Maryland

Technology Teacher

Volume 4
Fall 2002

The Journal of the Technology Education Association of Maryland

TECH EXPO 2002 OCTOBER 18, 2002

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Maryland Technology Teacher

Journal of the Technology Education Association of Maryland

Vol. 4 **Fall 2002**

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The Maryland Technology Teacher is the official publication of the Technology Education Association of Maryland (TEAM) with executive offices at the Baltimore Museum of Industry, 1415 Key Highway, Baltimore, Maryland 21230.

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President's Perspective

Roy Rosnik

Technology education is a uniquely human endeavor. Through the teaching of technology, we are better able to prepare the next generation to be happy and successful adults. Although the term technology education is relatively new in the halls of schools, it has its roots well founded throughout history. As new technologies were created, empires rose and fell. One constant along the human path has been the need to pass along the knowledge and skills that create and use new technologies.

As technology education continues to grow and develop, so does its acceptance in the schools. Once thought of as a fancy name for "shop", administrators, parents, students, and teachers are learning that it is much more than building birdhouses and bread boxes. Through the application of mathematics, science and other academic classes, technology education is unleashing the creative use of knowledge, tools and skills that all students possess.

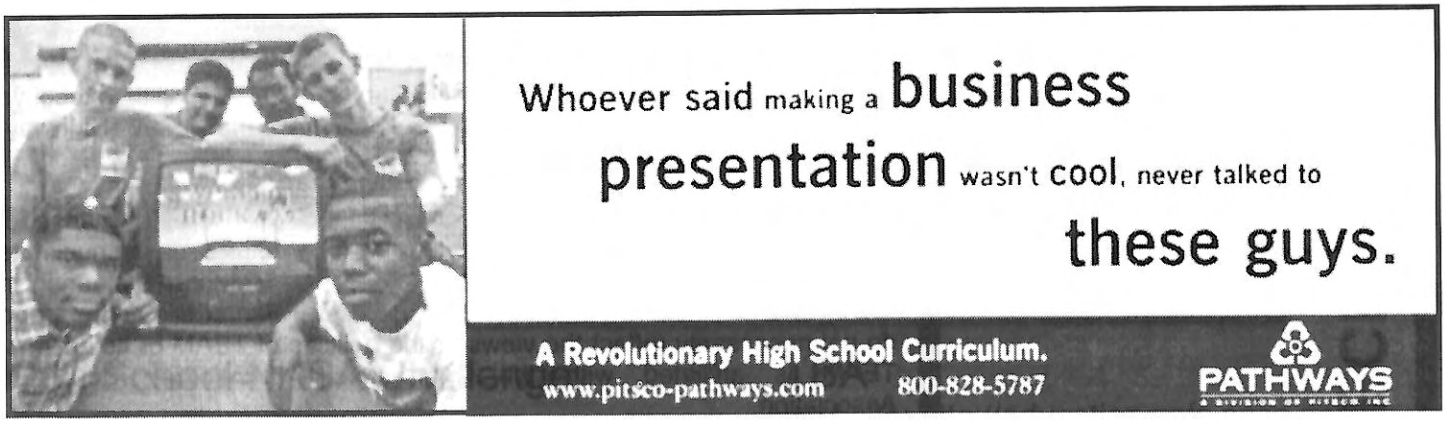
New technologies are being developed every day. The way knowledge, tools and skills are being applied today is different than just a few years ago. The lessons that technology teachers use today are also different than just a few years ago. With all of this change and adaptation, also comes the need for more teacher education. In the state of Maryland, there have been two great resources that have been created to further teacher education in the field of technology education. One is the Technology Education Leadership Project (TELP) and the other is the master's degree program at the University of Maryland, Eastern Shore.

Found through out the pages of this journal, is a wealth of information designed to bring better understanding of what technology education is and how it is being used. Please enjoy the efforts of timeless hours in the preparation of this journal.

Editor's Note: This issue of the Maryland Technology Teacher features articles written by recent recipients of Masters of Education in Career and Technology Education degrees at the University of Maryland Eastern Shore. The graduate program is designed to prepare individuals to become master teachers, administrators, and leaders who are committed to developing, instructing, coordinating, and directing quality programs in Career and Technology Education. Candidates for the degree are introduced to various forms of research and gradually develop the skills needed to carry out their own action research project. The articles presented here are brief summaries of the actual research papers. The writers were kind enough to create these articles for the Maryland Technology Teacher after they had completed all the requirements for their degrees. It is a credit to their dedication to the field and their willingness to share the results of their work with colleagues. I hope that you will find the articles interesting and relevant to what you are teaching.

It has been TEAM's goal to provide its members with a variety of useful publications. The journal's goal is to provide thought-provoking articles of an academic nature while the TEAM newsletter provides timely information on things going on around the state related to technology education.

Bob Gray



The Core Technologies: A New Technology Education Standard for Maryland

Christopher Gray

Introduction

This research project was focused on finding out the origins and development of the core technologies as defined in Maryland. This is important information for educators and other professionals that seek to improve technology education, whether or not they subscribe to the core technologies in their current form. The research methodology was historical and included an analysis of documents and interviews of participants and experts.

Methodology

The research methodology was both a review of the literature and a collection of documents and first-hand accounts from those involved. A search and review of the literature on this topic was undertaken, and it produced a number of publications and documents that briefly mentioned or described the core technologies. The study also looked into a broad understanding of the history of technology education through the twentieth century. Finally, this review also looked for an understanding of the nationally accepted standards and concept organizers that either competed with or corresponded to the core technologies.

Review of the Literature

There have been many efforts in the last century to develop content or curriculum organizers that are appropriate for industrial arts and technology education. Content was first organized around trades like woodworking, metalworking, and drafting. Industrial arts retained this structure while several competing versions of content organization were being developed. More recently there has been a shift in national opinion toward looking at technology by the types of enterprises: communication, transportation, construction, manufacturing, and power and energy.

The Industrial Arts Curriculum Project (IACP) at The Ohio State University (1968) – stated that industrial arts is a study of industry, so the focus of their curriculum was on the processes used to change materials (IACP, 1968). From IACP, the categories of construction and manufacturing could be associated with structural and materials technology. Although the core technologies were not a factor in the development of The Maryland Plan in the 1960s and 70s, students were expected to describe, "how things work" and they did this by identifying science concepts. The core technologies concept would have enhanced this effort.

The Jackson's Mill Industrial Arts Curriculum Symposium (1980s) brought together leaders of several emerging curriculum efforts to form a unified vision for industrial arts. One of the key points of Jackson Mills was that the study of technology should focus on the productive activities of communication, construction, manufacturing, and transportation (Wright, 1995).

The Ohio Model Schools Project (1989) defined technology as the "knowledge and study of human endeavors in creating and using resources, processes, and systems to manage the artificial and natural environment, to expand human potential, and enhance the relationship of these to individuals and society" (Savage, 1989, p. 2).

An alternative to this is to study the common components, or sub-systems, that make up all of these systems. These components could be organized in a similar manner as the fields of science and engineering have been organized, thus emphasizing the interdisciplinary connections. This is the basis of the core technologies in Maryland.

Maryland's Development of the Core Technologies

In 1985, the Maryland Symposium Series for Technology Education was established for the creation of "guidelines for program transition from industrial arts to technology education" (Copeland & Gray, 1998). This was a five-year process that involved two symposia per year that brought together technology educators, administrators from the local and state level, and business and industry representatives. The Symposium Series was the beginning of Maryland's curriculum development in technology education with a problem-solving emphasis. Prince George's County in Maryland was working on developing new curriculum guides for their high school technology education program when they realized that what they were missing was a knowledge base to support their problem solving activities. It was from this basis that Prince George's County technology educators derived the core technologies concept.

With many of the core technologies categories already in use in the Technology Magnet program at Eleanor Roosevelt High School, other resources were gathered to help develop the new concept organizers for the new courses being written. One source of information used was the Modular Courses in Technology, published by Oliver and Boyd, in association with the Nation Centre for School Technology in the United Kingdom. Another

source that was used to form the core technologies came from The Center for Occupational Research and Development (CORD), located in Waco, Texas. They designed a course called "Principles of Technology" and published a series of fourteen workbooks, one for each unit in the course. In each unit, one principle was introduced and then it explained how it was used in mechanical, fluid, electrical, and thermal systems. The resource material for this course was used extensively in the writing of their new county technology education curriculum.

In 1990 there was discussion of what was called the "building blocks of technology", which was a list of seven categories that constituted the majority of the core technologies. The name "core technologies" appears to have been coined by an electrical engineer from Digital Equipment who was serving on the Technology Education Advisory Council for Prince George's County. Richard Rothschild was at a series of meetings in 1991-1992 where several of the eventual core technologies were presented. He observed that while information technology was fundamental to all technology enterprises, the building blocks were "the core components of technology systems."

