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Directions of Dissertation Research at Universities Preparing Future Technology Education Teacher Educators

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DIRECTIONS OF DISSERTATION RESEARCH AT UNIVERSITIES PREPARING FUTURE TECHNOLOGY EDUCATION TEACHER EDUCATORS

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SIGNATURE PAGE

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TABLE OF CONTENTS

SIGNATURE PAGE ..... **I**

TABLE OF TABLES ..... **IV**

CHAPTER I, INTRODUCTION **1**

STATEMENT OF THE PROBLEM 2

RESEARCH GOALS 2

BACKGROUND AND SIGNIFICANCE 2

LIMITATIONS 4

ASSUMPTIONS 4

PROCEDURES 5

DEFINITION OF TERMS 5

OVERVIEW OF CHAPTERS 6

CHAPTER II, REVIEW OF LITERATURE **8**

REVIEW OF INDUSTRIAL ARTS PROGRAMS 8

TECHNOLOGY EDUCATION 11

JOURNAL OF TECHNOLOGY EDUCATION 13

SUMMARY 13

CHAPTER III, METHOD AND PROCEDURES **15**

POPULATION 15

INSTRUMENT DESIGN 16

METHODS OF DATA COLLECTION 16

SUMMARY 17

CHAPTER IV, FINDINGS **18**

REPORT OF THE FINDINGS 18

Categories Identified 19
Target Research Areas 24
Institutions Supporting Research 27
Summary 27

CHAPTER V, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS 29

Summary 29
Conclusions 29
Recommendations 33

BIBLIOGRAPHY 35

Appendix A. University Population List 38
Appendix B. Survey Form 42
Appendix C. Cover Letter 43
Appendix D. List of Dissertations 44

TABLE OF TABLES

TABLE 1. DISSERTATIONS IN TECHNOLOGY EDUCATION RESEARCH ……... 20

TABLE 2. TARGETED AREAS OF STUDY 24

TABLE 3. INSTITUTIONS SUPPORTING RESEARCH..... 27

CHAPTER I
INTRODUCTION

Technology Education is continuing to transition as elementary, secondary, and college level school systems move from industry based courses of Industrial Arts into the broad based context of Technology Education. Colleges that prepare Technology Education teacher educators need to keep abreast of these changes and review what doctoral students are researching for dissertations and what students seeking masters degrees are interested through their research. Several professional educational organizations have attempted to sort and classify the findings of this research into databases and have also focused many professional educator conventions around these (Zuga,1994; Streichler, 1966; McCrory, 1987).

According to Reed, "The release of the *Standards for Technological Literacy: Content for the Study of Technology* (International Technology Education Association, 2000) has spawned significant activity and literature addressing needed research in technology education" (2002, p. 66). For example, the American Association for the Advancement of Science (AAAS) held a conference to analyze what research would help to achieve the goals of technological literacy (Cajas, 2000). This research has provided topics on technology education that should be further studied in future research projects as this study will provide.

The Council on Technology Teacher Education (CTTE) was created in 1950 and published its first yearbook in 1952. The CTTE is the international professional organization focusing on the needs of Technology Teacher Education. The CTTE strives to provide educational leadership opportunities for its members, stimulate research and scholarships related to the technology education profession, and support and further the

professional ideals of technology teacher education (http://teched.vt.edu/ctte/CTTEMain .html). The CTTE has created a database of 5,260 thesis and dissertations for the technology education profession to review and assist with literature reviews called the Technology Education Graduate Research Database (TEGRD) which includes research from years 1892 through 2000. The TEGRD will allow technology education teachers working on their dissertations to review what has already been researched and also what research still needs to be completed or updated. This study will build on the TEGRD database and review what new research was currently underway and also what research had been conducted during the period from 2000 to 2005.

STATEMENT OF THE PROBLEM

The purpose of the study was to determine the directions of dissertation research at universities preparing future technology education teacher educators.

RESEARCH GOALS

The following goals were established to explore the dissertation directions and maintain focus on the problem:

1. Determine if university faculties had focused research agendas in technology education teacher preparation for doctoral studies and what they were.
2. Determine if university programs in technology education teacher preparation allowed students to determine their individual research dissertations and what they were.

BACKGROUND AND SIGNIFICANCE

A review and synthesis of research in technology education had been compiled as far back as 1966 by Streichler, in his “Review and Synthesis of Research in Industrial

Arts Education". Since then, the subject has been revisited by researchers such as McCrory (1987), Foster (1992) and Zuga (1991, 1994, 1999). Zuga was the last one to compile any data in this area. Past research reviewed dissertations, thesis, staff studies, personal research, periodical articles, yearbooks, and speeches. Areas discussed in Zuga's review were (1) Philosophy and Objectives, (2) Curriculum Development, (3) Instructional Materials and Devices, (4) Learning Processes and Teaching Methods, (5) Student Personnel Services, (6) Facilities and Equipment, (7) Teacher Education, (8) Administration and Supervision, (9) Evaluation, and (10) Research. This author will attempt to continue the same detailed and in-depth research as his predecessors, but focusing only on current dissertation research.

The significance of this study was that technology education educators, along with graduate students, need to keep abreast of any changes in education direction, and review what graduate and doctoral students were researching. This also continued the same question of should doctoral students be allowed to randomly select their area of research or should the university faculty direct them to focus on established agendas of related importance or concern? Some project that this was the best process to bring recognition to their universities and the community of scholars. This study hoped to show the strengths and weaknesses of the technology education teacher education research so that it may be addressed in future doctoral student studies. Also, Old Dominion is planning to begin a Ph.D. in Education in 2006 with a concentration in technology education. This information will assist the faculty as they move forward with research requirements to their planned program.

LIMITATIONS

The boundaries of this research were limited methodologically to doctoral dissertations in technology education from years 2000 through 2005 inclusive. This would allow for the most relevant information and the most up-to-date research. The inclusion of masters research papers and journal reviews was rejected due to the time limitations and scope of the research. The research would be further limited by selecting dissertations from colleges and universities in the United States only. This was to forgo having to deal with foreign language translations. The research would be further limited by the research agendas of the solicited universities.

ASSUMPTIONS

Assumptions of this research were based on what research had been completed in the past and what research had been viewed as being necessary to pursue in the present. Since the scope of the research was narrowly limited to only dissertations, this researcher had made the following assumptions:

1. Technology education dissertation research topics have become more focused.
2. Doctoral students would be focusing their research topics on problem solving/design skills in technology education.
3. Doctoral students would be working on what steps have been taken to implement technological literacy standards.
4. The dissertations investigated revealed more research into effectiveness of instruction.
5. There was a need to explore and demonstrate the inherent value of technology education.

6. There was an ongoing need to develop and test curriculum materials in order to implement technology education for all students.

PROCEDURES

The *Industrial Teacher Education Directory*, 42nd edition (2004), was used to prepare a mailing list of universities that awarded doctoral degrees. A survey was developed and submitted to university program leaders, asking for information on dissertations their doctoral students had been researching at their institution with a focus on technology education teacher education. Upon receipt of the information, the dissertations would be categorized into topic areas related to the research study and a summary would be prepared showing the changes from the previous studies and what directions the new studies showed for the future.

