, 2002; Bocij & Greasley, 1999; DeSouza & Fleming, 2003; Goldberg & Pedulla, 2002; Greenberg, 1998; Shermis & Lombard, 1998; Shermis, Mzumara, & Bublitz, 2001; Song, 1998; Stephens, 2001; Truell & Davis, 2003). Often cited advantages of computer-based testing include decreased testing costs, effective records management, increased assessment options, improved scoring precision, instant feedback to students, more instructional time, more test administration choices, and reduced testing time. Despite the many advantages associated with computer-based tests for student assessment purposes, there are several

areas of concern associated with their use. Two areas of concern with computer-based test use are user interfaces and test item exposure control formats.

For example, a number of researchers have expressed concern with the potential impact of the user interface on student test performance (Booth, 1991, 1998; Huff & Sireci, 2001; Parshall, Spray, Kalohn, & Davey, 2002; Ricketts & Wilks, 2002). In addition, only a few researchers have investigated various test item exposure control features associated with computer-based testing use (e.g., Cheng & Loui, 2003; Davis, Pastor, Dodd, Chaing, & Fitzpatrick, 2003; Meijer & Nering, 1999; O'Neill, Lunz, & Thiede, 2000; Pastor, Dodd, & Chang, 2002; Ryan & Chiu, 2001; Stocking & Lewis, 1998; Stocking, Ward, & Potenza, 1998; van der Linden & Chang, 2003). The majority of the test item exposure control research focused on the impact of test items selected to be exposed to a test taker from large test item pools. Further, computer-based testing systems have caused some researchers to express concern that its equivalency with traditional testing techniques be confirmed (Alexander et al., 2001; Bugbee & Bernt, 1990; Bugbee, 1996; Truell & Joyner, 2003; Truell, 2005). Finally, Truell (2005) recommended that research was needed regarding the various settable interface formats available to faculty using computer-based testing systems.

NEED FOR THE STUDY

In recent years there has been a growing use of computer-based testing systems in postsecondary education. This increased growth is associated with the many advantages of their use for assessing student performance. Despite this growth and reported advantages, researchers have noted several issues of concern. Specifically, this concern has focused on the user interface and test item exposure control formats. Thus, the results of this study fill a gap in the literature by addressing research recommendation put forward in the literature.

PURPOSE OF THE STUDY

The purposes of this study were (a) to determine if there is a significant difference in postsecondary business student test scores and test completion times based on settable test item exposure control interface format (i.e., all at once, one at a time—backing up, and one at a time—no backing up) and (b) to determine if there is a significant difference in postsecondary business student test score and test completion time based on settable test item exposure control interface format (i.e., all at once, one at a time—backing up, and one at a time—no backing up) by gender. Thus, the following research questions were investigated.

1. Is there a significant difference in postsecondary business student test scores based on settable test item exposure control interface format?
2. Is there a significant difference in postsecondary business student test completion time based on settable test item exposure control interface format?
3. Is there a significant difference in postsecondary business student test scores based on settable test item exposure control interface format by gender?

4. Is there a significant difference in postsecondary business student test completion time based on settable test item exposure control interface format by gender?

METHODOLOGY

Research Design

The counterbalanced, Latin square quasi-experimental design was used in this study. Specifically, the counterbalanced Latin square design was selected because “. . . experimental control is achieved or precision enhanced by entering all respondents (or setting) into all treatments” (Campbell & Stanley, 1963, p. 50). Additionally, this design controls for the majority of threats to internal validity (Campbell & Stanley, 1963). Treatment order was determined by random assignment. The specific counterbalanced, Latin square design used in this study is illustrated in Table 1.

Table 1. *Illustration of the 3 x 3 Counterbalanced, Latin Square Design*

Row Factor	Column Factor		
	Test 1	Test 2	Test 3
Class 1	All at Once	One at a Time—Backing Up	One at a Time—No Backing Up
Class 2	One at a Time—Backing Up	One at a Time—No Backing Up	All at Once
Class 3	One at a Time—No Backing Up	All at Once	One at a Time—Backing Up

Participants

Participants were those postsecondary business students enrolled in three, intact sections of the same college of business core course at a Midwestern university. More specifically, 90 students participated in the study. The number of students participating in each class was 34, 32, and 24, respectively.

Data Collection Procedures

The commercially available computer-based testing system used during this study automatically recorded postsecondary business student test score and test completion time data. The three classes were taught by the same instructor, met in the same classroom, and were provided with the same instructional materials. Classes met on a three day per week schedule. All computer-based tests were completed in a computer lab located near the classroom. All tests were proctored by the instructor. Students were allotted 50 minutes to complete each 50-item multiple choice test regardless which settable test item exposure control interface format.

Data Analysis

To answer research questions one, two, three, and four, MANOVAs and post hoc ANOVAs were used to analyze the data. There were 34, 32, and 24 postsecondary business students enrolled in the three, intact classes involved in this study, respectively. The Latin square design assumes an equal number of participants in each class so data from 24 postsecondary business students in each of the classes enrolling more than 24 students was randomly selected for inclusion in the data analysis. In order to form each of the 24 Latin squares, postsecondary business students were randomly matched across the three classes. Since each Latin square contained four observations and there were 24 replications, the data set had 72 observations. Effect size and observed power are reported in the findings section. As Kotrlik and Williams (2003) noted “It is almost always necessary to include some index of effect size or strength of relationship in your results section . . .” (p. 1). Effect size magnitude in this study was determined using Omega square (ω^2) values. Kirk’s (1996) procedure for interpreting ω^2 effect size magnitude is used in this study. Tests of statistical significance were conducted at $\alpha = .05$.

FINDINGS

Research Question One

Research question one sought to determine if there was a significant difference in postsecondary business student scores based on settable test item exposure control interface format. Results of the MANOVA—Hotelling’s Trace—analysis indicated that there was no significant difference in postsecondary business student test scores based on settable test item exposure control interface format. MANOVA and ANOVA analyses for research question one and their associated descriptive statistics appear in Tables 2 and 4, respectively.

Research Question Two

Research question two sought to determine if there was a significant difference in student test completion time based on settable test item exposure control interface format. MANOVA—Hotelling’s Trace—analysis indicated there was no significant difference in postsecondary business student test completion time based on settable test item exposure control interface format. MANOVA and ANOVA analyses for research question two and their associated descriptive statistics appear in Tables 2 and 4, respectively.

Research Question Three

Research question three sought to determine if there was a significant difference by gender in student scores based on settable test item exposure control interface format. MANOVA—Hotelling’s Trace—analysis indicated either a significant difference in postsecondary business student test score or test completion time by gender. Post-hoc

Table 2. *Analysis of Latin Square Design*

Model: (score time) = Class X Test Item Exposure Control Interface Format X Test X Replication						
Multivariate Tests						
Effect	Hotelling's Trace	<i>P</i>	Partial <i>Eta</i> ²	Observed Power		
Class	0.055	0.040	0.027	0.717		
Test Item Exposure Control Interface						
Format	0.055	0.913	0.003	0.103		
Test	0.241	0.000	0.107	1.000		
Replications	0.440	0.003	0.180	1.000		
Univariate Tests						
Effect	<i>Type III SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	ω^2
Dependent Variable (Score)						
Class	97.287	2	48.644	2.761	0.066	0.013
Test Item Exposure Control Interface						
Format	17.343	2	8.672	0.490	0.614	-0.004
Test	675.398	2	337.699	19.168	<0.001	0.134
Replications	656.218	23	28.531	1.619	0.043	0.052
Error	3294.861	186	17.714			
Total	4741.106	215				
Dependent Variable (Time)						
Class	484292.565	2	24146.283	2.232	0.110	0.010
Test Item Exposure Control Interface						
Format	899.287	2	449.644	0.004	0.996	-0.008
Test	898792.954	2	449396.477	4.143	0.017	0.026
Replications	4568370.204	23	198624.791	1.831	0.015	0.077
Error	20391083.639	186	109629.482			
Total	26343438.648	215				

ANOVA analysis $F(1, 185) = 11.164, p = 0.001$ indicated that there was a significant difference by gender in student scores based on settable test item exposure control interface format. Specifically, postsecondary business female students scored significantly higher than did male students based on settable test item exposure control interface format. The means and standard deviations for female and male postsecondary business students were 43.87 ($SD = 3.74$) and 41.56 ($SD = 4.85$), respectively. These means and standard deviation differences are too small to be of much practical significance, however. This lack of practical differences by gender in postsecondary business student scores is supported by the effect size for the analysis. The effect size for this analysis is $\omega^2 = 0.036$. A ω^2 of <0.05 is considered a small effect size (Kirk, 1996).