Maryland Technology Education Graduation Requirement

As a result of the Symposium Series it became clear that changes in COMAR (The Codified Law of Maryland) were needed and an effort was launched to adopt a requirement that all high school students would have to earn one technology education credit in order to graduate. Dr. Gerald Day served on the curriculum sub-committee of the High School Graduation Commission, which made recommendations to the main Commission. This committee was very influential and included many local superintendents and assistant superintendents. Mike Shealey, the supervisor of vocational and industrial arts in Baltimore County, was one of the original organizers of the Symposium Series. Out of this he became one of the local leaders in the effort to promote a high school graduation requirement for technology education. In 1993, the Maryland State Board of Education adopted a graduation requirement for technology education and the Maryland State Department of Education (MSDE) facilitated the development of the "learner outcomes that defined technology literacy for Maryland students" (Copeland & Gray, 1998). The sections of COMAR supporting the graduation requirement identified eight goals and related sub-goals for technology education. Statements regarding the core technologies did not appear in this law.

The Maryland State Board of Education later approved the Maryland Technology Education Curricular Framework. In this framework, there was a statement (expectancy 1.2.5) that referenced the core technologies: "The learner demonstrates knowledge of the core technologies from which all technology systems are derived, which include: mechanical technology, structural technology, fluid technology, electrical, technology, electronic technology, optical technology, thermal technology, biotechnology and materials technology" (MSDE, 1992, p. 22).

Maryland Embraces the Core Technologies

From that point, the core technologies continued to appear in technology education documents published by the Maryland State Department of Education. In support of the new curricular framework, the Technology Education Association of Maryland (TEAM) developed a monograph series that helped technology education teachers implement the new learner outcomes (TEAM, 1994). In the Donald Maley Monograph Series 2, dealing with teaching-learning strategies, the core technologies appeared in a graphic organizer that showed the relationship of design teams to technology systems and enterprises. In 1996, most technology education teachers in Maryland were given a set of 30 posters, one third of which dealt with the core technologies, and *Core Technologies, the Building Blocks of Technology Systems* video (Smith & Gray, 1998).

The Department of Technology at UMES offers two courses based on the core technologies titled Core Technologies I and Core Technologies II. Each focuses on half of the nine core technologies and includes both lecture and lab experiences. These courses are the main content organizer courses, and the program structures content delivery around these courses. These courses are required for certification of new technology education teachers who are coming with degrees in engineering and architecture who are making career changes. The core technologies are an accepted concept organizer for technology education throughout the teacher certification program in Maryland.

In the design of the Technology Education Leadership Project (TELP), the project directors used the core technologies as a major content organizer. Each workshop was organized around one of the nine core technologies, and they were given equal emphasis with six teacher/learner strategies and communication technology in the two-week summer workshops. The local workshops organized by the participants were also organized around the core technologies. The TELP Summer Institute in the summer of 2001 was a four-day workshop held "to begin the process of aligning Maryland's Curricular Framework for Technology Education with the new national standards" (Gray, 2001, p. 28)

The work coming out of this institute was applied to the development of the Maryland Technology Education Content Standards. This document, intended to replace the Maryland Curricular Framework, would contain standards from which local school systems could develop or evaluate technology education curriculum. In the draft developed in 2002, one of seven standards identified, dealt with understanding the core technologies. This is a much more prominent position than it had been in the earlier Maryland Technology Education Framework.

Harley Smith presented the core technologies in special interest sessions at the International Technology Education Association (ITEA) Annual Conferences in both 1993 and 1994, and published articles about it in several journals. The response to the use of the core technologies has been mixed. In the National Standards for Technology Literacy (ITEA, 2000), the core technologies were missing. While these standards can be related to core technologies, this inclusion falls well short of the concept developed in Maryland.

Conclusions

Maryland has a history of contributing to the national understanding of the study of technology under the leadership of Dr. Donald Maley. The core technologies as a content organizer was developed by the students of Dr. Maley and is a tribute to his work. Let's not just pass this work along to the next generation of teachers and students, but let's use it as one starting point for further development and contribution to the national discussion of technology education. As a result, the following recommendations are made:

- Conduct a study of the extent of acceptance and use of the core technologies by high school and middle school technology education teachers in Maryland.
- Descriptive research to more clearly define and deepen the understanding of the core technologies is needed to improve teacher training and curriculum resource material.
- At every possible opportunity in the process of revising the National Standards for Technological Literacy, Maryland technology education leaders should present how the core technologies would improve students understanding of the nature of technology and the designed world.
- It could be an added standard in the chapter on the nature of technology or at least new benchmarks under standard two.

Summary

The information gathered through this research provided a full picture of the major events and issues that affected the development of this content organizer. As a result of this research, several conclusions were drawn. The core technologies were created by drawing from and expanded on existing content organizers. The core technologies were formed by a small group of people coming from Prince George's County, Maryland. The core technologies were originally spread by these same few people who created them, with the important support of many leaders from the State Department of Education and technology educators from across the State of Maryland. Many efforts have been made to share this concept organizer with teachers and other educational professionals. No significant effort has been made to revise, clarify, expand, or define in more depth the categories that were originally developed.

The core technologies are the one content organizer that is most understandable to people outside of technology education and best explains the relationship of technology education to the vast diversity of technology systems that pervade our modem society. It contains a body of knowledge that is equally useful to everyone, regardless of his/her occupation, hobbies, or specific technology system they use. It is relevant to anyone who uses, maintains or produces technology systems such as engineers, technologists, technicians, and craftspeople. It is relevant whether one is studying past, present or future technology. The core technologies are simple enough to be taught at the elementary school level and each category has enough depth to constitute a distinct technology/engineering program in college. Further development of the core technologies and inclusion of them into state and national content standards for technology education will greatly improve the technological literacy provided to students and will provide a key element needed to elevate technology education to an academic discipline, a stable knowledge content.

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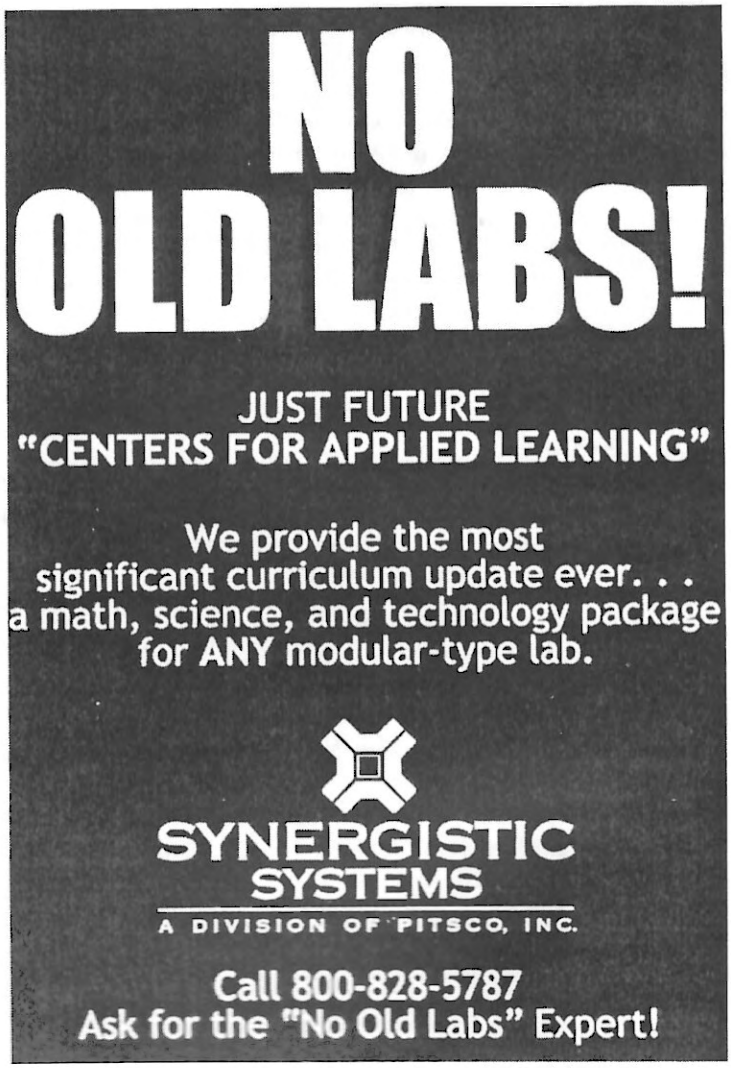

Illinois State University Professors Receive NSF Grant

Two Illinois State University professors, Rodney Custer, DTE, chair of the Department of Technology, and Michael Daugherty, a professor in that department, have received a $750,000 grant from the National Science Foundation (NSF) to develop high school level technology education curricula.

The Project ProBase (problem-based) technology curricula will help prepare high school students who plan to go on to community college technical education or enter four-year engineering-related programs.

Custer and Daugherty will develop a set of eight learning modules (in a three-year project) for the 11th and 12th grade levels that focus on core concepts identified in *Standards for Technological Literacy: Content for the Study of Technology* and use hands-on problem-solving activities to teach fundamentals of technology in the fields of information and communications; entertainment and recreation; energy and power; transportation; agriculture and biotechnology; medicine and manufacturing.

In addition to curriculum development, the NSF grant provides funding for field-testing the learning modules in selected schools. The completed technology education modules will be available for purchase by schools through ITEA.

Custer is a member of the Committee on Technological Literacy, a contributor to the Committee's report, "Technically Speaking: Why All Americans Need To Know More About Technology," and a contributor to *Standards for Technological Literacy.*

Daugherty, who coordinates the technology education program in the Department of Technology, was awarded the National Technology Teacher Educator of the Year award for 2001 by the Council on Technology Teacher Education.