DEFINITION OF TERMS

The following terms and abbreviations were fundamental to the understanding of the research material:

Agenda - a list or outline of things to be considered or done, an underlying often ideological plan or program (Merriam-Webster, 1994).

Descriptive research - to describe systematically a situation or area of interest factually and accurately (Ritz, 1999).

Dissertation - an extended, usually written, treatment of a subject; *specifically,* one submitted for a doctorate degree (Merriam-Webster, 1994).

Ed.D. - Doctor of Education degree.

Focused research - The aim of the activity was to support projects for which the collective effort by a group of researchers was necessary to reach projected goals in a timely manner.

Methodological - of or relating to method or methodology of study (Merriam-Webster, 1994).

Ph.D. - Doctor of Philosophy degree.

Teacher preparation - the education at a higher learning institute of a future teaching professional.

Transition - passage from one state to another, a movement, development, or evolution from one form, stage, or style to another (Merriam-Webster, 1994). As in the transition of the industrial arts curriculum into the technology education curriculum.

OVERVIEW OF CHAPTERS

In Chapter I, the topic to determine the direction of dissertation research at universities preparing future technology education teacher educators was introduced along with the procedures used to gather the research information. A significant amount of research was found in the technical education curriculum and the industrial arts curriculums before they were officially renamed to technology education.

Chapter II will provide a review of the literature where the variables from our problem statement will be described, distinguished what has been done from what needs to be done, developed meaningful relationships between the data and the topics, and established the significance of the problem. Research of other works were reviewed such as the the work of Zuga, Householder, Foster, and Streichler.

Chapter III will define the methods and procedures used to gather the data and how it will be processed. Chapter IV will report on the findings of the research where the data will be sorted and topic area groups identified. Chapter V includes a summary and conclusions of the data based on the findings of the dissertations submitted. Recommendations are made for future studies for graduate student research and dissertations.

CHAPTER II

REVIEW OF LITERATURE

There are several research papers that have dealt with the topic of technology education but few that have actually dealt with technology education teacher education. There are papers dealing with the politics of technology education, curriculum development, female and minority participation, elementary and high school technology education programs, and the documentation of the history of changing the name from industrial arts to industrial technology and technology education. Although several attempts have been made to approach the topic of research in teacher education, Zuga (1991, 1994, 1999) has probably been the one that has reported the most on research by the technology teacher education profession. This chapter will provide a review of research made in similar areas of technology education topics and show some relevance to the technology teacher education topic as well as provide a history of the research progression from industrial arts programs into technology education.

REVIEW OF INDUSTRIAL ARTS PROGRAMS

Streichler (1966) compiled a history of industrial arts education research from dissertations, masters research papers, staff studies, journals, and personal research. In his review of graduate education, he remarked that "Continued data gathering seems necessary and desirable in graduate education. A serious void seems to exist in information on training researchers in industrial arts education" (p. 50). He also commented on the quality of the research and how it seemed to be declining, while also praising other works. He was unable to pinpoint the source of why the research work quality was poor but added that some of the participants were probably in a rush to fulfill

a masters research requirement or meet a research deadline. Streichler also stated that content and curriculum offerings in public schools and teacher education institutions are still largely centered around traditional rolls of the industrial arts field. His research included studies that the intelligence of the student had a lot to do with the high drop out rate in industrial arts. Having a high verbal ability and convergent thinking may not be sufficient to meet the demands of the industrial arts class.

Householder (1969) reviewed research conducted on teacher education in industrial arts programs. These studies explored various aspects of the organization and administration of the total program of teacher education. He reviewed Evans (1967) argument that industrial arts teachers should be administered in the same departments along with trade and industrial education programs. He noted that having separate departments produced an undesirable degree of specialization and also a duplication of staff and services. Several studies he reviewed concerned undergraduate studies that sought to identify or validate content of undergraduate technical courses and also the recruitment of teacher education students. Another item of interest was that students who were majoring in the industrial arts teacher education curriculum demonstrated a continuous pattern of professional growth but also showed professional viewpoints to be similar to that of the teacher educators.

In research outlined by Doty, Tornell, and Wenzel (1980), "Technical education literature commonly mixes the terms postsecondary vocational education, occupational education, vocational-technical education and the like. In addition many areas of study have added the word of technical or technology" (p. 1). They organized their research data into five different working groups of:

1) The study pertains to technical education or contains crucial information for the technical educator;

2) The findings appear to have national significance;

3) The methodology was judged appropriate and thorough;

4) The reports are available through microfiche, microfilm, or hard copy; and

5) The studies cited appear representative in a particular area (p. 2).

While the majority of the research was in the trades area, Doty references twenty observations that could also be related to the technology education curriculum. In a review of the research, 53 percent were surveys, 22 percent were developmental studies, eight percent were experimental, seven percent were curriculum guides, three percent were review and synthesis papers, three percent were bibliographies, and three percent were reports of national conferences. Of the total, sixteen percent of the studies were dissertations.

Foster (1992) researched recent graduate research in industrial education between 1985 and 1990 with a total collection of 508 abstracts. He then organized the results of his research into five different research questions. These questions related to but were not limited to: history of graduate student research in the last five years; major topics researched; research methods used; research method according to degree being pursued; and did methods vary according to the field in which the study was conducted. Fosters' recommendations suggested that future research must "focus on seminal issues facing the field, the educational system, and society" (p. 71). He further comments that graduate advisors and students identify critical issues and then separate these into smaller, easier studies that research students can pursue within their educational time frame.

TECHNOLOGY EDUCATION

One article of noted importance in the *Journal of Technology Education* by Boser (1993) was of teaching through problem solving. His review of Householder and Boser (1991) reported that an emphasis on problem solving instructional strategies was a key ingredient in assessing the effective implementation of pre-service technology teacher education programs. They pointed out that technology teacher education programs needed to use problem solving strategies to teach problem solving skills. McCormick (1990) noted that, depending on the context, problem solving may have meant:

a) a teaching method that encourages active learning,

b) a generic ability to deal with problem situations,

c) a method used in such subjects as mathematics or science, or

d) an empirical investigation (p. 1).

These skills all pointed to a higher level of thinking. In a research paper by Boser (1993), he suggested that technology education teachers need to develop technical expertise, problem solving skills, and the ability to foster the problem solving skills of their students. However he noted that the competencies needed to teach problem solving must first be taught to prospective technology educators.

Zuga (1994) conducted a review and synthesis where she focused on US published research in secondary through teacher education aspects of technology education and to journal articles and databases related to technology education as defined by the International Technology Education Association (ITEA). She studied 220 research papers of which 105 were dissertation abstracts. Of the studies she reviewed, 53 percent were identified as teachers and teacher educators and were the prime population used in

research. She identified 89 institutions that submitted research reports for technology education and at least 18 studies were identified with two or more institutions. Findings of Zuga's research showed that:

- The professionals are male.
- Teacher educators are not very concerned with minority participation in their field.
- Technology educators are concerned about standardizing credentialing.
- Forming habits while in college from teacher educator examples, technology educators reveal themselves to be not very active professionally, using reading as the most frequent means of professional development.
- Once they overcome student teaching fears, technology educators seem to derive job satisfaction from the facilities, equipment, tools, machines with which they work, and their salaries.