Table 3. *Analysis of Latin Square Design with Gender Added*

Model: (score time) = Class X Test Item Exposure Control Format X Test X Replication X Gender						
Multivariate Tests						
Effect	Hotelling's Trace	<i>P</i>	Partial Eta ²	Observed Power		
Class	0.060	0.028	0.029	0.756		
Test Item Exposure						
Control Format	0.006	0.906	0.003	0.106		
Test	0.255	0.000	0.113	1.000		
Replication	0.423	0.005	0.174	0.999		
Gender	0.076	0.001	0.071	0.924		
Univariate Tests						
Effect	Type III SS	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	ω^2
Dependent Variable (Score)						
Class	117.116	2	58.558	3.503	0.032	0.018
Test Item Exposure						
Control Interface Format	17.343	2	8.672	0.516	0.598	-0.003
Test	675.398	2	337.699	20.204	<0.001	0.135
Replication	607.237	23	26.402	1.580	0.052	0.046
Gender	186.595	1	186.595	11.164	0.001	0.036
Error	3108.266	185	16.801			
Total	4741.106	215				
Dependent Variable (Time)						
Class	417674.624	2	208837.312	1.959	0.144	0.008
Test Item Exposure						
Control Interface Format	899.287	2	449.644	0.004	0.996	-0.008
Test	898792.954	2	449396.477	4.215	0.016	0.026
Replication	4232107.733	23	184004.684	1.726	0.026	0.066
Gender	452812.539	1	452812.539	4.247	0.041	0.013
Error	19938271.100	185	107774.438			
Total	26343438.648	215				

Research Question Four

Research question four sought to determine if there was a significant difference by gender in postsecondary business student test completion time based on settable test item exposure control interface format. MANOVA—Hotelling's Trace—analysis indicated either a significant difference in postsecondary business student scores or test completion times by gender based on settable test item exposure control interface format. Post-hoc ANOVA analysis $F(1, 185) = 4.247$, $p = 0.041$ indicated that there was a significant difference by gender in postsecondary business student test completion times based on

Table 4. *Descriptive Statistics for the Data in the Analysis*

Class	Frequency	Test Score		Test Time	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
First	72	42.78	4.74	1336.15	333.15
Second	72	42.42	5.17	1444.72	340.53
Third	72	41.21	4.03	1355.10	370.49
Test Item Exposure Control Interface Format					
All at Once	72	42.51	4.34	1377.29	415.12
One at a Time—Backing Up	72	42.06	4.70	1377.14	327.55
One at a Time—No Backing Up	72	41.83	5.06	1381.54	302.34
Test					
First	72	44.60	3.84	1346.75	328.27
Second	72	40.53	5.31	1468.63	402.18
Third	72	41.28	3.78	1320.60	298.10
Gender					
Male	162	41.56	4.85	1415.10	363.45
Female	54	43.87	3.74	1269.31	282.01
Total	216	42.13	4.70	1378.66	350.04

Note. Maximum possible test score was 50 regardless of settable test item exposure control interface format; maximum possible test completion time was 50 minutes regardless of settable test item exposure control interface format; time recorded and analyzed in seconds.

settable test item exposure control interface format. Specifically, female postsecondary business students achieved significantly faster test completion times than did male postsecondary business students based on settable test item exposure control interface format. The means and standard deviations for female and male postsecondary business students were 1269.31 (*SD* = 282.006) and 1415.10 (*SD* = 363.452) seconds, respectively. These means and standard deviation differences are too small to be of much practical significance, however. This lack of practical differences by gender in student scores is supported by the effect size for the analysis. The effect size for this analysis is $\omega^2 = 0.013$. A ω^2 of <0.05 is considered a small effect size (Kirk, 1996). MANOVA and ANOVA analyses for research question four and their associated descriptive statistics appear in Tables 3 and 4, respectively.

CONCLUSIONS AND DISCUSSION

The results of this study offer several conclusions. These conclusions, however, are offered with the caveat that this study appears to be among the first to examine the impact of various settable test item exposure control interface formats and that additional investigation is needed. First, there is no significant difference in postsecondary business student performance based on settable test item exposure control interface format.

Specifically, postsecondary business student test scores and test completion times did not differ significantly regardless of settable test item exposure control interface format. Second, female postsecondary business student performance on both test score and test completion time were significantly different from their postsecondary business student male counterparts. This significant difference for both test scores and test completion time is likely of little practical difference. These conclusions are supported by data in Tables 1, 2, 3, and 4. The results of this study are consistent with the earlier work of Truell (2005) who examined if differences existed in student scores and test completion time based on two computer-based user interface and paper and pencil formats.

Truell (2005) reported that there was no significant difference in student scores based on test presentation format. In addition, there was no significant difference in test completion times between the two computer-based user interface test formats. Interesting, when gender was included in the analysis, female students scored significantly higher and achieved significantly faster test completion times than did their male counterparts. Truell (2005), after examining the effect size and descriptive statistics for each analysis, noted that these significant differences by gender were likely of little practical difference. The practice implication resulting from this study is that postsecondary business faculty can proceed with using the various settable test item exposure control interface formats. This use of various settable test item exposure control interface formats should be done with caution until more research has been conducted into their potential impact on test performance, however.

RECOMMENDATIONS FOR FURTHER RESEARCH

Based on a review of the literature and the findings of this study, the following recommendations for further research are put forward.

1. This study should be replicated. Given that relatively few studies have examined test item exposure control interface procedures, it would be prudent to conduct additional research in a variety of settings. Such studies would provide additional insight into the impact of settable test item exposure control interface features available with the various commercially available computer-based testing systems.
2. As new settable testing features become available, research should be conducted to determine their potential impact on postsecondary business student test performance. Such studies will provide insight as to the impact of evolving technology on postsecondary business student computer-based test performance.

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THE IMPACT OF BLOCK SCHEDULING ON AGRICULTURAL EDUCATION: A NINE YEAR COMPARATIVE STUDY

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ABSTRACT

In recent years, many states have implemented block scheduling in secondary schools. The purpose of this study was to examine the attitudes of agricultural educators in career and technical education at the beginning of the implementation of block scheduling and changes in their attitudes nine years later. Over the past nine years, teachers' concerns related to block scheduling have changed which is to be expected according to the Concerns-Based Adoption Model (CBAM). Teacher's attitudes regarding classroom instruction indicate student interest and discipline are challenges that have become more apparent to teachers who have been on block scheduling for some time. Agricultural educators do appear to have accepted and adapted FFA and SAE functions to block scheduling even though they do not feel these components have improved in general. Teachers have also adapted to the longer class periods by providing a variety of well planned activities to succeed on a block schedule.