ITEA to Work with PBS Affiliate on National Project

ITEA is working with WETA, the Washington affiliate of the Public Broadcasting System in a project titled "Rough Science." This outreach program will contain 10 videos that will be aired at various times across the U.S. using science and technology as the background for activities that can be tried or experienced by secondary students and adults. ITEA will advise project workers on directions that will be most helpful to secondary teachers and work to expand the life of the project well beyond the airing dates. Watch ITEA publications and news releases for more information as the school year evolves.

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What Happened to Shop?

Joseph R. Depto

The content areas of industrial arts and technology education evolved as a result of advancements in technology, changes in society, and increasing and changing needs of people. Throughout history we have formed philosophies of education reflecting these changes. Titles such as "manual training," "manual arts," "industrial education," "industrial arts" and "technology education" reflected the educational trends of the time, but the underlying concept was the same - preparing people to meet the material needs of society.

The Evolution of Technology Education

In 1876, U.S. educators marveled at the Russian System presented at the Philadelphia Exposition (Clark, 1989). Examples of manual training showing articles of wood and metal were displayed, demonstrating how the students learned processes through exercise and practice. Shortly afterwards U. S. educators, seeking to integrate mechanical arts with practical instruction, adopted a form of this Russian System in some American schools (Foster, 1999).

Calvin M. Woodward, a major supporter of manual training, was impressed with the Russian System (Davis, 2001). Woodward, a teacher at Washington University, wanted his engineering students to construct wooden models to illustrate certain mechanical principles. In doing so, he discovered they had little skill in using tools. To remedy this, Woodward began the St. Louis Manual Training School of Washington University in 1879, considered by Davis (2001) a pioneer manual training school.

Another European influence was the Swedish Sloyd system. The origins of Sloyd were found in the household crafts. During the long winters household articles such as tools, utensils, and sewn and spun projects were made with the intent of being sold in the spring. The system became quite popular and spread throughout northern Europe (Leutkemeyer, 1979). Successfully established in grades 5-8 in the Boston area by Gustaf Larsson in 1888, it included group instruction of tool usage. Although students made mechanical drawings of the models (projects), they did not design them.

The Arts and Crafts Movement through which "design and artistic expression were stressed rather than tool manipulation" (Barlow, 1967) was also taking place at this time. This movement influenced the organization of the Society of Arts and Crafts in Boston in 1897 "for the purpose of promoting artistic work in all branches of handicraft" (Bennett, 1937, p. 441). Bennett also stated "It was at this stage of development that the term 'manual arts' came into use to express emphasis on the art side of manual training" (p. 441).

John Dewey saw value in manual training and manual arts, but felt that there was a lack of connection to culture and social issues that made it unlikely to be included in the general education curriculum (Land, 1979). He proposed that manual training be regarded as a method of teaching related subject matter and be broad enough that it could be related to other subjects (Bennett, 1937). If the teacher selected the right projects, students could be engaged in activities requiring problem solving as well as realize social goals at the same time. This ideology became referred to as the social-industrial theory.

In 1904, Charles R. Richards, a member of the staff of Teachers College, Columbia University, wrote an editorial in *Manual Training Magazine* suggesting that the term industrial arts be substituted for the term manual training. Richards suggested the name change because he felt that American education should move toward content that was industry-based, aligning with Dewey's emphasis on "shop work."

Perhaps the two educators who had the greatest influence on the genesis of what is now known as technology education were Lois Coffey Mossman and Frederick Gordon Bonser, faculty members at Teachers College, Columbia University. Along with Teachers College Dean James E. Russell, Bonser and Mossman developed a comprehensive system of industrial education that has been the theoretical basis for technology education for most of the past seventy years (Foster, 1995). In their work, Bonser and Mossman described the inadequacies of manual training. Manual, training, they believed, focused on tool processes and a finished product, not the educational and social growth of the child. There was lack of motivation on the part of the students because the work was predetermined, each having to conform to the system. Manual training provided little opportunity for students to express their individuality and creativity. (Foster, 1997) In 1923, Bonser and Mossman wrote *Industrial Arts for Elementary Schools.* This document provided a definition of and provided the foundation for the general education concept of industrial arts (Bartow, 1994).

Bennett (1937) placed the beginning of the vocational education movement in 1906 with the report of the Douglas Commission to the Massachusetts Legislature

and the organization of the National Society for the Promotion of Industrial Education. Until then, considerable debate took place as to the direction manual training and manual arts was going.

The Douglas Commission made two recommendations. The first was instruction in elementary schools be modified to include productive industry, including agricultural, mechanical and domestic arts. Focus should be on cultural and industrial value. Instruction in high schools should include application of mathematics, science, and drawing from the perspective of industry, enabling the students to realize the usefulness of these subjects in practical life. The Commission also recommended that another commission on industrial education should be appointed to establish industrial schools, independent but parallel to the public school system (Bennett, 1937).

Parallel but different to vocational education theory was the approach of industrial arts as general education (Land, 1979). William E. Warner, a strong proponent of this theory, furthered the work of Dewey and Bonser. Warner said that the profession should move away from a common village trade concept (Gomez, 2001). He emphasized technology rather than tool skills, and on organizing content on the human activities of power, transportation, manufacturing, communications, and management (Ball, G., Ball F., and Wright, 1995).

One of the lifelines in the evolution of industrial arts was that its program has adjusted with changes in the educational culture. As new goals, purposes, and values were stressed, industrial arts found identity with the prevailing educational thought (Barlow, 1967,). Recognizing the need for change, the American Industrial Arts Association (AIAA) was established in 1939. Its mission was to promote industrial arts education, advance the quality of teaching, and create a forum to share ideas and advance practices. The AIAA was formed as part of the American Association of School Administrators and became part of the National Education Association (NEA) (Starkweather, 1998; Davis, 2001).

The years from 1947 to 1955 saw the development of The Maryland Plan. Professor Donald Maley, other professors and graduate students at the University of Maryland College Park interfaced graduate and undergraduate studies of philosophy, educational psychology, economics, learning theory, human development and curriculum, culminating in The Maryland Plan (Maley, 1979). Based upon testing and experimentation rather than merely constructing projects, it addressed the vital aspects of goals, content and methodology for industrial arts. Three major elements: technology, industry, and the relationship of technology and industry to man and society, were at the heart of The Maryland Plan (Evans, 1999). Accepted by many technology education teachers throughout the country, states have approved plans based upon this approach (Bensen, 1995).

In 1957, the Russians launched the satellite Sputnik. Shepard and Ragan (as cited by Bartow, 1994) identified its launching as the beginning of a period of innovating curriculum of science and technology. When the National Defense Education Act was passed, industrial arts was not perceived as vital in supporting the American way of life. The question was asked "How is woodworking getting kids ready for the space age?" Industrial arts was still building birdhouses and breadboards (Gomez, 2001).

In 1981, the most significant step in giving a unified direction to industrial arts came from the publication of the Jackson's Mill Industrial Arts Curriculum Theory by James F. Snyder and James A. Hales. Its purpose was to "provide rationale and direction for the future of industrial arts from which we might all find a point of view" (Sanders, 1995, p. 615). The document provided specific examples of how industrial arts should provide an articulated program of study from elementary school through exploratory courses in middle school to high school specialization (Rogers, 1995).

As a result of the greater emphasis put on the study of technology, the American Industrial Arts Association changed its name to the International Technology Education Association (ITEA) at its annual conference held at San Diego, California on March 26, 1985. The ITEA is the largest professional educational association, principle voice, and clearinghouse devoted to technology education (Gomez, 2001). The major focus of its work is to enhance teacher quality and work to promote a consistent forward-thinking philosophy and direction for the technology education teacher.

To accomplish this, the Technology for All Americans Project (TfAA) was implemented in 1994. In 2000, the Standards for Technological Literacy: Content for the Study of Technology were published. This document presented a framework for what every student should know and be able to do in order to be technologically literate.

The Value of Historical Research in Technology Education

The value of historical research in technology education should not be underestimated. Historical research provides valuable insight into fundamental values of education reflecting the needs of the American people. In light of the fact that industrial education development has paralleled educational progress in general, it is understandable that historical research in technology

education can help us understand more clearly the transition of industrial arts to technology education. Barlow (1967) had a "deep personal conviction that industrial educators can plan effectively for the future only to the extent that they have developed a perspective of the past" (p. 8).

Conclusions

Technology education evolved from industrial arts education to address the needs of a technological society. Society and culture change as technology develops, placing new demands upon education. It has been seen throughout history that content and methodology of education must change to keep up with the needs of society. This is the major influence on the transition from industrial arts to technology education. Historical research can be valuable in helping us better understand these changes by enabling us to see the present through a better perspective. By learning from the lessons of the past, we can better make well-informed decisions concerning the issues of today and help us prepare for the future.