A disturbing fact reported by Zuga was that teacher educators in technology education showed a lack of participation in professional involvement and development. This is a topic that needs further investigation by future researchers.

Another study was that of Prime (2001) where she researched the *Journal of Technology Education* for US research and the *International Journal of Technology and Design Education* for research in the UK during the period of 1990 through year 2000. She reviewed Petrina's (1998) research that identified what the concept of technology literacy was and suggested that "we abandon the notion of literacy and replace it with technology sensibility, participation and sagacity" (p. 6) or better yet, technological aptitude. The question of measuring literacy seems to be an ongoing challenge to the technology education curriculum and many have researched it, but it still eluded us. The goal of technological literacy had proven to be a moving target. The International Technology Education Association's *Standards for Technological Literacy* (2000)

defined technology as the ability to use, manage, assess, and understand technology. The standards and related benchmarks suggested the level and degrees of literacy sought.

JOURNAL OF TECHNOLOGY EDUCATION

The *Journal of Technology Education* (JTE) followed on the footsteps of the *Journal of Technology and Society* (JTS) which was launched in 1987 and only lasted for two years. This journal was intended to give scholarly direction to a profession in transition and provide an outlet for addressing the increasing publishing demands on teacher education faculty (Petrina, 1998). The Council on Technology Teacher Education (CTTE) was concerned primarily with technology teacher education issues and activities and co-sponsors the JTE. In 2000, Reed created a database of research papers on technology education called the *Technology Education Graduate Research Database* (TEGRD) and contained research from years 1892 through year 2000. There were over 5,260 thesis and dissertations contained in the database and completely searchable online at the CTTE web page at http://www.teched.vt.edu/CTTE (Reed, 2002). This database was a useful research tool both for research students and also teacher educators.

SUMMARY

The scope of this research was to determine what dissertations had been completed and also what dissertations were in progress in the area of technology education teacher education for the years 2000 through 2005. A secondary goal was to update the TEGRD with this information. The researcher had reviewed several research projects conducted prior to this research that had focused on technology educators and teacher education and reviewed what areas received the most attention and gave a history

of the progress of technology education. Chapter III will present the methods and procedures used to collect, sort, and categorize the dissertations for this research.

CHAPTER III

METHOD AND PROCEDURES

The purpose of this study was to solicit colleges and universities of their doctorial students and find out what topics were being researched for their dissertations over the last five years (2000-2005). In this chapter the researcher will identify the methods and procedures used to collect and organize the information to be submitted by the various colleges and universities and how the information will be sorted into topic areas. Requests were sent to university department chairs for information on their students' research dissertations. Additional subject matter in this chapter will include identifying the population used and how it was selected, survey instrument design, methods of data collection, and a summary of the chapter.

POPULATION

The population used in this study was selected from the *Industrial Teacher Education Directory* (ITE)(42nd) edition, a publication sponsored by the National Association of Industrial and Technical Teacher Educators (NAITTE) and the Council on Technology Teacher Education (CTTE). This directory included program listings for technology education, industrial education, occupational education, trade and industrial education, vocational education, vocational-technical education, industrial technology, engineering technology, and other specialty programs. The directory was arranged in alphabetical state order, and secondly by institutions within each state. Institutions were selected by reviewing each institution's listing searching for PhD, DIT, and EdD under Degrees Awarded. This poised a limiting factor on the population due to the fact that some of the technical institutions listed did not list Degrees Awarded, which thereby

eliminated them from the list. Of the total of 179 institutions listed in the directory, a total of twenty institutions were selected to be surveyed, see Appendix A. These included: University of South Florida, Idaho State University, University of Idaho, Southern Illinois University at Carbondale, University of Illinois, Indiana State University, Purdue University, Iowa State University, North Carolina State University, The Ohio State University, The University of Akron, Oklahoma State University, Oregon State University, The Pennsylvania State University, Clemson University, University of North Texas, Utah State University, Old Dominion University, Virginia Polytechnic Institute and State University, and West Virginia University.

Other limiting factors of the population were any institutions on foreign soil. This was decided to eliminate any translation issues with their submitted research.

INSTRUMENT DESIGN

The instrument, Appendix B, was designed based on the responses that were expected to be returned by the various universities. The researcher would need to determine if university faculties had focused research agendas in technology education teacher preparation for doctoral studies and what they were. It was decided to use an open-ended design where the completer enters as many lines of information as needed to satisfy the researchers request. The responses were presented as a descriptive research study. An area for open ended comments was also included to allow an in-depth response from each department chair.

METHODS OF DATA COLLECTION

A package containing a copy of the survey form and the cover letter was submitted to Old Dominion University, and approved on May 17, 2005, by the Human

Subjects Committee of the Darden College of Education. Survey packets were mailed to each selected institutions department head using the United States Postal Service as the primary delivery system. Each survey packet contained a cover letter, Appendix C, with a human subjects confidentiality statement, and a survey form, Appendix B. In order to protect the confidentiality of the participants, no identifiable information, such as, names or social security numbers were provided to the researcher. A secondary reminder was sent by email to each department head two weeks after the initial mailing. Subsequent email reminders were sent weekly to any outstanding surveys. The returned data was presented by each institutions chairperson or their designated representatives. The responses were analyzed using the frequency of response method and sorted into respective sub-group topic areas.

SUMMARY

Chapter III presented the methods and procedures utilized for collecting and sorting the data of this research study. The targeted population was selected from the *Industrial Teacher Education Directory*. The detail of the survey instrument, method of data collection, and population was given to the reader to provide the validity required of the research content. The findings of the data collected are presented in Chapter IV of this research from the various university department chairs.

CHAPTER IV

FINDINGS

The purpose of this study was to determine the directions of dissertation research at universities preparing future technology education teacher educators. This was an open ended descriptive survey to which this chapter presents those findings. Twenty surveys were mailed requesting information on dissertations completed in the last five years (2000-2005). The goals of the study were to determine if university faculties have focused research agendas in technology education teacher preparation for doctoral studies and what they were. It also sought to determine if university programs in technology education teacher preparation allow students to determine their individual research dissertation topics and what they were.

REPORT OF THE FINDINGS

Of the twenty institutions solicited, fifteen of them responded back with the survey form, presenting a response rate of seventy-five percent. Of the fifteen submittals, five institutions reported they had no technology education dissertations or no longer had a technology education program. Of the remaining ten institution submittals, there were a total of fifty-nine dissertations identified, Appendix D. The dissertations were collected and categorized into the following groups: curriculum, continuing education, instruction, professional development, and attitudes. This was done to maintain some continuance with the research completed by Zuga (1994), where a total of 105 dissertation abstracts were reviewed.

The *Industrial Teacher Education Directory* (ITE), 42nd edition (2004), was used to prepare a mailing list of universities that awarded doctoral degrees which provided the

names of the twenty institutions surveyed. Seven of the institutions identified on the ITE directory were also surveyed by Zuga (1994), however only three of the institutions on Zuga's list were ones that responded to the survey for this research. Accordingly, there were twelve additional institutions found on the ITE directory in this research that awarded doctoral degrees that were not on Zuga's list of institutions surveyed.