INTRODUCTION

During the last decade, several states have implemented block scheduling in their secondary public schools to improve the educational process (Carroll, 1990). Until this recent reform, the traditional school day had been virtually unchanged in the public schools since the beginning of the twentieth century.

The prevalence of block scheduling has increased rapidly in southeastern states since the 1990's. During the 1992-1993 school year, only 1% of the public high schools in North Carolina were on block scheduling (Averett, 1994). In 2003, approximately 74% of public schools in North Carolina were using the block scheduling system (Charlotte Advocates for Education, 2003). While the numbers are unclear about how many schools across the country have moved to the block schedule, it is estimated the number is growing rapidly (Spoelstra, 2002).

Since a large number of schools have adopted the block schedule, there is concern as to how the new schedule is impacting the complete agricultural education program which consists not only of classroom and laboratory instruction, but of the National FFA student

organization (FFA) and experiential education called Supervised Agricultural Experiences (SAE) functions. In a study conducted nine years ago, some initial concerns of block scheduling included a decline in communication resulting from student to teacher classroom contact during only one semester, a decrease in the SAE projects because of the difficulty in enforcing the projects over the uninvolved semester, and a decrease in FFA membership and active members due to limited meeting times. The complete agricultural program encompasses much more than just classroom work, so this means there is increased planning and consideration when agricultural educators move toward block scheduling (Becton, 1996).

LITERATURE REVIEW/THEORETICAL FRAMEWORK

Recent research indicates teachers believe block scheduling helps create active learners and helps students to focus on subject matter. Teachers also believe block scheduling improves student discipline and academic performance (McCoy & Taylor, 2000). Not only do many teachers favor block scheduling, but students say block scheduling allows for more learning time, more opportunities to work with other students, more individual help, more time for test preparation, and generally they approve of it (Corley, 2003).

Even though it seems many people favor this schedule and initial results seem positive, not all of the data collected shows a positive influence of block scheduling on education. Research related to the effectiveness of block scheduling regarding student achievement has produced mixed results. In 1997, Skrobarcek reported high school students taking Algebra I in a block schedule had a higher rate of failure than those on a traditional schedule (Lawrence & McPherson, 2000). Problems with block scheduling may be due to transition time, stress at the beginning of the implementation process and difficulty for teachers to adapt (Harmston, Pliska, Ziomeck & Hackman, 2003; Spencer & Lowe, 1994).

A few studies have been conducted that specifically examine the impact of block scheduling on the total agricultural education program, which includes the instructional classroom, FFA, and SAE. Becton (1996) found block scheduling positively affects the FFA by increasing the number of agricultural classes offered, thereby more students are eligible for FFA membership. However, she also found block scheduling causes teachers to have less contact with students throughout the entire school year because students are only in the agricultural classroom for one semester and SAE projects are impacted because students are less likely to have experiential projects for the entire school year. Moore, Kirby & Becton (1997) also found FFA chapters suffered under the block scheduling system due to a lack of communication maintained between the teachers and students during the school year.

Baker and Bowman (2000) determined block scheduling had a positive impact on planning, teaching strategies, and overall agricultural education program enrollment but negatively impacted FFA and other extracurricular programs within agriculture education: however, they concluded teachers are able to be more innovative in their teaching techniques and they can complete entire labs in one school day. Spoelstra (2002) concluded agricultural educators used several different methods of instruction during one

day and felt they were able to have more laboratory activities and adequate planning time while on the block schedule.

Agriculture educators must be willing to adapt and change to get the most out of the education process and address potential concerns. The theoretical framework for this study is based on the Concerns-Based Adoption Model (CBAM) developed by Hall and his associates (Hall & Hord, 1987; Hall & Loucks, 1978), which addresses seven stages of concern.

These seven stages explain the different concern levels of individuals who are experiencing the change:

1. Awareness – The individual is aware of the change but is not concerned with it.
2. Informational – The individual would like to learn more about the change.
3. Personal – The individual questions how the change will impact him/her.
4. Management – The individual spends all of his/her time preparing for the change.
5. Consequence – The individual questions how he/she are doing and how to improve.
6. Collaboration – The individual questions how his/her work relates to others.
7. Refocusing – The individual combines ideas to see what works best for his/her situation.

These stages have three major implications for pre-service and in-service providers. One implication is the importance of addressing concerns of teachers and students and monitoring progress to determine areas of improvement. Another implication suggests the importance of monitoring the change process over several years. It may take time for concerns to be addressed and new concerns to emerge during the change process. It is imperative to provide assistance during the change process to work out problems and allow for good teaching strategies to arise. A final implication is that time for the change to become routine should be allowed (Bybee, 1996).

Moore, Kirby and Becton (1997) identified the initial teacher's perspectives of block scheduling and problems associated with block scheduling and agricultural education during the initial phases of the implementation of block scheduling in North Carolina. By replicating this study conducted in 1996, we will be able to determine if teachers are progressing through the Concerns-Based Adoption Model, to identify new concerns that might have arisen and to determine if teachers have adapted to block scheduling by implementing new teaching strategies.

PURPOSE AND OBJECTIVES

The primary purpose of this research was to identify the impact of block scheduling on the agricultural education field and to identify useful tools teachers use in the implementation of block scheduling. This research had four objectives.

1. To determine the current status of block scheduling in North Carolina.

2. To determine the current impact of block scheduling on the complete agricultural education program as perceived by agricultural educators as compared to their perceptions nine years ago.
3. To determine if agricultural educators concerns related to block scheduling have changed since the initial implementation of block scheduling in North Carolina.
4. To identify different agricultural educators' methods for teaching using the block scheduling system and determine if they have altered their methods of teaching using a block schedule over the past nine years.

METHODS AND PROCEDURES

This study consisted of both qualitative content analysis and quantitative survey research based primarily on a previous study conducted in 1996. An electronic survey instrument was created based on the paper survey created by previous researchers. The original paper survey was piloted with a group of teachers and as a result the researcher made clarity revisions to the original survey. The reliability estimate of the original survey was calculated using a Cronbach's alpha on the attitude component of the survey and yielded a .92.

In both studies, the instrument was sent to every senior teacher of an agricultural education program in North Carolina who could be identified in the North Carolina agricultural teacher's directory. The survey asked teachers about their personal attitudes pertaining to block scheduling and its impact on the total agricultural education program. Teachers were asked questions related to their attitudes regarding teacher experience, program enrollment, student involvement, and program quality before and after block scheduling.

There were 47 items on the online survey. The first 18 questions were devoted to determining background information on the teacher and the specific school and agricultural education program. The questions were both open-ended and multiple choice. The next 28 questions were formatted using a Likert-type scale with 1 representing "strongly disagree" and 5 representing "strongly agree." The Likert questions were worded both negatively and positively. The negative items were reverse scored when calculating the mean of the teachers' attitudes. The final three questions were open-ended and inquired as to what teachers were doing differently with regards to their instruction, FFA program, and SAE. They also provided a chance for the teacher to give suggestions for other teachers to use on the block schedule and voice any possible concerns. This qualitative data was analyzed using a constant comparative method to group similar items (Glaser & Strauss, 1967). Categories were created by grouping similar responses.

The survey was administered online. An email message was sent to each senior teacher in every agricultural education program ($N=249$) in the state requesting they complete the survey online. One e-mail follow up was sent to teachers who did not initially respond. A second follow up was administered by faxing all of the teachers who had not yet responded. Non-response error was controlled by comparing early and late respondents. Respondents were considered late respondents if they had not responded after one e-mail

reminder. A comparison of the attitudes of early and late respondents resulted in $t=1.162$, $df=75$, $p=.249$. The two groups were found not to be statistically different, so non-response was not considered as a threat to the validity of the results in this study. A total of 136 schools responded to the survey for a response rate of 55%.