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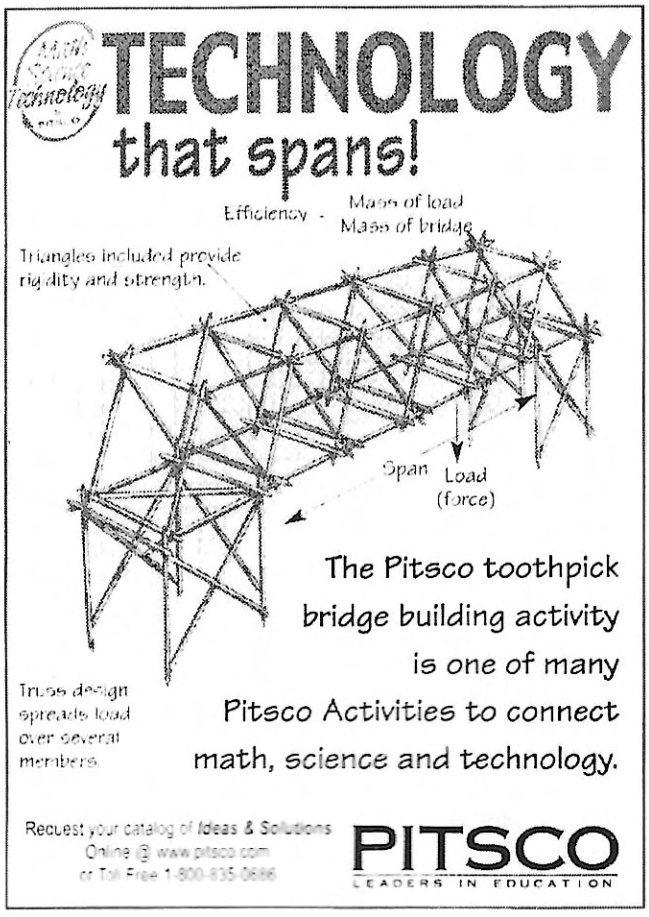


The Maryland Plan... An Old Standard with a New Twist

G. Daniel Wood, Jr.

I hate to admit it, but yes I have become a disciple of Maley. Dr. Donald Maley, that is, professor emeritus at the University of Maryland College Park who wrote The Maryland Plan, The Study of Industry and Technology in Junior High School. I hate to admit my evolution to disciple-hood because I know that for many of my knowledgeable colleagues, The Maryland Plan is considered highbrow, out of touch with reality, and impractical to teach. I think in the beginning of my teaching career I would have been inclined to concur. However, throughout the course of my teaching career, my opinion has evolved. I now view The Maryland Plan as a program that has a number of practical problems, but offers great promise, particularly in light of the new state and national standards, and should be examined with a renewed focus.

What is The Maryland Plan?

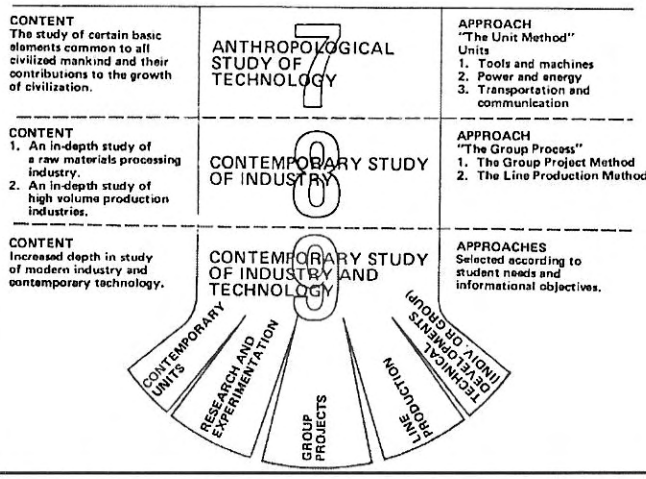
The Maryland Plan was originally designed to teach students about industry - its evolution, utilization, and significance; and industry - its organization, materials, occupations, processes and products. It also addressed the problems and benefits resulting from the technological and industrial nature of society. The elements and content structure of the program are graphically represented at the right.

Highbrow and Out of Touch?

Yes, indeed The Maryland Plan is a bit high-brow. It has been popularly espoused by numerous academicians and supervisors in our field. However, in spite of its popularity among the various theoreticians, I would still ask the practitioners to consider the worthiness of the plan. Why? Because, *practically* speaking, technology is totally inner-woven into human existence. Our ability to integrate our knowledge, tools, and skills to solve problems is far superior to all known creatures on the planet. So, from the standpoint of the reality of the human condition, there is, arguably, no more important subject to learn about and practitioners need to start teaching technology, not arts and crafts. The Maryland Plan may offer, at least in part, a solution to the problem of what to teach.

The Junior High Plan in Industrial Arts

. . . an emphasis on the psychological and sociological needs of the individual as well as his/her resourcefulness and capabilities.



As a student in Dr. Maley's Practicum course, I joined other highly skilled and motivated college students in working through the intricacies of the plan in a hectic semester. However, I have yet to see the Plan be fully and successfully implemented in the intended junior high/middle school environment. But I suppose this is the main juncture where I diverge with all my fellow educators. First, to my professors, the idea behind the plan is right on the mark. I have seen no better plan from the standpoint of concept. But all the professors I know who have been knowledgeable about the Plan, simply refuse to recognize the problems inherent in its execution. Second, to my fellow practitioners, we must begin to look beyond the tips of our noses. There's a lot of junk out there, lots of bits and piece, lots of shallow, incoherent and/or meaningless/brainless activities being taught out of ease and convenience, lots of packaged activities that teach little and lead nowhere. We will become extinct unless we start to think a little deeper and work a little harder to develop meaningful programs. Like the sentiment echoed in President Kennedy's inaugural speech, I suggest that we choose to do something, not because it's easy, but because it's the right thing to do.

A Practitioner's Point of View

In my initial study of The Maryland Plan's Anthropological Unit, three problems were identified: logistics, social impact, and evaluation. A study entitled The Anthropological Unit Approach for Teaching Technology Education and the Use of Rubrics for Evaluation (Wood, 2002) considered the use of rubrics as a practical solution to the problem of objectively assessing the numerous subjective elements of student work. Two questions were addressed: "What are rubrics?" and "How can rubrics be used to evaluate

student participation in the anthropological unit?"

Research Methodology

A descriptive-analytical procedure was selected as a method for studying rubrics. Information related to the topic of rubrics was systematically examined. Sources of information reviewed included books, magazine articles, journal articles, Internet web sites, an interview, and sample works of fellow colleagues and students. Answers to the questions listed in this study were derived through a process of inductive reasoning. The descriptive-analytical procedure of research was selected because it was the most direct, economical (in terms of time) and pertinent method available for answering the questions posed in this study.

Review of Literature

In a quest to define rubrics and determine their worthiness as assessment tools for the anthropological unit, a number of articles and books were reviewed. Studies such as Using Rubrics for Assessment and Evaluation in Art by Mary Piscitello were found that testified to the education benefits of rubrics. Most notable among the literature reviewed was the Performance-Based Education Implementation Handbook by Rodney Custer. This handbook clearly explained the differences between traditional assessment techniques and authentic assessment techniques (to include rubrics.) It further went on to show how objective rubrics could be developed for most any subjective learning activity. Knowledge acquired from the readings formed the basis for the development of a set of evaluation rubrics for the anthropological unit. Examples of these rubrics follow this article.

Conclusion

The anthropological unit in The Maryland Plan provides our field with a strong conceptual framework for learning about technology. The problem with the Plan dwells in its actual implementation. A number of practical problems such as logistical needs, background information, and evaluation methods need to be addressed. Rubrics may be used as an effective, practical tool for guiding and evaluating students participating in the anthropological unit. A further study of the use of the rubrics developed in this study is needed to confirm their effectiveness. It is hoped, however, that the development and use of these rubrics will provide a solution to one of the problems of implementation and, in effect, provide a positive new twist to an old standard.

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SEMINAR LEADERSHIP RUBRIC

NAME (S): _____

TASKS	SUPERIOR	ABOVE AVERAGE	AVERAGE	NEEDS IMPROVEMENT	INADEQUATE	SCORE
1. PREPARE AN AGENDA.	**30 points** -Typed agenda that includes the following items: 1. Introduction. 2. Individual progress reports. 3. Feature presentation. (subtopic presentation(s)) 4. Group reaction. (involvement of many students is this discussion is highly desirable.) 5. The problems of the group. 6. Topics of Interest. 7. Closing Comments. (from visitors, teacher, and/or student leaders.) -Made copies of agenda for everyone present to include teacher and visitors.	**25 points** -Typed agenda that includes the following items: 1. Introduction. 2. Individual progress reports. 3. Feature presentation. (subtopic presentation(s)) 4. Group reaction. (involvement of many students is this discussion is highly desirable.) 5. The problems of the group. 6. Topics of Interest. 7. Closing Comments. (from visitors, teacher, and/or student leaders.)	**20 points** -Hand written agenda that includes the following items. 1. Introduction. 2. Individual progress reports. 3. Feature presentation (subtopic presentation(s)) 4. Group reaction. (involvement of many students is this discussion is highly desirable.) 5. The problems of the group. 6. Topics of Interest. 7. Closing Comments. (from visitors, teacher, and/or student leaders.) -Made copies of agenda for everyone present to include teacher and visitors.	**18 points** -Hand written agenda that includes most of the following items: 1. Introduction. 2. Individual progress reports. 3. Feature presentation. (subtopic presentation(s)) 4. Group reaction. (involvement of many students is this discussion is highly desirable.) 5. The problems of the group. 6. Topics of Interest. 7. Closing Comments. (from visitors, teacher, and/or student leaders.)	**0 points** -Agenda was not created.	
2. SET UP CLASSROOM.	**30 points** -Leader checks the physical needs of the room prior to the seminar. -Leader arranges all furniture as required before and after the seminar.	**25 points** -Leader checks the physical needs of the room prior to the seminar. -Leader arranges most furniture as required before and after the seminar.	**20 points** -Leader checks some of the physical needs of the room at the start of class.	**18 points** -Leader checks some of the physical needs of the room after much prompting from the instructor.	**0 points** -Physical needs of the room are not considered.	
3. CONDUCT SEMINAR.	**40 points** -Leader assumes charge and controls all movement and direction with out instructor involvement (to include welcoming all students and visitors.) -Leader moves seminar along with strong student involvement. -Leader covers all agenda items.	**35 points** -Leader assumes charge and controls all movement and direction with a little instructor involvement (to include welcoming all students and guests). -Leader moves seminar along with good student involvement. -Leader covers all agenda items.	**30 points** -Leader assumes charge and controls all movement and direction with moderate instructor. -Leader moves seminar along with some student involvement. -Leader covers most agenda items.	**25 points** -Leader assumes charge and controls all movement and direction with a lot of instructor involvement. -Leader stimulates low positive student involvement	**0 points** -Leader does not conduct the seminar	
EXTRA CREDIT: REFRESHMENTS	**10 points** -Supplied food and drinks -Supplied sufficient plates, napkins, and eating utensils.	**7 points** -Supplied food and drinks. -Supplied some plates, napkins or eating utensils.	**5 points** -Supplied food or drinks -Supplied some plates, napkins or eating utensils.	**3 points** -Supplied food or drinks.	**0 points** -No refreshment provided.	
					TOTAL GRADE	