CATEGORIES IDENTIFIED

Attitude is defined as a "State of mind, and behavior, or conduct regarding some matter, as indicating opinion or purpose" (Funk & Wagnalls, 1976, p. 41). The attitude dissertations found through this research included surveys, value studies, analysis studies, and influential studies. The list of dissertations of the attitude group consisted of seven different studies which comprised 12% of the total 59 dissertations reported, see Table 1. They included: First Robotics as a Model for Experiential Problem-Based Learning: A Comparison of Student Attitudes and Interests in Science, Mathematics, Engineering, and Technology; Teacher Perceptions of Modular Technology Education Laboratories; The Impact of SOL Tests on Teachers' Perceptions and the Teaching of Computing/ Technology Content; The Value of Technology Education to Elementary School Students' Learning of Technology Concepts and Processes: A Qualitative Investigation of a Constructivist Perspective; Perceptions of Faculty, Supervisors, and Graduates of South Carolina State University Teachers Technology Education Program; An Analysis of the Variables That Affect Technological Literacy as Related to Selected Technology Student Association Activities; and Assessment of the Learning and Attitude Modification of Technology Education Students Who Complete an Instructional Unit on Agriculture and Biotechnology.

Table 1. Dissertations in Technology Education Research

	No.	Percent
Attitudes	7	12%
Instruction (how)	17	29%
Curriculum (what)	5	8%
Continuing Education	2	3%
Professional Develop.	8	14%
Foreign	11	19%
Work-based Education	9	15%
Total	59	

Instruction (how to teach) is defined as "The act of instructing or teaching" (Funk & Wagnalls, 1976, p. 337). Instruction had the largest group of papers submitted as shown in Table 1 with a total of 17 or 29% of the 59 papers submitted. They included: The Influence of Collaborative Video Assessment on Pre-service Technology Education Teachers; Analysis of the Factors Involved in Technological Problem Solving in a College Technology Education Classroom; The Effects of Gender Grouping and Learning Style on Curiosity in Modular Technology Education Laboratories; Effects of a Technological Problem Solving Activity on First Lego League Participants' Problem Solving Style & Performance; Teamwork Exercises and Technological Problem Solving with First Year Engineering Students; The Effects of Solid Modeling and Visualization on Solving a Technical Design Problem; The Degree of Implementation of Standards for Technological Literacy in Virginia; The Effect of Instructor-Solicited Interaction on Student Satisfaction in Distance Education; Research on Learning Styles of Students Who Are Taking Web-Based Courses; The Influence of an Integrated Math, Science & Technology Education Program on Students' Performance on the State of Ohio Math and Science Sub-Sections of the 9th Grade Proficiency Test in a Selected High School;

Relationships of Selected Factors and the Level of Computer Use for Instructional Purposes by Technology Education Teachers in Ohio Public Schools: A Statewide Survey; Effects of Integrated Technology, Mathematics, and Science Education on Secondary School Technology Education Students; The Effects of Direct and Problem-Based Learning Instruction in an Undergraduate Introductory Engineering Graphics Course; Novice Drafters' Spatial Visualization Development: Influence of Instructional Methods and Individual Learning Styles; Transfer of Training: Using Simulation to Teach Technical Skills; An Analysis of Successful and Unsuccessful Example Solutions to Enhance Open-Ended Technological Problem-Solving Efficiency Among Middle School Students; and The Relationship Between Learning Style and Conventional or Modular Laboratory Preference Among Technology Education Teachers in Virginia.

Curriculum (what to teach) is defined as "All the courses of study offered at a university or school" and "A regular or particular course of study" (Funk & Wagnalls, 1976, p. 157). Of the total papers submitted, five, or eight percent of the total papers submitted, were in the curriculum group. See Table 1. They included: Towards the Definition and Development of Expertise in the Use of Constraint-based CAD Tools: Examining Practicing Professionals; Integrating Multimedia in Technology Education to Improve College Student Comprehension, Problem-Solving Skills, and Attitudes Toward Instructional Effectiveness; Validation of a Detailed Strategic Planning Process Model for the Implementation of Distance Education in Higher Education; Problem-Based Learning; and The Democratic Mission at Publicly Funded Associate's Colleges: Comparing Liberal & Vocational Program Requirements.

As noted in Table 1, continuing education made up three percent of the dissertation topics and included: Enhancing Problem-Solving Disposition, Motivation and Skills Through Cognitive Apprenticeship; and The Effects of Cooperative Education on the Initial Employment of Community College Drafting Graduates.

Eight professional development papers made up 14% of the total dissertations submitted. See Table 1. They included: An Analysis of Award-Winning Local School Technology Education Teachers and Their Use of Effective Leadership Practices; Career and Technical Education Teacher Burnout: Impact of Humor-Coping Style and Job-Related Stress; The Professional Development Experience of Occupational Instructors at Community Colleges in Illinois; Leadership Effectiveness of Applied Technology Department Chairs in Illinois Community Colleges; Facility Administrator Perceptions of the External Environmental Constituencies Shaping Urban Advanced Technology Centers; Problems as Perceived by High School and Middle School Technology Education Teachers in Indiana; Implementation of ITEA Standards in School Districts in Florida; and Women in Technology & Engineering R&D.

Non-United States studies submitted made up 19% of the dissertations and included: Investigation of Fit Among Current and Preferred Organizational Cultures, Personality Styles, and Job Attitudes in Employees of International Tourist Hotels in Taiwan; Attitudes Toward Parental Involvement in Early Childhood Education: A Comparison Between Northern Pingtung, Taiwan and Pocatello-Chubbuck, Idaho, United States of America; Female Participation in Technical Education in Nepal; Academic Achievement, Attitudes, and Retention: Application of Whole-Brain Instruction in the Principles of Accounting Course in Central Taiwan; The Effect of Whole-Brain

Instruction on Student Achievement, Learning, Motivation, and Teamwork at a Vocational High School in Taiwan; Interrelationships Between Cross-Cultural Training, Learning Styles, and Training Effectiveness for Multinational Expatriates; World Trade Organization Expansion Between China and Taiwan: The Impact of Human Resource Development on Workforce Development; The Development of Benchmarks and Assessment Methods to Assess the Technological Literacy Portion of the National Science and Living Technology Curriculum as Required by the 2000 National Curriculum Guidelines of the Republic of China; A Comparison of Student's Achievement & Attitudes Between Constructivist & Traditional Classroom Environments in Thailand Vocational Electronics Programs; Factors Influencing School Choice of Students Who Would Like to Attend Private Technical Colleges in Taiwan; and Individual Perceptions of Leadership Attributes by Industrial Technology Teachers in Selected Public High and Technical High Schools in Jamaica.