RESULTS/ FINDINGS

Current Status of Block Scheduling

Ninety three percent of schools ($n=127$) surveyed were on block schedule, 7% ($n=8$) were not on block scheduling, with 1% ($n=1$) planning to change to block scheduling. In 1996, 45% ($n=63$) of the schools were on block schedule; therefore, North Carolina experienced a 48% increase in agricultural education programs on a block schedule over nine years.

Of the 127 schools on block schedules in 2004, 6 schools were in their first year of operation, 10 schools were in their second year of block scheduling and 111 schools had been on block scheduling three or more years. In 1996, of the 63 schools on block scheduling, 45 schools were in their first year of operation, 15 schools were in their second year of operation and only two schools had been on block scheduling more than three years. Between 1996 and 2004, 64 more agricultural education programs converted to a block schedule resulting in the majority of agricultural education programs using block scheduling by 2004.

In 2004, eight percent ($n=11$) teachers indicated they had never taught on a block schedule, 60% ($n= 82$) indicated they had taught on both a block and traditional schedule, and 32% ($n=43$) indicated they only had experience teaching on a block schedule. The number of agricultural education teachers and the number of years experience they have had teaching block scheduling has greatly increased over the last nine years.

In 2004 teachers responded they had attended an average of 2.7 in-service workshops related to block scheduling. No data relating in-service was collected in the 1996 study.

Impact of Block Scheduling on the Complete Program

The second research objective was to determine the current impact of block scheduling on the complete agricultural education program as perceived by agricultural educators compared to their perceptions nine years ago. Questions focused on instructional quality, FFA quality, and SAE program quality of the agricultural education program. Only responses from both 1996 and 2004 teachers who indicated on the survey they had taught on both a traditional and block schedule were examined since they were able to reference their agricultural education programs prior to and after block scheduling. Teachers were asked to rate overall quality of the instructional program, FFA program and SAE prior to and after implementation of block scheduling. A modified Likert-type scale was used with 10 being excellent and 1 being poor.

The rating of the instructional program in 1996 was 7.4 prior to block scheduling and 7.53 after block scheduling. In 2004 the mean score of the instructional program was 7.4 prior to block scheduling and 7.92 after block scheduling. Both teachers in 1996 and

those surveyed in 2004 believed block scheduling had a slight positive impact on their instructional program.

In 2004 teachers agreed with those teachers surveyed in 1996 that block scheduling has had the greatest impact on the FFA. FFA membership in North Carolina has significantly increased in the last decade. However, in 1996 teachers felt more strongly that the quality of their FFA had been negatively impacted than in 2004. In 1996 prior to block scheduling the teachers rated their FFA program at 7.53 and after block scheduling at 5.95. In 2004 they felt the quality of the FFA was 7.37 prior to block scheduling and 6.51 after block scheduling.

The rating of the quality of the SAE program declined slightly in both groups. In 1996 the mean score for the quality of the SAE program prior to block scheduling was 5.95 and after block scheduling was 5.49. In 2004 the quality of the SAE program prior to block scheduling was 6.18 and after block scheduling was 5.63. Both groups indicated SAE is a weak component of the agricultural education component before and after block scheduling and this component was even weaker after block scheduling was implemented.

Teacher Concerns

The third research objective was to determine if agricultural educators' concerns related to block scheduling have changed since the initial implementation of block scheduling in North Carolina. Responses to specific items on the attitude scale were examined to see which items might merit special attention. Only responses from both 1996 and 2004 teachers who indicated on the survey that they had taught on both a traditional and block schedule were examined since they were able to reference their agricultural education programs prior to and after block scheduling. The overall mean attitude score in 1996 was 3.22 on a 5 point scale and in 2004 the mean attitude scale was 3.20 on a 5 point scale. Mean attitude scores above 3.50 were considered positive and mean attitude scores below 2.50 were classified as negative. Scores falling in between 3.50 and 2.50 were considered neutral.

As displayed in Table 1, teachers in 1996 responded positively toward ten items and in 2004 teachers responded positively on seven items. In 1996 teachers responded negatively toward five items and teachers in 2004 responded negatively to three items.

As shown in Table 1, mean item scores between those of teachers who responded in 1996 and 2004 yielded five responses that differed by more than 1.00 indicating a difference in concerns. Teachers in 2004 felt they more strongly disagreed with the following items: "It is more difficult to operate the FFA program since we implemented block scheduling," "Coordinating SAE visits are difficult when students are not in class," and "It is more difficult to prepare contest teams since we implemented block scheduling." Teachers in 2004 more strongly agreed with the following items: "I have difficulty maintaining student interest for the entire period since we implemented block scheduling" and "I have had more discipline problems in my class since we implemented block scheduling."

Table 1. *Attitudes of Teachers toward Block Scheduling*

Attitude Statement	1996		2004	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Labs can be utilized more effectively under block scheduling.	4.44 ^a	0.81	4.24 ^a	0.79
* It is more difficult to operate the FFA program since we implemented block scheduling.	4.13 ^a	0.95	2.05 ^b	1.21
Enrollment in Ag Ed classes has increased since we implemented block scheduling.	4.02 ^a	0.92	3.76 ^a	1.08
I personally like block scheduling.	4.00 ^a	1.10	4.00 ^a	1.14
I have more planning time.	4.00 ^a	0.87	3.70 ^a	1.16
Block scheduling has been successful in my school.	3.83 ^a	0.70	3.91 ^a	0.93
* Coordinating SAE visits are difficult when students are not in class.	3.75 ^a	0.96	2.16 ^b	1.06
* It is more difficult to prepare contest teams since we implemented block scheduling.	3.70 ^a	0.83	2.30 ^a	1.18
Most of my students like block scheduling.	3.70 ^a	0.88	3.88 ^a	0.85
I believe block scheduling is a better way to organize school time.	3.63 ^a	0.95	3.52	1.15
Students can focus better under block scheduling because they have fewer courses.	3.47	0.93	3.39	1.12
Higher quality students are now joining the FFA.	3.23	0.88	3.16	1.13
My students are learning more since we implemented block scheduling.	3.22	0.83	3.30	1.09
It is easier to teach SAE record keeping with the longer class periods.	3.21	0.87	3.30	0.92
Student achievement has improved with block scheduling.	3.20	1.03	3.28	1.06
The quality of the students in the program has improved since we implemented block scheduling.	3.16	1.09	3.17	1.14
Students have difficulty sitting through the longer periods of block scheduling.	3.12	0.97	2.65	1.20
It is more difficult for students to have a SAE program with block scheduling.	3.02	0.98	2.94	1.28
Block scheduling allows students to have different types of SAE Programs.	2.85	0.95	3.30	0.87
I worry that students don't learn as much as they did under a traditional schedule.	2.80	0.92	3.26	1.23
More students are showing interest in the SAE program under block scheduling.	2.57	0.92	2.73	0.93
*I have difficulty maintaining student interest for the entire period since we implemented block scheduling.	2.48 ^b	0.83	3.48	1.12
It is easier to cover all of the competencies outlined in the course description under block scheduling.	2.47 ^b	0.97	3.07	1.16
It is easier to develop a FFA Program of Activities under block scheduling.	2.33 ^b	0.97	2.64	1.11
*I have had more discipline problems in my class since we implemented block scheduling.	2.30 ^b	0.93	3.45	1.07
Attendance for FFA chapter meetings has increased since block scheduling.	2.25 ^b	1.13	2.57	1.08

Note. Scale= 1 Strongly Disagree, 2 Disagree, 3 Undecided, 4 Agree and 5 Strongly agree
^a positive response. ^b negative response.

*Differed by 1.00 or more between 1996 and 2004 indicating a difference in concerns.