MODEL EVALUATION RUBRIC

NAME (S) : _____

_____

CRITERIA	SUPERIOR	ABOVE AVERAGE	AVERAGE	NEEDS IMPROVEMENT	INADEQUATE	SCORE
1. AUTHENTICITY.	**40 points** -All parts are proportionally accurate. -High level of detail.	**35 points** -All parts are proportionally accurate. -High level of detail.	**30 points** -Most parts are proportionally accurate	**20 points** -Authenticity was attempted but not reached.	**0 points** -Authenticity was not attempted.	
2. CONSTRUCTION.	**40 points** -All parts are neatly and accurately cut and assembled in a sturdy manner. -High level of craftsmanship.	**35 points** -Most parts are neatly produced and neatly/ strongly assembled. -High level of craftsmanship.	**30 points** -Model is complete. -Average level of craftsmanship	**20 points** -A good attempt was made at constructing the model.	**0 points** -A poor attempt was made at model construction.	
3. FINISH.	**10 points** -Color and texture of finish look exactly like the original invention. -Finish is neatly applied over all surfaces.	**8 points** -Color and texture of finish look similar to the original invention. -Finish is neatly applied over all surfaces.	**6 points** -Color and texture of finish is similar to the original invention. -Finish is poorly applied over all surfaces.	**4 points** -Color and texture of finish is not similar to the original invention. -Finish is poorly applied.	**0 points** -No finish was supplied.	
4. DISPLAY OR EXHIBIT.	**10 points** -Model is displayed on a well-crafted base or stand. -Name of model is neatly typed and attached to the base.	**8 points** -Model is displayed on a well-crafted base or stand.	**6 points** -Model is displayed on a base and/or supports.	**4 points** -Model is neatly labeled.	**0 points** -No base is created or base/label distracts from model.	
EXTRA CREDIT – DOES IT WORK?	**10 points** -Model is fully functional.	**8 points** -Model exhibits a high level of function.	**6 points** -Model exhibits a moderate level of function.	**4 points** -Part of model works.	**0 points** -Model does not work.	
					TOTAL GRADE	

PARTICIPATION EVALUATION RUBRIC

NAME (S) : _____

_____

CRITERIA	SUPERIOR	ABOVE AVERAGE	AVERAGE	NEEDS IMPROVEMENT	INADEQUATE	SCORE
1. SAFETY.	**10 points** -Student always follows all safety rules without teacher prompting. -Student actively promotes safety in the lab.	**8 points** -Student always follows all safety rules without teacher prompting.	**6 points** -Student follows most a safety rules without teacher prompting	**4 points** -Student follows all safety rules with prompting from teacher	**0 points** -Student is generally unsafe or does not follow safety rules	
2. SEMINAR PREPARATION.	**40 points** -Student always clears desk, places research materials and model on desk without teacher prompting. -Student helps others when asked for assistance.	**35 points** -Student usually clears desk, places research materials and model on desk without teacher prompting. -Student helps others when asked for assistance.	**30 points** -Student clears desk, places research materials and model on desk when asked.	**20 points** -Student clears desk, places research materials and model on desk when repeatedly asked.	**0 points** -Student is disruptive or does not participate	
3. SEMINAR PARTICIPATION.	**40 points** -Student actively challenges, debates, questions and comments in a good natured positive manner.	**35 points** -Good involvement. -One non topic conversation.	**30 points** -Moderate involvement. -A few non topic conversations.	**20 points** -Low involvement and/or poor comments or non-topic conversations.	**0 points** -Student is generally disruptive or does not participate	
4. CLEAN-UP.	**40 points** -Student earns a 90% grade or better on clean-up tasks.	**35 points** -Student earns a clean-up score between 80% and 89.5%.	**30 points** -Student earns a clean-up score between 70% and 79.5%.	**20 points** -Student earns a clean-up score between 60% and 69.5%	**0 points** -Student earns a clean-up score between 0% and 59.5%	
					TOTAL GRADE	

Maryland Technology Education Going Digital

Sam Ellis

Research was conducted at the University of Maryland Eastern Shore in the fall of 2001 and the spring of 2002 to determine if Maryland technology education teachers were interested in an online curriculum resource. The basis for this research came from feedback of participating teachers in the Technology Education Leadership Project (TELP). This researcher found that teachers were very receptive to learning what other teachers were doing in their classrooms as well as sharing what they were doing with others.

The Internet has allowed teachers to share what they are doing at a level that is unprecedented. If a person was to enter the keywords "lesson plan" into an Internet search engine such as *Google*, or *Lycos*, they would find millions of pages returned. In addition to individual lesson plan pages, there are numerous websites that post teacher-created lesson plans. This researcher spent a great deal of time evaluating several of these sites. The vast majority of material that is available is written by and for the core subject area teachers. There was very little technology education material available and much of what was termed "technology education" dealt with computer technology. An additional problem with many of these sites is that there is no quality control (B. Valesey, *Personal Communication*, November 19, 2001). Most sites serve only as a repository for teachers to post their lessons with no proofreading required or professional review for accuracy of information.

As a result of this researcher's participation in TELP and other professional development programs, a need was identified for the dissemination of quality technology education materials that focus on Maryland's unique instructional requirements (i.e. Maryland learner outcomes, core learner goals and core technologies). Through the graduate program at the University of Maryland Eastern Shore, this need was studied more thoroughly.

A review of existing literature proved to be a difficult task. This researcher could find very few studies done on similar topics. One study done by Robert Wicklein identified the critical issues facing the field of technology education. His research, published in the *Journal of Technology Education*, identified curriculum development as an important issue. Wickelin stated that the need of a formal knowledge base was fundamental to the future of technology education and recommended that, ". . .standards need to be established at a national level and implemented at the state and local school levels." (Wickelin, 1993).

Two Internet-based projects were identified by this researcher as relevant to this research, the Pennsylvania Education Digital Object Repository (PEN-DOR) and the Gateway to Educational Materials (GEM). Both services sought to provide teachers with a centralized location for searching for curriculum materials. The PEN-DOR project was geared towards Pennsylvania teachers while GEM was an international program. At the time of this research, the PEN-DOR project was not operational, but the GEM website was online. In an effort to find out more information about PEN-DOR, the individual identified as one of the creators of the site was contacted via email. He replied saying that he was no longer with the project and that to the best of his knowledge, the service was not online.

Methodology

This researcher sought to answer three research questions:

- Is there a need for an online resource for technology education curriculum materials that is geared towards the Maryland School Performance Program and High School Assessment?
- What elements should be included in the curriculum materials?
- Are teachers willing to submit lessons themselves?

To answer these questions, a survey instrument was developed and mailed to the TELP teacher leaders. It was designed to determine the teacher's current planning habits, opinions about what elements should be in a lesson plan and whether they would use and/or contribute to an online curriculum resource.

Findings

Thirty-eight (38) of the eighty (80) TELP teacher leaders surveyed responded yielding a 47.5% return rate. Results showed strong justification for the development of an online resource for Maryland's technology education teachers. While 86% of the teachers responding to the survey said that they use the Internet when planning a lesson, 89% indicated that there were only "some" or "very few" technology education lesson plans available online.

In an effort to gauge what teachers wanted from a lesson plan resource, a question was asked, "If you were looking for a lesson plan on a topic that you knew very little about, what elements would you like to see in a document?" Teachers were given a list of sixteen lesson plan components and were given the choices of "definitely", "maybe", and "no" to indicate if they would want them in a lesson plan. While all items had positive responses, the top five were a materials list, detailed activity directions, background information, math and/or science concept, and handouts. There were no lesson plan elements that received more than five teachers indicating that they would not want them in a lesson plan (Figure 1). Teachers were asked to indicate their opinion of the need for an online resource for technology education lesson plans with the elements listed in Figure 1. Responses were based upon a six-point Likert scale with a "0" indicating they felt there was no need for such a resource and a "5" indicating that they felt there was an immediate need for one. Eighty-three percent (83%) of the teachers responded with a "4" or a "5" indicating strong support for developing this resource.