Work-based education dissertations submitted included: Idaho Charter School Teachers' Perceptions of Expeditionary Learning Outward Bound Inservice Training; Learning Achievement, Satisfaction and Retention with Whole-Brain Instruction Among Nursing Students at a Technology College in Taiwan; Identifying Adult Non-Traditional Learners' Learning Styles Taking Online Courses and Their Learning Preferences of Teaching Methodologies at Idaho State University; Tech Prep/School-to-Work Content as Reflected in Secondary School English Textbooks: A Content Analysis; Worksite Mentor Knowledge and Training in Illinois Work-Based Learning Programs; Airline Flight Operations Internships: Perceived Impact in the Pursuit of Career Goals; Community College to University Transfer and Articulation in Illinois; Integrating

School-to-Work Concepts into Pre-Service Teacher Education: Perceptions of Selected Illinois Teacher Educators; and The Nature and Characteristics of Post-Baccalaureate Reverse Transfer Students and Their Utilization of Career Guidance.

Both the non-United States and the workforce education categories of submitted dissertations were discounted from the research as being non-relevant to the topic of the study. The numbers of the discounted dissertations were still used in developing Table 1.

TARGET RESEARCH AREAS

The majority of the dissertations submitted focused on the area of instruction with seventeen papers. College level instruction was the predominant area of study with high school instruction and teacher education last, see Table 2. Elementary school instruction had no dissertations submitted.

Table 2. Targeted Areas of Study

	Middle	High	College	Teacher	Total
Attitudes	1	3	1	2	7
Instruction (how)		5	8	4	17
Curriculum (what)		1	4		5
Continuing Education		1	1		2
Professional Development		3	3	2	8
	1	13	17	8	39
	3%	33%	44%	21%	

College level education was the predominant area of study in all of the research papers submitted; it comprised 44% of the technology education studies. They included: Assessment of the Learning and Attitude Modification of Technology Education Students Who Complete an Instructional Unit on Agriculture and Biotechnology; Analysis of the Factors Involved in Technological Problem Solving in a College Technology Education

Classroom; Teamwork Exercises and Technological Problem Solving with First Year Engineering Students; The Effect of Instructor-Solicited Interaction on Student Satisfaction in Distance Education; Research on Learning Styles of Students Who Are Taking Web-Based Courses; The Effects of Direct and Problem-Based Learning Instruction in an Undergraduate Introductory Engineering Graphics Course; Novice Drafters' Spatial Visualization Development: Influence of Instructional Methods and Individual Learning Styles; Transfer of Training: Using Simulation to Teach Technical Skills; Towards the Definition and Development of Expertise in the Use of Constraint-based CAD Tools: Examining Practicing Professionals; Integrating Multimedia in Technology Education to Improve College Student Comprehension, Problem-Solving Skills, and Attitudes Toward Instructional Effectiveness; Validation of a Detailed Strategic Planning Process Model for the Implementation of Distance Education in Higher Education; The Democratic Mission at Publicly Funded Associate's Colleges: Comparing Liberal & Vocational Program Requirements; The Effects of Cooperative Education on the Initial Employment of Community College Drafting Graduates; The Professional Development Experience of Occupational Instructors at Community Colleges in Illinois; Leadership Effectiveness of Applied Technology Department Chairs in Illinois Community Colleges; and Women in Technology & Engineering R&D.

As shown in Table 2, high school education topics received 33% of the total submissions. They included: First Robotics as a Model for Experiential Problem-Based Learning: A Comparison of Student Attitudes and Interests in Science, Mathematics, Engineering, and Technology; Teacher Perceptions of Modular Technology Education Laboratories; An Analysis of the Variables That Affect Technological Literacy as

Related to Selected Technology Student Association Activities; The Effects of Gender Grouping and Learning Style on Curiosity in Modular Technology Education Laboratories; Effects of a Technological Problem Solving Activity on First Lego League Participants' Problem Solving Style & Performance; The Effects of Solid Modeling and Visualization on Solving a Technical Design Problem; The Influence of an Integrated Math, Science & Technology Education Program on Students' Performance on the State of Ohio Math and Science Sub-Sections of the 9th Grade Proficiency Test in a Selected High School; Effects of Integrated Technology, Mathematics, and Science Education on Secondary School Technology Education Students; Problem-Based Learning; Enhancing Problem-Solving Disposition, Motivation and Skills Through Cognitive Apprenticeship; An Analysis of Award-Winning Local School Technology Education Teachers and Their Use of Effective Leadership Practices; Problems as Perceived by High School and Middle School Technology Education Teachers in Indiana; and Implementation of ITEA Standards in School Districts in Florida.

Elementary school level education topics were the least amount of research topics studied. The two studies were: The Value of Technology Education to Elementary School Students' Learning of Technology Concepts and Processes: A Qualitative Investigation of a Constructivist Perspective; and An Analysis of Successful and Unsuccessful Example Solutions to Enhance Open-Ended Technological Problem-Solving Efficiency Among Middle School Students.

Of the five major contributors of research dissertations it appears that Virginia Polytechnic Institute and State University focused 87% of their research topics in the area of Instruction, while Idaho State University focused 75% of their dissertation topics to

China and Taiwan education and workforce training. Of the remaining universities there appeared an equal amount of topic variation to eliminate any conclusion of focusing by the university.

INSTITUTIONS SUPPORTING RESEARCH

Of the twenty surveys that were sent to the technology education institutions, only ten of the participating institutions responded with dissertations on technology education. It should be noted that five institutions comprised the majority of research dissertations submitted. These included: Southern Illinois University at Carbondale, Idaho State University, North Carolina State University, Virginia Polytechnic Institute and State University, and Ohio State University. Table 3 shows the reporting institutions and the number of dissertations submitted.

Table 3. Institutions Supporting Research

	Dissertations
Utah State University	4
University of South Florida	1
Purdue University	1
Virginia Polytechnic Institute and State University	8
Old Dominion University	2
Southern Illinois University at Carbondale	12
North Carolina State University	10
Ohio State University	7
Idaho State University	12
Clemson University	2
	59

SUMMARY

This chapter has presented the results of the surveys submitted by the various institutions queried. The dissertations were categorized into areas of study in the same manner as Zuga (1994) presented them in her research, so as to maintain a certain amount

of continuity. The areas included: attitudes, instruction, curriculum, continuing education, and professional development. The targeted areas of research were further categorized by middle school, high school, college level, and teacher education. Focused areas were found in the area of instruction and foreign country topics. The results have been categorized and will be summarized in Chapter V of this research paper.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study sought to determine the direction of doctorial research in the subject of technology education. In this chapter will be reported a summary of this research, conclusions drawn, and recommendations projected.

SUMMARY

The purpose of this study was to determine the directions of dissertation research at universities preparing future technology education teacher educators. Twenty surveys were mailed to various universities with a response rate of seventy-five percent. The goals of the study were to:

- Determine if university faculties have focused research agendas in technology education teacher preparation for doctoral studies and what they were.
- Determine if university programs in technology education teacher preparation allowed students to determine their individual research dissertation topics and what they were.

Five of the fifteen responding universities had no dissertations or no longer had a technology education program. Five of the ten remaining universities submitted the largest number of dissertations and only one of those universities showed a trend in dissertation topics.