Teachers were also asked to identify problems they had with block schedules in an open-ended question. As seen in Table 2 for teachers in 1996 and 2004 the most frequently identified problem was the difficulty to communicate and keep continuity with students not in class. Teachers were much less concerned with FFA membership and preparing for FFA contest. There was a great increase of concern relating bored students and keeping student interest in class.

Table 2. *Problems Identified by Teachers Using Block Schedules*

Problems	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Difficult to communicate and keep continuity with students not in class	27	43	58	45
Bored Students/difficulty in maintaining student interest	5	8	24	19
Decreased FFA involvement	-	-	11	9
Scheduling difficulty/less quality of students	5	8	9	7
Loss of instructional time/not as much covered	13	21	9	7
Difficult to prepare for contests	9	14	8	6
Classes too long	-	-	6	5
Decrease in FFA Membership	28	44	4	3
Less guidance and difficulty in managing SAEs	-	-	4	3
Others	28	44	33	28

Teaching Methods Used on Block Scheduling

The fourth research question was to identify different agricultural educators' methods for teaching using the block scheduling system and determine if they have altered their methods of teaching on a block schedule over the past nine years. As seen in Table 3, a larger frequency of teachers indicated they were using a variety of teaching styles/methods in 2004. Teachers in 2004 suggested more alternative activities in their comments such as implementing more technology, field trips, more activities, and splitting the class into smaller periods.

Table 3. *Teacher Strategies for Successfully Using Block Scheduling*

Strategies	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Use a variety of teaching styles/methods (media and activities)	29	46	86	72
Use of hands-on projects indoors or outdoors	8	13	27	22
Conduct well-managed, well-planned, and longer lab(s)	10	16	13	10
Use group activities in class	7	11	7	6
Increase correspondence with students (announcements, posters, etc.)	7	11	6	5
More field trips	-	-	6	5
Incorporate more technology (PowerPoint, Internet, video, etc.)	-	-	12	10
Complete outside work/activities	-	-	8	7
Split up classes into smaller periods	-	-	7	6
Others.	17	27	44	37

As seen in Table 4, teachers in 2004 had more advice for teachers going on block scheduling than those in 1996. More teachers suggested the use of media/activities to break up the class and to be more prepared by planning. They suggested trying new things, utilizing more hands-on activities, having more FFA functions and having a positive attitude.

Table 4. *Advice for Others Going on Block Scheduling*

Advice	1996		2004	
	<i>f</i>	%	<i>f</i>	%
Use a variety of media/activities to break up class (less lecture).	9	14	42	36
Plan! Plan! Plan! Prepare and stay on task, pace yourself.	-	-	39	34
Be unique, innovative, flexible, and try new and fun things!	4	6	10	9
Utilize hands-on activities, shop, and lab work.	-	-	10	9
Have more FFA meetings, social activities, and communication	-	-	9	8
Have positive attitude, be patient and relax.	-	-	5	4
Use pacing guides.	5	8	3	3
Allow breaks.	-	-	3	3
Others.	17	27	51	40

CONCLUSIONS/RECOMMENDATIONS

Eighty-seven percent of agricultural educators in North Carolina have been teaching on a block schedule for more than three years. They are still uncertain about the majority of their attitudes regarding block scheduling, but their experience has made them feel more confident in discussing problems and concerns and their solutions related to block scheduling. In 2004, teachers were able to provide many suggestions for other teachers adapting to a block schedule.

After nine years of block scheduling, the majority of teachers feel labs are more effectively utilized under block scheduling, enrollment in classes has increased, both students and teachers like it, teachers have more planning time, and it is a better way to organize time. This trend indicates that agricultural educators are accepting the changes block scheduling has introduced to the educational process in North Carolina.

Over the past nine years teachers' concerns related to block scheduling have changed, which is to be expected according to the Concerns-Based Adoption Model (CBAM). Agricultural educators in North Carolina indicate they are less concerned with conducting FFA and SAE activities on a block schedule than before, but they are still concerned communication with FFA members and students is more difficult on a block schedule. They also do not feel the overall quality of these two components have improved. This complacency may be due to their acceptance of block schedule as routine or they may have created new but not improved strategies for handling FFA and SAE activities. More research is needed to identify specific strategies they have implemented in their FFA and

SAE programs that work on a block schedule to improve the quality of the FFA and SAE program.

In general, teachers also believe block scheduling has had a slightly positive impact on the instructional component of their program, but they are concerned about the fact that maintaining student interest and discipline is more challenging on a block schedule. Earlier research conducted by McCoy & Taylor (2000) found teachers believed block scheduling would improve student discipline, which contradicts this study. The concern exhibited by current teachers in North Carolina related to student interest and discipline may be indicative of their arrival at the consequence level of the Concerns-Based Adoption Model (CBAM). At the consequence level they are questioning how they are doing and how to improve.

Teachers indicate they are using a greater variety of teaching methods on block scheduling than they did in 1996, which supports the findings of Baker and Bowman (2000) that teachers are able to be more innovative in their teaching techniques on a block schedule. Evidently teachers in North Carolina have adapted their teaching strategies to the longer class periods provided by block scheduling. Many of these teachers attended county and state in-service training focused on using a variety of teaching strategies on a block schedule. These teachers agree a variety of methods hold the key to conducting a successful program on block scheduling.

Educational leaders need to utilize the wisdom of teachers who have had long-term experience teaching on a block schedule to help others proceed through the change process. This can be done by listening and sharing advice from those experienced with those just beginning on a block schedule. Valuable advice selected from our experienced teachers might include: “Be flexible and adapt with changes,” “Think outside the box,” “Develop a way to let FFA members to know about activities,” or “Use your time to be diverse in your instruction.”

Teacher concerns related to block scheduling need to continue to be monitored and further research should be conducted to determine specific pre-service and in-service strategies to address their current concerns of communication with students, student interest and discipline. Research should also be conducted to find easy to use strategies for conducting quality SAE and FFA components while teaching on a block schedule.

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A RETENTION STUDY OF CAREER-BASED INTERVENTION TEACHERS IN OHIO

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Abstract

Teacher retention has been of interest to educational researchers for over three decades. Various reasons for teacher attrition have been cited, including student discipline and motivation problems, working conditions, low salary, and a lack of administrator support. This descriptive survey research sought to determine the present status of completers of a career-technical/vocational education teacher licensure endorsement program in Career-Based Intervention at a state-supported university. Career-Based Intervention programs are designed for middle/high school students at-risk for dropping out of school, and seek to provide work-based learning coupled with academic instruction to allow students to develop employability skills and acquire appropriate academic knowledge to graduate from high school. The study sought to determine if teachers completing the licensure endorsement program were still teaching in Career-Based Intervention programs, why they may have left, and to obtain their perceptions of the preparation program's effectiveness in working with the student population in Career-Based Intervention programs.

Introduction

The need for qualified teachers in America's elementary and secondary schools has been a subject of a significant number of studies in the past twenty years. In the mid-1980's two widely disseminated reports focused attention on the coming shortage of teachers (National Academy of Sciences, 1987; National Commission on Excellence in Education, 1983). Due to increasing student enrollments and the aging of the present teaching workforce, these two reports predicted a commensurate increase in demand for new teachers. These predictions have been upheld by numerous other studies, including studies which delineated the shortages in specific teaching fields, such as math, science and special education (Boe, Bobbitt & Cook, 1997; Grissmer & Kirby, 1997; Weisbaum & Huang, 2001).

Concern over teacher shortages and the retention of current teachers has given rise to continued research on the topic. In the late 1980's the National Center for Education Statistics began the Schools and Staffing Survey (SASS) in an attempt to track the phenomenon. Each year SASS sends out surveys to over 50,000 teachers in a random sample to obtain data on teacher staffing, shortages, and retention. A companion study, the Teacher Follow-up Survey, was designed to focus specifically on the reasons why teachers leave the profession. These studies continue today.