Technology Education Association of Maryland

Excellence in Education Awards Banquet
Thursday, October 17, 2002

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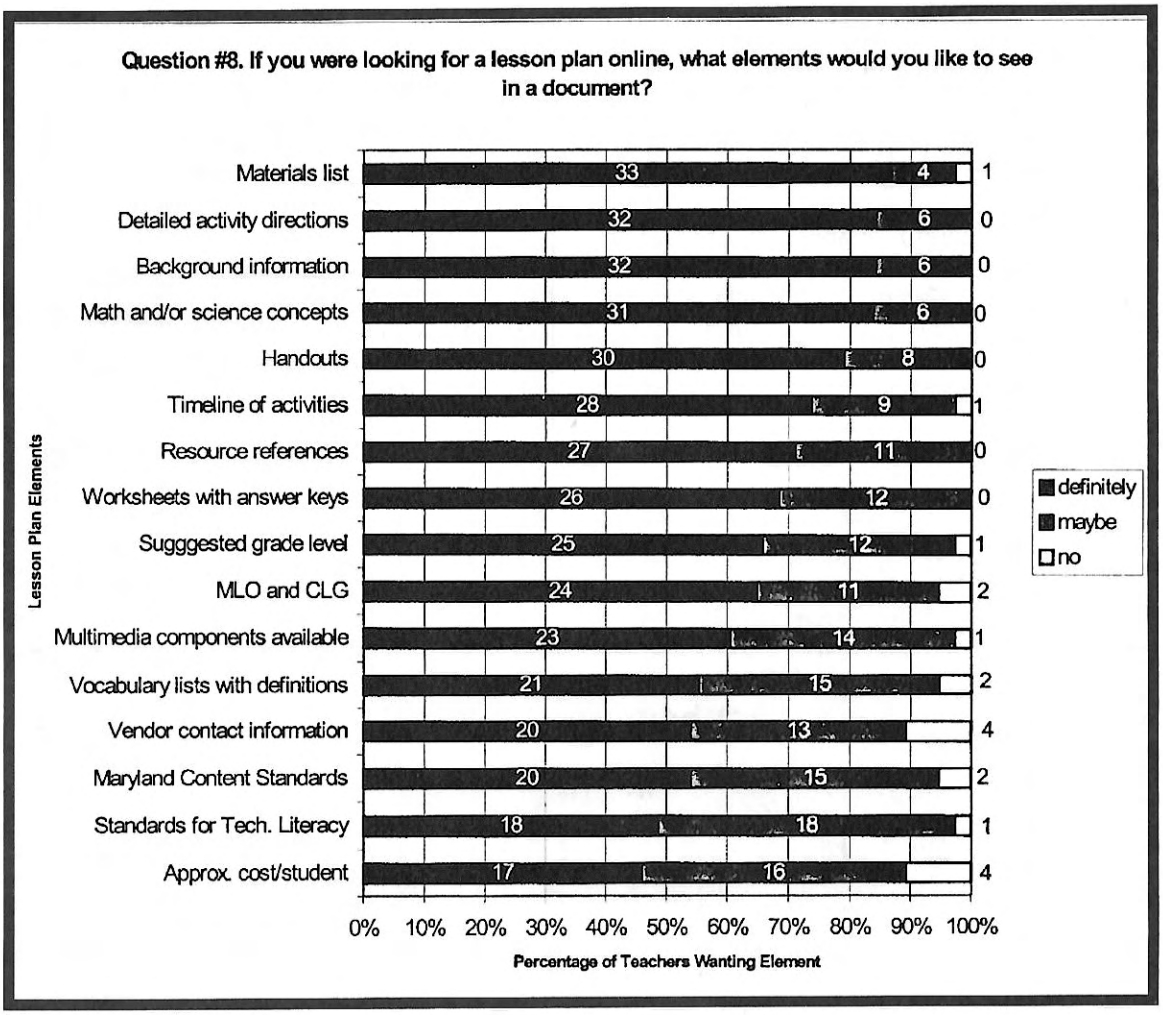
Join us in honoring Maryland Technology Educators

Figure 1



Margaret Leonard Retires from Baltimore Museum of Industry

Technology education in Maryland has benefited greatly from the contributions of Margaret Leonard of the Baltimore Museum of Industry and the Maryland Engineering Challenges. Margaret has decided to take an early retirement at the end of August to spend more time with her husband, Rod, and their family. They will return to her native England in the next few years. She will be greatly missed as she has been a dedicated and creative part of our technology education family.

Beginning her affiliation with the BMI as a volunteer in 1992, she then became a staff member attached to the Maryland Center for Career and Technology Education Studies. In 1999 she was appointed the Director of Education and led that department until the Museum asked her to head a new department, Special Programs, in 2001, which focused on specific areas that might help the Museum increase attendance. It was a challenge and she rose to the occasion.

Under Margaret's leadership, the Museum's programs for girl and boy scouts were expanded and the summer day camp (Camp Widget), a senior tour program and an after-school care training program (Design-It) were put in place. She did all of this while continuing to coordinate the Maryland Engineering Challenge Program.

Her dry English wit, her careful attention to detail, and her extremely analytical mind served her well and has made the annual Maryland Engineering Challenges one of the top engineering problem-solving events in the nation. Margaret and Rod have been regular supporters and attendees at most TEAM events and we hope to see them at these events in the future. All of the technology education community wish her well!

Maryland Technology Teacher

Journal of the Technology Education Association of Maryland

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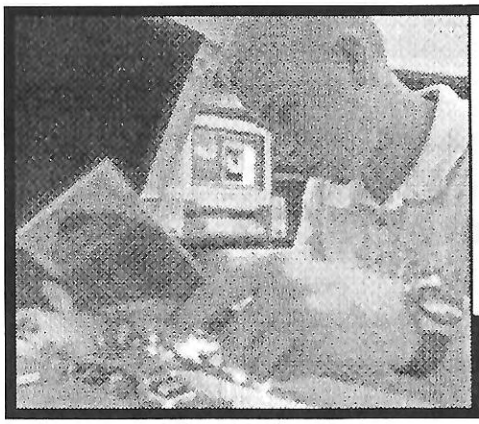

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Secondary Technology Education Teachers as Change Agents for Elementary Technology Education

Lawrence Ryan

In education today there is increasing urgency to make teaching and learning more authentic and relevant. Existing elementary technology education activities provide young learners with opportunities for authentic learning across the curriculum. The good news is that young children are motivated by these activities and relevance is given to their reading, math, writing, and science by them.

The Maryland State Performance Assessment Program, (MSPAP) measures how well students relate and use knowledge from different subject areas and how well they apply what they have learned to solve real world problems. For example, a traditional assessment might test a student's ability to calculate a perimeter; a performance assessment, such as MSPAP, might test his/her ability to use perimeter calculations to design a garden.

While the MSPAP tests have been in existence for about 10 years, they now are being changed. Many think that while MSPAP has had some success measuring the strength of schools' instructional programs, they have not been as effective measuring what individual students have learned. Whether, in fact, the MSPAP tests have served the purpose of helping students to apply their knowledge, thereby increasing depth of understanding and relevance, is still a question. What is not a question is that giving students opportunities to use knowledge in "contextual" circumstances not only brings relevance of learning but clearly enhances student's depth of understanding. These new understandings are the foundations of constructivist theory (where knowledge can provide a platform or point of reference from which students can construct new meanings and new knowledge). Elementary technology education activities are providing young students with these opportunities for learning.

For close to 100 years, through the progressive influence of John Dewey on manual training, industrial arts, and now technology education, practical solutions to problems through the integration of knowledge have been sought. The ability to integrate math and science began with Bonser and Mossman in 1923. The idea, which had its roots in John Dewey's progressivism influence, has continuing effects on what technology education is today.

As a student and a teacher of technology education, this writer is familiar with the problem solving activities that incorporate multiple content areas. That existing curriculum in elementary technology education has not been more widely used as a means for thematic instruction is surprising. For that reason, a research effort to find the attitudes of elementary school teachers toward implementing technology education activities was begun. A survey was conducted in and it was found that attitudes were very favorably inclined toward providing technology activities. It was indicated that attitudes were even more favorable in 2002 after an in-service on elementary technology education activities was provided. This research on the attitude of elementary teachers toward elementary technology education activities was conducted over a period of six months. The before-after questionnaire design pivoted on an in-service provided by an accomplished first grade teacher from St. Mary's County. After the in-service, the same survey was given to the teachers. The data indicated a more positive attitude toward the use of technology education activities after the in-service.

Technology education, with its history of hands-on learning, is poised to take on a greater role in elementary education for other reasons as well.

Technology education promotes technological literacy and the ability to integrate learning from all of the traditional subject areas. Since elementary teachers are natural integrators of curriculum, it seems appropriate to have elementary teachers use technology education activities. The problem arises when elementary educators are bound to existing curriculum practice that is difficult to change. In addition to the reluctance to

change practice toward providing integrated learning experiences, elementary teachers lack training and background in the use of technology education activities. (Todd, 1997)

Because secondary technology education teachers are accustomed to making connections to other areas of study in the process of solving problems, they also can take on a greater role in helping to implement elementary school technology education. In the best interest of the profession, technology education teachers can provide the much-needed support to elementary teachers to help them to start using technology education activities that provide themes for the integration of instruction.