CONCLUSIONS

The first goal of this research was to determine if university faculties have focused research agendas in technology education teacher preparation for doctoral studies

and what they were. Two trends appeared for one university. The first was in research topics on China and Taiwan and the second was research in distance learning. Of the twelve dissertations submitted by this university, seven of the studies contained topics related to China and Taiwan. These included: Attitudes Toward Parental Involvement in Early Childhood Education: A Comparison Between Northern Pingtung, Taiwan and Pocatello-Chubbuck, Idaho, United States of America; Factors Influencing School Choice of Students Who Would Like to Attend Private Technical Colleges in Taiwan; The Effect of Whole-Brain Instruction on Student Achievement, Learning, Motivation, and Teamwork at a Vocational High School in Taiwan; Learning Achievement, Satisfaction and Retention with Whole-Brain Instruction Among Nursing Students at a Technology College in Taiwan; World Trade Organization Expansion Between China and Taiwan: The Impact of Human Resource Development on Workforce Development; Academic Achievement, Attitudes, and Retention: Application of Whole-Brain Instruction in the Principles of Accounting Course in Central Taiwan; and Investigation of Fit Among Current and Preferred Organizational Cultures, Personality Styles, and Job Attitudes in Employees of International Tourist Hotels in Taiwan.

The second trend that appeared with this institution was distance learning research topics. Of the twelve dissertations submitted, three dissertations concerned topics related to distance learning, 25% of the research topics submitted. These topics included: The Effect of Instructor-Solicited Interaction on Student Satisfaction in Distance Education; Research on Learning Styles of Students Who Are Taking Web-Based Courses; and Identifying Adult Non-Traditional Learners' Learning Styles Taking Online Courses and Their Learning Preferences of Teaching Methodologies at Idaho State University. This

trend pattern represents 10% of the total universities submitting dissertations that have targeted agendas.

The second goal of the research was to determine if university programs in technology education teacher preparation allowed students to determine their individual research dissertation topics and what they were. It appears that the balance of dissertation submissions from the remaining universities were random topics selected by the students or guided by the students' professors.

Instruction was the leading topic of research. This seems to be a contradiction to what Zuga (1994) found in her research when she noted that curriculum was the dominate research topic. Since both instruction and curriculum have many of the same elements, it is possible that they could be interchangeable. This research defines instruction as how a class was taught and curriculum as what was taught in the class. Also noted was that Zuga further categorized the curriculum studies into three separate sub-categories: status, development, and change. However, she failed to also categorize instruction into the same three sub-categories. One thing that Zuga's and this research studies revealed is that little research is being performed on elementary level education. A total of twenty-six research papers, or forty-four percent, were done on the college level education area. It should be noted that Zuga included Professional Literature in her research which gave her a much larger base, 220 studies, to form her conclusions versus the total of fifty-nine dissertations in this study.

Zuga also noted the lack of female participation in technology education, prefixed by the fact that females were more convinced that technology was a male endeavor. Only

three of the dissertations received in this research dealt with the area of female activity in technology education, further adding to Zuga's claim of male dominance in the field.

Studies reviewed by Zuga showed few attempted to justify the effectiveness of technology education, and after reviewing dissertations received in this study, it became apparent that there were several dissertations submitted showing research in effectiveness of technology education. These included: The Impact of SOL Tests on Teachers' Perceptions and the Teaching of Computing/Technology Content; The Value of Technology Education to Elementary School Students' Learning of Technology Concepts and Processes: A Qualitative Investigation of a Constructivist Perspective; Assessment of the Learning and Attitude Modification of Technology Education Students Who Complete an Instructional Unit on Agriculture and Biotechnology; Effects of a Technological Problem Solving Activity on First Lego League Participants' Problem Solving Style & Performance; The Influence of an Integrated Math, Science & Technology Education Program on Students' Performance on the State of Ohio Math and Science Sub-Sections of the 9th Grade Proficiency Test in a Selected High School; and Effects of Integrated Technology, Mathematics, and Science Education on Secondary School Technology Education Students.

Several assumptions were made at the beginning of this research in what some of the results would lead to. This research attempted to answer or validate those assumptions.

- Technology education dissertation research topics have become more focused as was assumed they would. Robotics, problem solving,

multimedia instruction, distance learning, and teacher and student attitudes were all part of this research.

- Dissertation students would be focusing their research topics on problem solving/design skills in technology education. A total of nine dissertations identified were related to the topic of problem solving in this research.
- Dissertation students will be working on what steps have been taken to implement technological standards. The implementation of technology standards was addressed by only two dissertations.
- The dissertations investigated reveal more research into effectiveness of instruction. Fourteen dissertations were identified as being related to effectiveness of instruction.

RECOMMENDATIONS

Recommendations to future researchers would be to take Zuga's original institution list and add any new institutions that awarded doctorate degrees from the updated *Industrial Teacher Education Directory* (ITE), 42nd edition (2004). This will result in a more complete list of institutions than this study reviewed. More research needs to be focused on justifying the effectiveness of technology education on students on all grade levels, not just college level institutions. Elementary education systems were lacking in research. Minorities and female roles in technology education were limited in the results of this study which supported Zuga's (1994) observations in her research. Future researchers should make it clear to the reporting institutions that they are only interested in technology education subjects and not all of the graduate dissertations at their institutions. It is also important to include international institutions in future

research to determine what dissertation research other countries are working on. It is recommended that this research be reported to the profession by the author writing a journal article to let the teacher educator faculty know of the findings of this research.

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Householder, D. & Boser, R. (1991). *Assessing the effectiveness of change to technology teacher education.* Journal of Technology Education, 2(2), 16-31.

Larson, M. (1969). *Review and synthesis of research: analysis for curriculum development in vocational education*. ERIC Clearinghouse, The Center for

Research and Leadership Development in Vocational and Technical Education. The Ohio State University. Columbus, Ohio.

McCormick, R. (1990). *The evolution of current practice in technology education*. A paper presented at the NATO Advanced Research Workshop: Integrating Advanced Technology into Technology Education. Eindhoven, The Netherlands.

McCrory, D. (1987). *Technology education: industrial arts in transition. A review and synthesis of the research* (4th ed.). Information series no. 325. ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio. ED 290 935.

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Phillips, D. & Briggs, L. (1969). *Review and synthesis of research in technical education* (2nd ed.). ERIC Clearinghouse, The Center for Research and Leadership Development in Vocational and Technical Education. The Ohio State University. Columbus, Ohio.

Prime, G. (2001). *An analysis of research in technology education: what we have learned from a decade of research*. U.S. Department of Education. Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED 462 964).

Reed, P. (2002). *Research in technology education: back to the future*. Journal of Technology Education, 13(2), 66-70.

Ritz, J. (1999). *OTED 635 Notetaking Guide 2*. Old Dominion University, Norfolk, VA.

Streichler, J. (1966). *Review and synthesis of research in industrial arts education.* ERIC Clearinghouse, The Center for Research and Leadership Development in Vocational and Technical Education. The Ohio State University. Columbus, Ohio.

Zuga, K. (1991). *Technology teacher education curriculum courses*. Journal of Technology Education, 2(2), 60-72.

Zuga, K. (1994). *Implementing technology education: a review and synthesis of the research literature*. Information series no. 356. ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio. ED 372 305.

Zuga, K. (1999). *Addressing women's ways of knowing to improve the technology education environment for all students*. Journal of Technology Education, 10(2), 57-71.