Higher standards in the public schools have affected millions of disadvantaged students who are at-risk for not graduating from high school. Educational reform, with its increased emphasis on testing, has placed more strains on educational systems trying to accommodate increasing numbers of these at-risk students. To meet the needs of these students, approximately 40% of public school districts have alternative schools and programs, approximately 50% of which involve vocational skills training (National Center for Educational Statistics, 2005).

Many of these programs are focused on students who are at risk of dropping out of school for a number of reasons including poor grades, truancy, suspension, and pregnancy (Paglin & Fager, 1997). As a result, teachers may face special challenges and concerns when teaching this population of students. The need to recruit and retain quality teachers in programs and schools with large numbers of at-risk students was recently highlighted in a report by the National Partnership for Teaching in At-Risk Schools (2005). The report described the necessity for proper pedagogical preparation to work with at-risk students, improvement of school conditions, and a focus on retention of quality teachers through various incentives.

Little is known about retention of teachers in the at-risk programs in schools that have a focus on vocational skills training. Also, while there appears to a significant amount of research on teacher attrition of beginning teachers, there is little addressing established teachers who change teaching fields. This study seeks to establish baseline data regarding the status of individuals that fit both these descriptors.

Literature Review and Conceptual Framework

Teacher Attrition and Retention

With respect to teacher turnover, Ingersoll (2003) defined two types: teacher attrition, which refers to teachers who have left the profession entirely, and teacher migration, which denotes teachers who have transferred to teaching jobs in other districts. While teacher attrition results in a loss of an individual from the teaching profession, teacher migration also has implications for schools, as it still results in teachers that must be replaced.

Teaching is a large occupational category in the U.S., representing four percent of the entire nationwide civilian workforce (Ingersoll, 2003). However, when compared to other occupations, teachers exhibit higher rates of turnover than many other professions.

Whereas the overall average across all occupations in the U.S. is about 11% per year, the rate for teachers has been as high as 15.7% in certain years (Bureau of National Affairs, 2005).

This turnover is costly to individual schools and school districts. One recent national estimate of the cost of replacing public school teachers who have left the profession of teaching cast the cost at \$2.2 billion a year. Adding in the costs of teachers transferring to other positions and/or schools increased the cost to \$4.9 billion every year (Alliance for Excellent Education, 2005).

Beginning teachers are more likely to leave the profession (Harris, Camp & Adkison, 2003). Twenty-five percent leave by the end of their first year (Norton, 1999), while almost 40% have left after five years (Ingersoll, 2003). As those who stay accumulate teaching experience, they are more likely to continue in the teaching profession. These continual departures put a strain on schools, as a “revolving door” can be created, especially in poor rural or inner-city schools. With respect to career-tech/vocational education teachers, 50% have been shown to leave within six years (Heath-Camp & Camp, 1990).

Studies have delineated several reasons why teachers leave the profession. Dissatisfaction with the job, which can include such aspects as low pay and poor working conditions, has been shown to be a primary reason (Anderson & Sinha, 1999; Weisbaum & Huang, 2001). Teachers leave to pursue careers in other occupations and industries, sometimes for better pay, and sometimes for personal and/or professional advancement. In addition, the U.S. has been experiencing a “graying” of the teaching workforce in the past two decades, as many teachers have retired. However, retirements only contribute to 12% of the total number of teachers who leave. The greatest percentage (28%) leave due to school staffing cutbacks due to lay-offs, school closings, and reorganizations (Ingersoll, 2002).

Many young teachers who choose to leave within five years of beginning their teaching careers often cite a lack of preparation to cope with the challenges of teaching, particularly in public schools. The ability to deal with challenging students (behavior problems, those with a lack of motivation, special populations), along with a lack of administrative support has been defined as a primary reason. New teachers also mention a lack of opportunity for professional development and professional advancement as two other reasons for their departure.

A Specific Vocational Work-Based Program for At-Risk Students

As in many states, Ohio has a program available in middle and high schools for students at-risk for dropping out of school. Originally called Occupational Work Experience, the program was developed in 1963 as a vocational education pilot program designed to keep disadvantaged at-risk students in school by offering instruction well-suited for the needs of students who were to enter the labor market as unskilled workers (Davis, Kister, Parks & Shoemaker, 2001). An additional program, Occupational Work Adjustment, was added

in 1968 to focus on the needs of disadvantaged students aged 14-15 and was designed to reorient and motivate these students toward education and to prepare them for the world of work. The names of these programs were changed to Career-Based Intervention in 1999 to better reflect the profession's focus on career and technical education.

According to the Ohio Department of Education (2005), Occupational Work Experience/Occupational Work Adjustment/Career-Based Intervention programs help students with barriers to career and academic success improve their academic competence, develop employability skills, implement career plans, and participate in a career pathway in preparation for postsecondary education and careers en route to high school graduation. OWE/OWA/CBI programs provide combined educational and work-based learning opportunities for students in grades seven through twelve who demonstrate academic and/or social maturity difficulties in school. The number of years a student spends in an OWE/OWA/CBI program is determined locally by the program design and the individual.

Career-Based Intervention is a license endorsement, added to an existing teaching license. Individuals desiring the endorsement must already be licensed in another teaching field. In addition, the Career-Based Intervention endorsement requires a baccalaureate degree, two years of successful teaching experience under a professional license/certificate, and one year of full-time work experience outside of education. In addition, teachers must complete a minimum of 12 quarter hours of courses focused on Career-Based Intervention to receive the endorsement. The courses consist of the following content:

- Introductory CBI Clinic – Basic concepts of Career-Based Intervention programs
- Exceptional Children – Introduction to working with special populations
- Instructional Strategies – Classroom components of Career-Based Intervention programs
- Cooperative Education Programs – Work-based learning components of Career-Based Intervention programs

Teacher preparation programs for individuals pursuing a CBI endorsement exist at the following educational institutions in Ohio:

- Kent State University
- The Ohio State University
- University of Toledo
- Wright State University

This study has connections to teacher attrition and examines this issue through the lens of teachers working with at-risk students in an educational program with work-based learning experiences as a key component. The study also has ties to teacher preparation and the skills, knowledge and dispositions needed for entry into these Career-Based Intervention programs.

Purpose

The purpose of this research was to describe the current occupational status of program completers of The Ohio State University's College of Education Occupational Work Experience/Occupational Work Adjustment (OWE/OWA) and Career-Based Intervention (CBI) preparatory program. The study also sought to ascertain the perceptions of completers regarding the quality of the preparation they received in The Ohio State University's program.

With respect to the recent report by the National Partnership for Teaching in At-Risk Schools (2005), which described the importance of adequate preparation for teachers in order to work with at-risk populations, it was deemed necessary to evaluate the extent to which program completers were choosing to remain in the teaching profession and how preparatory coursework may have contributed to their retention. The feedback provided by this questionnaire was intended to allow for analysis and improvement of required coursework in order to better serve current and future students pursuing an Occupational Work Experience/Occupational Work Adjustment (OWE/OWA) and/or Career-Based Intervention (CBI) endorsement.

Research Questions

The research tracked the career choices of program completers and linked their evaluations of the preparatory program with retention in the teaching field. Specifically, the study addressed four research questions:

1. Are program completers currently employed in the field of education?
2. Are program completers currently employed as OWE/OWA/CBI instructors?
3. What are contributing factors related to the employment status of program completers?
4. What are program completers' perceptions of the preparation they received prior to assuming a classroom assignment?