There are many justifications for secondary teachers providing help and support to elementary teachers to begin the use of thematic technology education activities. They are:

- Vars 1965 study (as cited in Kathy Lake, 1994) reports that motivation for learning is increased when students work on "real" problems, a common element in integrated programs. When students are actively involved in planning their learning and in making choices, they are more motivated, reducing behavior problems.
- Secondary teachers have the resources, the tools, the materials, and the knowledge that can be shared to help make elementary teachers have confidence and success with "hands on" technology activities.
- Almost every teacher has experienced the feeling that "there just isn't enough time to get it all in" or "the school day just isn't long enough for all that I'm supposed to do; it seems that every year there are more things added to the curriculum." This feeling of frustration is one of the motivations behind development of an integrated curriculum. Teachers see this as part of the solution to the requirements that pull teachers in different ways. (Lake, 1994)
- Thematic activities are helpful to teachers meeting the increasing diversity of students and their learning styles and abilities.
- A first grade teacher at Hollywood Elementary School in St. Mary's County Maryland, along with her supervisor, have developed in conjunction with the Maryland State Department of Education a series of six comprehensive activity binders.
- The schools that are incorporating the activities developed by the St. Mary's County team and the Maryland State Department of Education are performing at a high level on the MSPAP tests.
- The attitudes of teachers toward implementing these technology activities were shown to be very favorable. Elementary teachers desire to use these activities!
- Elementary school teachers are generally very effective with reading, writing and math, but when it comes to technology activities and fixing things and working with tools, they will welcome the help.
- The establishment of elementary technology education programs in the local school system will enhance the quality of the secondary programs. Students will have an early start on technological literacy needed to succeed in a changing world.
- Perhaps most significantly, technology education can take the place it deserves as one of the core subjects in school curriculum. As a result, technology education teacher training programs will grow, and technology teachers will ensure their future significance as contributing members of instructional teams across the nation.

There may be other individual reasons why secondary technology teachers can assist in the development of elementary technology education programs. The best one is simply that it helps kids to learn and to enjoy learning.

The question now is how can secondary technology teachers effectively assist elementary educators in implementing technology education activities?

The research question was asked: Will the attitude of elementary teachers toward technology education change after an in-service on selected activities? The results of the research indicated a shift in teacher attitudes towards technology activities. The in-service provided became an important part of the research effort, and in the opinion of the researcher, served to begin a commitment by those in-serviced toward the implementation of technology education in their school. It was by planning and developing the in-service at the elementary school that this researcher was able to effect the changes in elementary teacher's attitudes. There was a follow up visit by five elementary teachers and two high school teachers to the first grade classroom of the teacher who was the in-service presenter. The professional day for the teachers was funded by a grant providing each teacher with

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reimbursement for a substitute and with money for start-up materials.

The implementation of technology education activities does not automatically begin by planning an in-service, however. The vision for implementation requires a collaborative effort with a sustained leadership and commitment from supervisors, principals, and teachers alike. Although more research is needed to help identify some of the obstacles to implementation, leadership for implementation of elementary school technology education from secondary technology education teachers can help to advance the change. This does not mean that implementing technology education can happen automatically given this prescription. What it says is that when teachers are led by visualizing technology education in their future, sustained change efforts that provide for teachers' needs to meet that goal will result in success.

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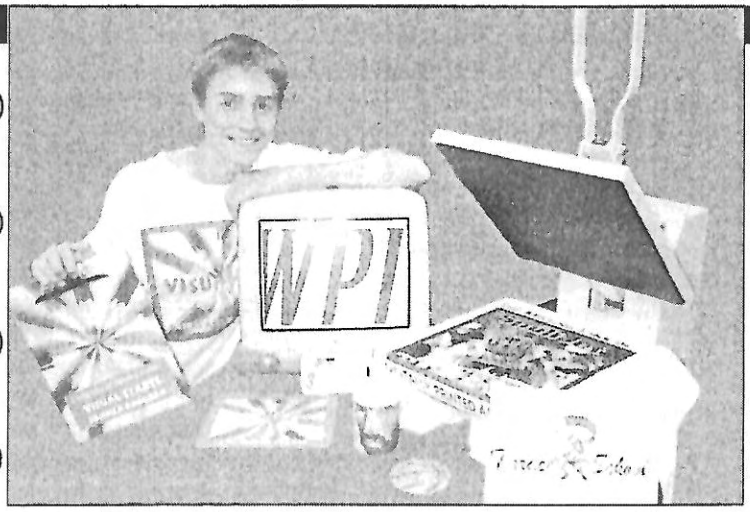

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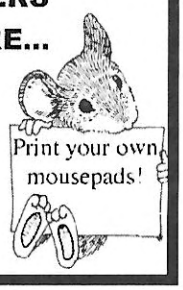

Trends in the Commercial Practice of Graphic Design: A Concern for CTE Programs

H. Clay Reister IV

This article is based on recent research conducted by the author in an effort to inform the design of career and technical education curriculum in graphic design. While the study was primarily concerned with the practices of graphic producers in a limited geographic region, the author feels that the results will support generalization.

Having recently accepted a position as the graphics instructor at the local Career and Technology Education Center, the author was concerned with the design of the curriculum in the graphics program. Despite the author's commercial and educational experience in the field, he needed up-to-date information on several topics before he could make thoughtful adjustments to the program's design.

The first concern was what skills to cover to best prepare students for entry-level jobs inside the local community of graphic employers. The potential employers were asked to rank fifteen (15) competencies on their importance to an incoming employee. The next issue was that of matching the technology tools in the program to those used in the industry. The employers were also asked to identify both their computer hardware systems and the specific applications they used as primary production tools.

Design of the Study

The study was designed to survey all the commercial graphic employers within a one-hour commute of the communities the students lived in. The resulting study included about 114 firms. Signs shops, newspapers, graphic design services, screen printing shops, printers, publishers, advertising agencies, and Internet web services were all included in the survey.

Results

Out of the fifteen competencies the potential employers were asked to rank in importance, basic design skills were most highly prized. More important than any ability with a specific tool, the student's ability to design effective and esthetic layout was the most highly ranked competency. Sixty-one percent of the respondents ranked this most important. The second place competency (38%) was the student's ability to import a variety of digital or digitized elements into a whole product using software applications. The third ranked competency (36%) was the ability to manipulate photos and graphics using digital technology. Fourth place (23%) went to knowledge of color principles, relationships and psychology. The fifth place skill was digital drawing or the ability to produce original graphics using a digital drawing program. The sixth competency dealt with desktop publishing.

The Tools Of The Trade

The queries regarding computer production tools lead to some useful information about equipment. There was a balance between Mac and PC- based platforms. About 41% of them used Mac-based systems exclusively and another 41% used only PC-based hardware. Eighteen percent of the panel ran both Mac and PC-based machines in their operations. Less than 1% listed "other" in the hardware category and they further qualified that with a statement about Unix that they are probably running on an IBM or PC platform.

The information obtained on software was more definitive. Of the 22 applications offered as options in the survey, Adobe Photoshop was clearly the program to know for students entering the workplace. Eighty-two percent of the survey panel listed Photoshop among their primary production tools. Adobe's Illustrator was a close second at 72%. Quark Express was third, being used by 48% of the employers surveyed. Microsoft Word came in fourth in 43% of the firms. At 30% there was a tie between Corel Draw and Adobe PageMaker

As expected, there were a sizable number of write-ins in the software category. These were primarily programs designed to drive specific tooling such as vinyl cutting plotters, large pattern plotters, robotic routers, metal brakes, and even embroidering machines.

Everyone who responded to the section on future trends highlighted the increasing importance of technology-driven tools in their respective industries. Many of the experts who have written articles and books regarding future trends in the graphic industry cited a growing interest in web-base design and display. One firm mentioned a "paperless work flow". A couple of respondents used the extra space to drive home their concern for the importance of basic design competency as an issue transcendent of other technological experience.

The population surveyed was dominated by smaller shops with 88% of the firms polled employing 6 or fewer people. Eleven percent employed more than 6 people. Taking the median value for each responding firm this represents about 170 jobs.

Conclusions

Despite the fact that paper and pencil skills were not highly valued by most of the respondents, clearly, they all expected newcomers to have a solid background in design apart from the technology tools themselves. Teaching students the basics of design is the chief priority. This will require some stepping away from the focus on the high tech tools to accomplish. This will also require students to develop substantial sketching and drawing skills outside of the use of technology. It is also clear that students' experience with the most widely distributed of the technology applications in the industry is another high priority of instruction. The successful program in graphic design must provide in-depth instruction in frontline production tools like Adobe, Photoshop and Illustrator, Quark Express, and Microsoft Word. An additional effort needs to be made to provide students an exposure to the increasing variety of programs that run or interface with production hardware of various designs such as plotters, vinyl cutters, routers, and metal breaks.