Appendix A: University Population List

University of South Florida
Bill Blank blank@tempest.coedu.usf.edu
College of Education
Department of Adult, Career & Higher Ed.
4202 East Fowler Avenue
Tampa, FL 33620-5650
PhD vocational tech ed 2 degrees reported in 2004 ITE

Idaho State University
Robert E. Croker , Chair crokrobe@isu.edu
College of Technology
Department of Human Resource Training & Development
Graveley Hall, MSC 8081
Pocatello, ID 83209-8081
EdD Educational human resource develop 4 degrees reported in 2004 ITE

University of Idaho
James M. Cassetto, coordinator ited@uidaho.edu
College of Education
Industrial Education Program
404 Sweet Avenue
Moscow, ID 83844-4021
PhD vocational ed 4 degrees reported in 2004 ITE

Southern Illinois University at Carbondale
Fred W. Reneau, chairman wed@siu.edu
College of Education and Human Services
Department of Workforce Education and Development
475 Clocktower Drive MC 4605
Carbondale, IL 62901
PhD workforce education 8 degrees reported in 2004 ITE

University of Illinois
Scott D. Johnson, head hre@uiuc.edu
College of Education
Department of Human Resources
1310 S. Sixth Street
Champaign, IL 61820
EdD Human Resource Education 4 degrees reported in 2004 ITE
PhD Human Resource Education 4 degrees reported in 2004 ITE

Indiana State University
Anthony F. Gilberti, chair tchgilb@isugw.indstate.edu
School of Technology
Department of Industrial Technology Education
Technology Center 219
Terre Haute, IN 47809
PhD Technology Management 1 degree reported in 2004 ITE

Purdue University
George Rogers gerogers@tech.purdue.edu
School of Technology
Department of Industrial Technology
401 N. Grant Street, Knoy Hall
West Lafayette, IN 47907-2021
PhD Curriculum & Instruction 1 degree reported in 2004 ITE

Iowa State University
Patrick E. Patterson, chairman ppatters@iastate.edu
Science and Technology
Industrial Education & Technology Department
116 I. Ed. II
Ames, IA 50011-3130
PhD 1 degree reported in 2004 ITE

North Carolina State University
William J. Haynie, coordinator http://www2.ncsu.edu/ncsu/cep/mste
College of Education
Department of Mathematics, Science & Technology Ed.
Box 7801
Raleigh, NC 27695-7801
EdD Technology Education 1 degree reported in 2004 ITE

Ohio State University, The
Karen Zuga zuga.1@osu.edu
College of Education
Technology Education Section
1100 Kinnear Road, Room 100
Columbus, OH 43212-1152
PhD Technology Education 2 degrees reported in 2004 ITE

University of Akron, The
Susan J. Olson, chair solson@uakron.edu
College of Education
Department of Educational Foundations & Leadership
410A Zook Building
Akron, OH 44325-4208 PhD 2 degrees reported in 2004 ITE

Oklahoma State University
Reynaldo L. Martinez Jr., chair rey.martinez@okstate.edu
College of Education
Occupational Education Studies
209 Willard Hall, Oklahoma State
Stillwater, OK 74078
PhD Occupational Education 1 degree reported in 2004 ITE
EdD Occupational and Adult Education 5 degrees reported in 2004 ITE

Oregon State University
Sam Stern, coordinator sam.stern@oregonstate.edu
School of Education
Professional Technical Education
Corvallis, OR 97331-1631
PhD 2 degrees reported in 2004 ITE

Pennsylvania State University, The
William J. Rothwell, coordinator wjr9@psu.edu
College of Education
Workforce Education & Development
301 Keller Bldg.
University Park, PA 16802-1303
EdD Vocational Industrial Education 1 degree reported in 2004 ITE
PhD Vocational Industrial Education 19 degrees reported in 2004 ITE

Clemson University
William Paige, chair wpaige@clemson.edu
College of Health, Education & Human Development
School of Education
Technology & Human Resource Development, G-01 Tilman Hall
Clemson, SC 29634-1353
EdD Vocational and Technical Education 2 degrees reported in 2004 ITE

University of North Texas
Jeff M. Allen, coordinator jallen@unt.edu
College of Education
Department of Technology and Cognition
P.O. Box 311335
Denton, TX 76203-1335
EdD Applied Technology, Training, and Develop. 3 degrees reported in 2004 ITE
PhD Applied Technology, Training, and Develop. 5 degrees reported in 2004 ITE

Utah State University
Edward Reeve ed.reeve@usu.edu
College of Engineering
Industrial Technology & Education Department
6000 Old Main Hill
Logan, UT 84322-6000
EdD Industrial Education 1 degree reported in 2004 ITE

Old Dominion University
John Ritz jritz@odu.edu
College of Education
Occupational & Technical Studies Department
4600 Hampton Blvd. ED228
Norfolk, VA 23529
PhD Career and Technical Education 1 degree reported in 2004 ITE
PhD Training and Development 1 degree reported in 2004 ITE

Virginia Polytechnic Institute and State University
Mark Sanders msanders@vt.edu
College of Liberal Arts and Human Sciences
Technology Education Program
300B War Memorial Hall
Blacksburg, VA 24061-0313
PhD Curriculum & Instruction 1 degree reported in 2004 ITE

West Virginia University
David L. McCrory, Coordinator david.mccrory@mail.wvu.edu
College of Human Resources and Education
Technology Education Program
509 Allen Hall P.O.Box 6122
Morgantown, WV 26506-6122
EdD Technology Education 6 degrees reported in 2004 ITE

Appendix B: Survey Form

Could you please take a few moments to list the dissertations your doctoral students have been working on for the period of 2000 through 2005 in the area of Technology Education. The purpose is to update the focus of dissertation research in the technology education field.

Name of Institution:

_____

List of dissertation topics completed or in current development:

Please return to:
David Sontos
Occupational & Technical Studies ED228
Old Dominion University
Norfolk, VA 23529
757-683-4305

Appendix C: Cover Letter

Dear Sir/Madam,

I am a graduate student at Old Dominion University, Norfolk, Virginia, and am conducting a study on graduate student dissertation research in the area of technology education. The purpose of the study is to determine the directions of dissertation research at universities preparing future technology education teacher educators. Old Dominion is planning to begin a Ph.D. in Education in 2006 with a concentration in technology education. This information will assist the faculty as they move forward with research requirements to their planned program and will also be published to allow other technology education doctoral preparation institutions to know what types of research are being undertaken in our field. Any human subject identifiers used in this study will be kept confidential; only the research title and institutions will be reported in this study.

Could you please take a few moments to list the dissertations your department's doctoral students have been working on for the period of 2000 through 2005 in the area of technology education. We hope to measure our profession's progress, identify areas that need attention, and strengthen the bond between the education communities. Also, trends and research topics will be analyzed.

Please complete the enclosed questionnaire. Your candid and thoughtful reply will help our evaluation. Most people are able to complete the questionnaire in less than 20 minutes. Your response and any comments you make will be treated with utmost confidentiality. After the results are tabulated and compiled, we will issue a report.