Procedure

Population

The population for this study were program completers of The Ohio State University's Occupational Work Experience/Occupational Work Adjustment (OWE/OWA) and Career-Based Intervention (CBI) preparatory program between the academic years of 1995 and 2004. Mailing lists for this group were developed from departmental files with the assistance of graduate students in the department. The entire population was surveyed. As the population for this study was limited to The Ohio State University's Occupational Work Experience/Occupational Work Adjustment (OWE/OWA) and Career-Based Intervention (CBI) program completers, results of this study are limited to this group.

The initial population was comprised of 111 program completers with current OWE/OWA/CBI license endorsements. The license status of subjects was verified with the Ohio Department of Education's Center for the Teaching Profession, which allows a user to access certificate details for individuals by last name and school district. Upon investigation, it was discovered that the licenses of two subjects were not accessible, which indicated the licenses may have been suspended or revoked. Removing these subjects from the population reduced the number of subjects to 109. Eighty-nine respondents returned the survey instrument for a response rate of 81.7%.

Instrumentation

The questionnaire utilized was adapted from Weisbaum and Huang (2001) and reviewed by a panel of experts consisting of the current state supervisor for Career-Based Intervention, two Career-Based Intervention instructors, and a current teacher enrolled in the program and pursuing the endorsement. Suggestions were evaluated and incorporated into the instrument where appropriate.

Data Collection

The population received a cover letter, survey, and postage-paid return envelope via standard mail delivered to the home address on file with the department. The cover letter explained the purpose of the study, guaranteed participant confidentiality, explained the response tracking method, and provided contact information in the event of participant questions or concerns. Surveys were numbered to ensure confidentiality and to limit follow-up mailing attempts. The respondents' answers were assumed to be an accurate reflection of their understanding of the questions. The research instrument consisted of four sections:

1. Demographic information to ascertain education-related employment data, educational attainment, etc;
2. Short statements related to the anticipation of leaving the teaching field and/or attrition from the field utilizing a ranking system;
3. Rankings of the perception of preparatory course material in relationship to 21 specific on-the-job teaching responsibilities; and
4. Space provided to elaborate on any questions answered or additional comments.

Approximately two weeks after the initial mailing, all non-responders received a second mailing of the same contents with an updated cover letter. Several surveys were returned due to incorrect addresses. Utilizing the Internet address search function located at <http://www.whitepages.com> and The Ohio State University Alumni Association directory were referenced to acquire updated addresses. A third and final mailing was conducted approximately two weeks after the second using school addresses for the remaining non-respondents. No further attempts were made after these three rounds.

Findings

Findings are reported for each research question under corresponding headings. Specific comments made by respondents are included where appropriate.

Question 1: Are program completers currently employed in the field of education?

Of the 89 respondents, 80, or 89.9% of respondents, indicated employment in the education field. The remaining nine respondents, comprising the residual 10.1%, were not employed in an education related field.

For demographic purposes, respondents employed in education also indicated their educational attainment upon assuming an OWE/OWA/CBI teaching position. Thirty-six, or 45%, had acquired a bachelor's degree upon the commencement of an OWE/OWA/CBI teaching assignment. Forty-four (55%) of this segment, held master's degrees upon assuming OWE/OWA/CBI responsibilities. Twenty-two respondents, or 27.5%, have completed bachelor's degrees. In addition 54, or 67.5% of respondents, had completed master's degrees.

Question 2: Are program completers currently employed as OWE/OWA/CBI instructors?

Sixty-seven respondents were still teaching in a classroom. Thirty (44.8%) were employed as OWE/OWA/CBI teachers. The other 37, or 55.2%, served as classroom teachers in areas other than OWE/OWA/CBI and represent a wide array of subject areas. Figure 1 provides a visual representation of the subject areas taught by the respondents. Respondents presently in the education field, but not in the classroom, were employed in a variety of educational positions, such as substitute teachers, tutors and administrators.

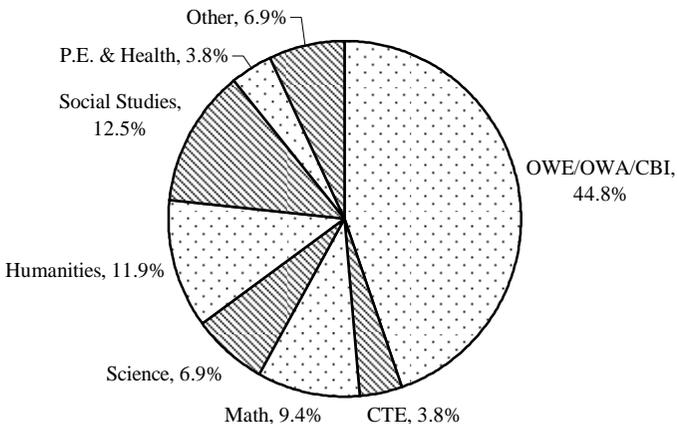


Figure 1. Respondent Teaching Subject Areas. The figure depicts the present subject area being taught by OWE/OWA/CBI completers.

Respondents employed in education also reported all positions held in the last five years. Sixty-nine respondents (86.3%) indicated employment as a classroom teacher. Sixty-eight respondents (85%) noted employment as an OWE/OWA/CBI teacher in this time span. Three respondents, representing 3.8% of the total, had served in school administration. Specifically, five respondents (6.3%) had acted as special populations educators.

With respect to teacher mobility, respondents indicated a wide range of number of positions held. Over the last five years, 16 respondents (20%) reported holding a single job, 45 respondents (56.3%) indicated holding two jobs, and 15 (18.8%) denoted holding three or more different jobs in the field of education.

Question 3: What are contributing factors related to the employment status of program completers?

The majority of all respondents currently in the education field did not anticipate exiting the field of education in the next five years. Sixty-four percent indicated this response.

Only three respondents (3.8%) cited dissatisfaction with the job as justification for planning to leave the field. No respondents who had already left the field of education cited job dissatisfaction as their rationale.

More than one-fourth of the respondents no longer teaching OWE/OWA/CBI indicated program closure as the primary reason they were no longer teaching the subject. Many expressed frustration at having completed the endorsement requirements, and having begun to teach OWE/OWA/CBI, only to have the program discontinued. A sampling of teacher comments on this topic included “The school district cut all electives due to budget cuts.”; “After I struggled to become CBI certified – the district eliminated the position!”; “I was staff reduced due to funding and was subsequently placed in special education.”; “The CBI program at my school was dropped.”; “I am no longer teaching this program because my school district no longer offers it”.

Of those planning to exit the field, 81.5% cited retirement as the reason for this career shift. Additionally, all respondents who had already left the field of education had done so through retirement. All retirements had occurred since the year 2000. This coincides with reported years of experience, as the least experienced retiree respondent amassed 22 years of service. However, despite many years in the field, few were spent teaching OWE/OWA/CBI. Two thirds of retirees spent less than three years teaching OWE/OWA/CBI. Six years was the longest time spent in an OWE/OWA/CBI teaching position.

A broad spectrum of experience levels is represented among the respondents still in the education field, as represented in Table 1. The aforementioned “graying” of the workforce is evidenced by results showing 35.1% of respondents on the cusp of retirement with 21 years or more of service in the field.

Table 1. *Respondents' Years Experience in the Field of Education*

	Years Experience						
	1-5	6-10	11-15	16-20	21-25	26-30	31+
Number	1	12	24	14	8	11	9
Percent	1.3	15	30	17.5	10	13.8	11.3

Question 4: What are program completer’s perceptions of the preparation they received prior to assuming a classroom assignment?

The majority of respondents deemed the OWE/OWA/CBI preparatory courses at The Ohio State University to be “adequate” in all of the 21 teaching responsibilities surveyed. Of particular interest were perceptions regarding preparation to educate special population students, engage in involvement with business and/or industry, provide career counseling, and facilitate remediation. With respect to the education of special populations, 43.8% of all respondents considered the preparation received to be “adequate” while 23.6% deemed their preparation “inadequate.” Table 2 depicts the perceptions of all respondents on this dimension of preparation.

Table 2. *Perceptions of Preparation to Educate Special Populations*

	Preparation Rating				
	None	Inadequate	Adequate	Excellent	Not Applicable
Number	7	21	39	17	--
Percent	7.9	23.6	43.8	19.1	--

Respondents who had little experience with special populations perceived a definite need for information to work with these students. On this topic respondents included comments such as “I taught college prep biology for 23 years prior to taking the CBI position. The type of student I am now dealing with is very different.”; “Administrators feel the at-risk CBI student creates discipline problems and lowers test scores”; “OWE/OWA is the best device to help a school reach some students”.

Preparation for involvement with business and/or industry was deemed “adequate” by 44.9% of all respondents, while 22.5% thought it “inadequate.” Table 3 portrays the perceptions of respondents on this preparatory dimension.

Table 3. *Perceptions of Preparation for Involvement with Business and Industry*

	Preparation Rating				
	None	Inadequate	Adequate	Excellent	Not Applicable
Number	7	20	40	18	--
Percent	7.9	22.5	44.9	20.2	--

Teachers commented on their preparation in this area with statements such as “I greatly appreciate having learned the importance of safety training and how to write a training plan.”; “As a CBI teacher, you should have some business experience!”; “Teaching CBI is not really covered in a traditional preparation program. The contact with business is a key.”

With respect to career counseling, 48.3% of all respondents deemed preparation to be “adequate” and 19.1% “inadequate.” Table 4 displays the perceptions of respondents on this dimension of preparation.

Table 4. *Perceptions of Preparation for Career Counseling*

	Preparation Rating				
	None	Inadequate	Adequate	Excellent	Not Applicable
Number	8	17	43	15	--
Percent	9	19.1	48.3	16.9	--

Respondents commented on the need for information in this area through observations such as “I believe the district in which I teach needs to add vocational programs in the schools, not cut the programs. There are a fair amount of students that are not going to college.”; “We as educators should be training students to become employed as well as preparing them for college.”

Preparation to offer academic remediation was thought “adequate” by 47.2% of all respondents, and “inadequate” by 20.2%. Table 5 depicts respondents’ perceptions of their preparation on this dimension.

Table 5. *Perceptions of Preparation for Remediation*

	Preparation Rating				
	None	Inadequate	Adequate	Excellent	Not Applicable
Number	10	18	42	11	--
Percent	11.2	20.2	47.2	12.4	--

Respondents stressed the need for remediation knowledge with such statements as “My school district used CBI as a tutor program for math”; “For four years I taught remediation for math, citizenship, etc. geared towards passing the Ohio Graduation Tests”; “It (CBI) was mainly used to help prepare CBI students for proficiency tests.”

Conclusions

With reference to the research questions posed by the study, the following conclusions are reached:

Research Questions 1, 2 and 3

1. Are program completers currently employed in the field of education?
2. Are program completers currently employed as OWE/OWA/CBI instructors?
3. What are contributing factors related to the employment status of program completers?

While the vast majority of the individuals surveyed for this study are still employed as classroom teachers, most are not employed as OWE/OWA/CBI teachers. This underutilization of the OWE/OWA/CBI endorsement may stem from several possible sources. Respondents may have acquired an endorsement only to find little opportunity to use it. Others may have left their OWE/OWA/CBI teaching assignment due to the special challenges associated with working with an at-risk population of students. Still others may have secured an OWE/OWA/CBI assignment that was later eliminated due to budget cuts or restructuring. Several respondents reported program cutbacks and the elimination of OWE/OWA/CBI positions from their schools. This is consistent with Ingersoll (2002), who reported the greatest percentage of teachers leaving the field do so in response to reductions in school staffing due to lay-offs, school closings, and reorganizations. Interestingly, the elimination of OWE/OWA/CBI programs would appear to run counter to the findings and recommendations of the recent report by the National Partnership for Teaching in At-Risk Schools (2005) which described the need for more of these types of programs.

Regarding those respondents in the field of education, another intriguing finding was the numbers of teachers who held more than one teaching position in the past five years. Fifty-six percent of the respondents reported having held two different teaching jobs in that time period, while 18.8% reported having held three or more different teaching jobs. Given the fact that several respondents noted the closure of programs as a reason they were no longer teaching OWE/OWA/CBI, this would again seem to support Ingersoll's (2002) discussion around school reorganization as a cause for teacher mobility, or it may point to some "job-hopping" behavior on the part of teachers.

Both teachers still in teaching and those who had left evidenced professional development, namely in the form of a graduate (Master's) degree. Several of these individuals have used the advanced degree to move into an administrative position. Three of the respondents used the OWE/OWA/CBI coursework as part of a Master's degree in Education. Finally, of those individuals no longer in teaching, retirement was listed as the primary reason for exit, a finding consistent with other studies (Anderson & Sinha, 1999; Weisbaum & Huang, 2001).

Research Question 4

4. What are program completers' perceptions of the preparation they received prior to assuming a classroom assignment?

With respect to the respondents' preparation to teach an OWE/OWA/CBI program, it appears the biggest concern for these individuals is working with special populations, i.e., those at-risk for dropping out of school. Some teachers may have received little training in working with this group as part of their initial teacher preparation, and may have little practical experience in this area prior to taking an OWE/OWA/CBI position. Since OWE/OWA/CBI programs have historically targeted this group, the demographic make-up of these programs is almost exclusively at-risk students. Hence, the respondent's concern, and desire for perhaps more preparation in this area, is understandable. The same may be true for the area of involvement with business and/or industry. Since many new OWE/OWA/CBI teachers come from academic disciplines (math, science, etc.), they may have little in the way of orientation to the world of work, and establishing relationships with the business community may be a new responsibility for them. This same shortcoming may also be true for another noted area, career counseling.

Recommendations

Based on the findings and conclusions of this study, the following recommendations appear warranted:

Expansion of the study to the other institutions in Ohio that have provided the OWE/OWA/CBI licensure endorsement program. Some themes have emerged in this study with respect to the status of OWE/OWA/CBI programs in middle and high schools, and it may be useful to see if these patterns are true in other parts of the state. Respondents in the study were unanimous in their support of OWE/OWA/CBI programs and stressed the need for more programs of this type, not less.

A larger study that examines dropout rates in schools with OWE/OWA/CBI programs versus those schools without OWE/OWA/CBI programs. If indeed these programs can make a difference, a study of this type may help determine the effectiveness of a vocational work-based program for at-risk students. At present, it appears a number of programs have been dropped from middle and high schools, ostensibly due to budget constraints. Now may be an opportune time to locate schools with/without OWE/OWA/CBI programs to perform a comparative study to judge the merits of such programs. In addition, at present, Ohio has several charter schools with OWE/OWA/CBI programs, and individuals teaching the subject area in charter schools are exempt from the requirement to have the endorsement. The charter schools with OWE/OWA/CBI programs without a fully credentialed instructor could also be part of this analysis.

Consideration of a statewide revision of licensure endorsement standards for these programs. An examination of respondent comments pointed to a need for more preparation and information with respect to working with at-risk populations and business and industry professionals. Additionally, career counseling was identified as an area where more information was desired. Given the increasing numbers of at-risk students in schools (National Partnership for Teaching in At-Risk Schools, 2005), the constantly changing needs of the workplace, and the multiplicity of career pathways, it is

reasonable to assume this information may need stronger emphasis in present and future CBI licensure endorsement preparation programs.

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