Please return the completed questionnaire by June 17, 2005. A self-addressed, stamped envelope is included for your convenience. Thanks again for your help.

Sincerely,

David Sontos
Graduate Student

Philip A. Reed
Assistant Professor

Appendix D: List of Dissertations

West Virginia University

No longer prepare tech ed teacher educators

Clemson University

1. First Robotics as a Model for Experiential Problem-Based Learning: A Comparison of Student Attitudes and Interests in Science, Mathematics, Engineering, and Technology.

2. Teacher Perceptions of Modular Technology Education Laboratories

Idaho State University

1. The Effect of Instructor-Solicited Interaction on Student Satisfaction in Distance Education

2. Research on Learning Styles of Students Who are Taking Web-Based Courses

3. Idaho Charter School Teachers' Perceptions of Expeditionary Learning Outward Bound Inservice Training

4. Attitudes Toward Parental Involvement in Early Childhood Education: A Comparison Between Northern Pingtung, Taiwan and Pocatello-Chubbuck, Idaho, United States of America

5. Factors Influencing School Choice of Students Who Would Like to Attend Private Technical Colleges in Taiwan

6. The Effect of Whole- Brain Instruction on Student Achievement, Learning, Motivation, and Teamwork at a Vocational High School in Taiwan

7. Learning Achievement, Satisfaction and Retention with Whole-Brain Instruction Among Nursing Students at a Technology College in Taiwan

8. Identifying Adult Non-Traditional Learners' Learning Styles Taking Online Courses and Their Learning Preferences of Teaching Methodologies at Idaho State University

9. World Trade Organization Expansion Between China and Taiwan: The Impact of Human Resource Development on Workforce Development

10. Academic Achievement, Attitudes, and Retention: Application of Whole-Brain Instruction in the Principles of Accounting Course in Central Taiwan

11. Interrelationships Between Cross-Cultural Training, Learning Styles, and Training Effectiveness for Multinational Expatriates

12. Investigation of Fit Among Current and Preferred Organizational Cultures, Personality Styles, and Job Attitudes in Employees of International Tourist Hotels in Taiwan

Ohio State University

1. The Influence of an Integrated Math, Science & Technology Education Program on Students' Performance on the State of Ohio Math and Science Sub-Sections of the 9th Grade Proficiency Test in a Selected High School

2. Relationships of Selected Factors and the Level of Computer Use for Instructional Purposes by Technology Education Teachers in Ohio Public Schools: A Statewide Survey

3. Effects of Integrated Technology, Mathematics, and Science Education on Secondary School Technology Education Students

4. The Value of Technology Education to Elementary School Students' Learning of Technology Concepts and Processes: A Qualitative Investigation of a Constructivist Perspective

5. The Development of Benchmarks and Assessment Methods to Assess the Technological Literacy Portion of the National Science and Living Technology Curriculum as Required by the 2000 National Curriculum Guidelines of the Republic of China

6. Perceptions of Faculty, Supervisors, and Graduates of South Carolina State University Teachers Technology Education Program

7. The Influence of Collaborative Video Assessment on Pre-service Technology Education Teachers

North Carolina State University

1. Analysis of the Factors Involved in Technological Problem Solving in a College Technology Education Classroom

2. Individual Perceptions of Leadership Attributes by Industrial Technology Teachers in Selected public high and technical high schools in Jamaica

3. The Effects of Direct and Problem-Based Learning Instruction in an Undergraduate Introductory Engineering Graphics Course

4. An Analysis of the Variables That Affect Technological Literacy as Related to Selected Technology Student Association Activities

5. Assessment of the Learning and Attitude Modification of Technology Education Students Who Complete an Instructional Unit on Agriculture and Biotechnology

6. Enhancing Problem-Solving Disposition, Motivation and Skills Through Cognitive Apprenticeship

7. Towards the Definition and Development of Expertise in the Use of Constraint-based CAD Tools: Examining Practicing Professionals

8. Integrating Multimedia in Technology Education to Improve College Student Comprehension, Problem-Solving Skills, and Attitudes Toward Instructional Effectiveness

9. An Analysis of Award-Winning Local School Technology Education Teachers and Their Use of Effective Leadership Practices

10. The Effects of Cooperative Education on the Initial Employment of Community College Drafting Graduates

Southern Illinois University at Carbondale

1. Career and Technical Education Teacher Burnout: Impact of Humor-Coping Style and Job-Related Stress

2. Community College to University Transfer and Articulation in Illinois

3. Novice Drafters' Spatial Visualization Development: Influence of Instructional Methods and Individual Learning Styles

4. Transfer of Training: Using Simulation to Teach Technical Skills

5. Worksite Mentor Knowledge and Training in Illinois Work-Based Learning Programs

6. Airline Flight Operations Internships: Perceived Impact in the Pursuit of Career Goals

7. The Professional Development Experience of Occupational Instructors at Community Colleges in Illinois

8. Integrating School-to-Work Concepts into Preservice Teacher Education: Perceptions of Selected Illinois Teacher Educators

9. Tech Prep/School-to-Work Content as Reflected in Secondary School English Textbooks: A Content Analysis

10. Leadership Effectiveness of Applied Technology Department Chairs in Illinois Community Colleges

11. The Nature and Characteristics of Post-Baccalaureate Reverse Transfer Students and Their Utilization of Career Guidance

12. Female Participation in Technical Education in Nepal

University of Illinois

1. No Tech-Ed dissertations

Old Dominion University

1. Facility Administrator Perceptions of the External Environmental Constituencies Shaping Urban Advanced Technology Centers

2. Validation of a Detailed Strategic Planning Process Model for the Implementation of Distance Education in Higher Education

University of Akron

1. Program is Post Secondary Technical Education **not** Technology Education

Virginia Polytechnic Institute and State University

1. The Effects of Gender Grouping and Learning Style on Curiosity in Modular Technology Education Laboratories

2. Effects of a Technological Problem Solving Activity on First Lego League Participants' Problem Solving Style & Performance

3. Teamwork Exercises and Technological Problem Solving with First Year Engineering Students

4. An Analysis of Successful and Unsuccessful Example Solutions to Enhance Open-Ended Technological Problem-Solving Efficiency Among Middle School Students

5. The Effects of Solid Modeling and Visualization on Solving a Technical Design Problem

6. The Relationship Between Learning Style and Conventional or Modular Laboratory Preference Among Technology Education Teachers in Virginia

7. The Impact of SOL Tests on Teachers' Perceptions and the Teaching of Computing/Technology Content

8. The Degree of Implementation of Standards for Technological Literacy in Virginia

Oregon State University

1. Do not have a doctoral program in tech ed.

Purdue University

1. Problems as Perceived by High School and Middle School Technology Education Teachers in Indiana

University of South Florida

1. Implementation of ITEA Standards in School Districts in Florida

Utah State University

1. Problem-Based Learning
2. Women in Technology & Engineering R&D
3. A Comparison of Student's Achievement & Attitudes Between Constructivist & Traditional Classroom Enviornments in Thailand Vocational Electronics Programs.
4. The Democratic Mission at Publicly Funded Associate's Colleges: Comparing Liberal & Vocational Program Requirements.

Indiana State University

1. No dissertations in last nine years.