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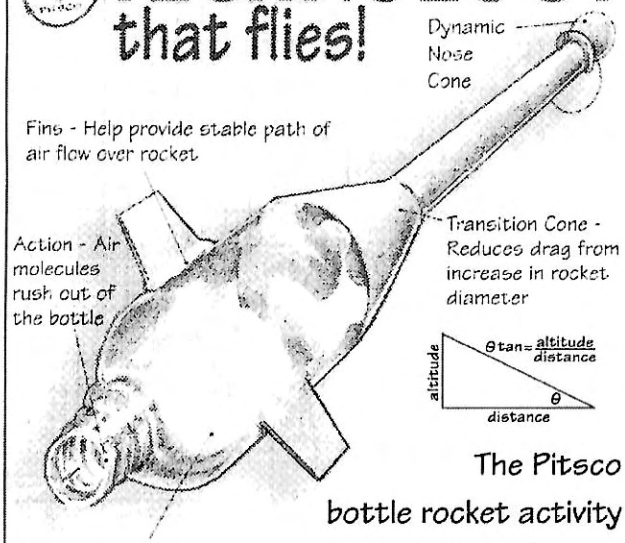

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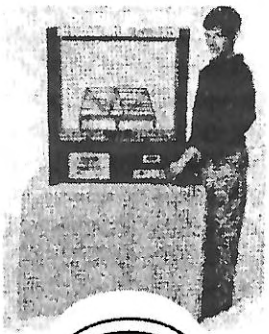

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The Technology Educator's Bookshelf

State of the Union A Century of American Labor
By Nelson Lichtenstein
Princeton: Princeton University Press, 336 pp, 2002,
$ 29.95.

This book is an outstanding treatment of the union component of the labor movement since the World War I era. In the center of the dilemma confronting American Labor, from the beginning of the twentieth century, has been the conflict between attempts to maintain a democratic citizenry in light of industrial growth and management's desire for a hands-off approach. President Wilson, in 1919, aptly put it in this way: ' ... how are the men and women who do the daily labor ... to obtain progressive improvement in ... (their work environment?). ' He went on to state that ' ... all reform ...must be genuine democratization of industry, based upon a full recognition of the right of those who work, in whatever rank, to participate ... in every decision which directly affects their welfare. ' The issue persists even today.

The notion that the norms of a democratic society should be the basis of control in the workplace is not supported by law, managerial ethos, or opinion-forming experts. The unions, from the earliest origins in America, have had to exist within the conflicts inherent with this milieu. As a result, they have waxed and waned over the past century. The author explains that the Progressive labor controversy has two components that have existed from its earliest times. First was the need to come to terms with wage labor (in place of artisan work that paid for products made). Union members, at the same time, assumed that apolitical and moral value was included with the price of their labor. This notion was in direct conflict with the belief by others that the reward for labor was based on the natural laws of supply and demand. In other terms, the dichotomy occurred between citizenship rights and privileges, and the power of concentrated capital. Lichtenstein skillfully points out throughout the chapters, in a non-biased manner, that this conflict between these two contradictory points of view continues to the present time.

The ongoing tension generated between these elements in society has resulted in the rise and fall in the popularity of unions throughout the decades of the twentieth century. World Wars I and II marked periods in which the organized labor movement gained considerable strength because of the perceived importance of industrial workers during those eras.

Of interest is that unions endorsed and encouraged patriotic actions during times of war, which helped to increase their popularity (and enrollment). The members of the labor movement tripled during and immediately after World War I. This is true as an outcome of World War II also. Organized labor reached its peak by the end of that period. The economy was robust between 1947- 73 to the extent that living conditions and wages of the working class doubled. The members endorsed wage and hour laws, Old Age Insurance, unemployment compensation, and publicly financed health insurance.

Perhaps in response to the emerging laws pertaining to discrimination and racial prejudice, the unions belatedly began to change their treatment of minority groups. In earlier times, women, immigrants, African Americans, Hispanics, and other racial groups were openly barred from union type jobs. Gradually, in response to legal mandates, these prohibitions were eased, although individual prejudice continued to exist in the workplace. Perhaps to avoid the various legal requirements dealing with health and other worker benefits, many

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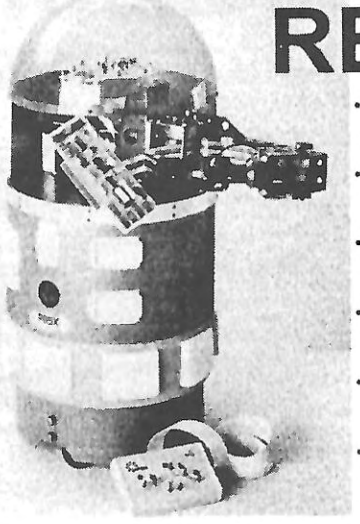

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organizations have resorted to using temporary part-time employees who often receive minimum wages and few benefits. This trend has kept the standard of living from going up in recent years.

Chapter seven offers a ray of hope for the future of organized labor. A greater number of women and minorities are gaining positions in the country's largest unions, including the AFL-CIO. Another significant development is the increasing demand for improved labor standards and quality across the board. Major movers in this effort are municipalities (such as Los Angeles and Washington) and single large institutions (universities and multinational industries). These events have encouraged the emergence of radical unions in urban areas and have enrolled traditionally underrepresented populations. The author noted that elements of the population once kept out of unions are now taking charge in many places.

This book presents a difficult story of an institution that has waxed and waned since its origins. One can sense the promise of 'better things to come' with the advent of the new unionism. The book is well written with virtually no jargon. For those interested in delving further into the history of unions, Lichtenstein provides excellent documentation through 46 pages of chapter-by-chapter notes. This is accompanied by a good Index. Those curious about the history of unions will find it interesting.

Lynne Gilli/Angelo C. Gilli

House Bill Contains Technology Funding

HR 1858, The National Mathematics & Science Partnerships Act was passed by the House of Representatives, and although it's primary purpose was to improve mathematics and science education, it contains support for technology education.

S 1262, which has not yet been passed, contains similar legislation and is a similar effort that also covers technology. For example, both bills are for mathematics and science teachers, but the definitions section contains the following description: "The term 'mathematics and science teacher' means a mathematics, science, or technology teacher at the elementary school or secondary school level."

Both bills contain funding for science enrichment for girls. However, the description for outlining the program includes mathematics, science, technology and engineering. The bills also contain information for funding the national digital library system. ITEA has received that funding for its ICON project that is building a digital library full of resources for technology teachers. Individuals interested in legislation and helping to get this funding directed toward technology teachers should contact their elected officials in Washington D.C. and encourage them to support both bills! This work is a part of the continued ITEA legislative effort to get more technology included in mathematics and science legislation.

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Hear no... speak no... see no... Technology Education

Patrick Lieb

Students and parents don't appear to share the same meaning of technology education based on the limited communication techniques that have been utilized in the classroom. As a result of inadequate communication between students, parents, and the instructor, student behavior problems increased while less than desirable learning was taking place. A plan for improving school-to-home communication was needed to bring the students, parents and instructor together so technology education expectations and achievement would align to meet the needs of a productive learning environment.

Many researchers, practitioners, and policymakers in education have documented the importance of parent involvement. A significant body of research (Henderson and Berla, 1994; Olmstead and Rubin, 1983) has indicated that when parents participate in their children's education, the result is an increase in student achievement and an improvement of students' attitudes. Increased attendance, fewer discipline problems, and higher aspirations also have been correlated with an increase in parent involvement. The positive effects of increased parental involvement have been known for some time (Henderson and Berla, 1994). Epstein (1983) reported that when teachers were committed to increasing parent involvement, the parents felt that they should help their children at home, understood more about what their child was being taught in school, were more positive about the teacher's interpersonal skills, and rated the teacher higher in overall teaching ability.

In the Spring 2002, an action research project was conducted to develop an interactive family learning activity for technology education in middle school classes. The purpose for developing this learning activity in technology education was to increase school-to-home communication. In order to understand school-to-home communication issues, student and parent surveys were administered. An attitude inventory survey instrument was used to identify school-to-home communication and involvement factors. The instrument was adapted and modified from an instrument used by the National Parent Teacher Association and the Center on Families, Communities, Schools and Children's Learning at The Johns Hopkins University. The students and parents provided opinions about parent involvement and evaluated the format of a technology education family learning activity.

The data was analyzed and a narrative description of the responses demonstrated that parents and students reported that the format for a technology education family learning activity was effective toward improving communication between students, parents and the teacher. Adjustments to the learning activity will continue as it is used for improving school-to-home communication between the instructor, students and parents.

As a result of the findings from this action research, further study is needed to develop additional family learning activities for technology education classes to continue improving parent involvement and school-to-home communication. If technology education is not heard and spoken by students and their parents, then the vision of technology education will lack the focus necessary to involve parents in the process of allowing students the opportunities to become technologically literate.

Technology Education Family Learning Activity

What is Technology Education?

In technology education class students have been discussing and discovering the definition and terminology of technology education. To reinforce their knowledge, students will inform their parent(s) regarding what they know about technology education.

Objective of this assignment:

Student should discuss with a parent the definition and terminology of technology education and then write an informative description of the meaning of technology education.

Activity:

What is Technology Education?

The student should discuss with a parent the definition of technology education. Use your notes and knowledge from technology education class. After the discussion, the student should write a summary of the discussion to explain the definition of technology education.

(Students should be able to explain the definition of technology education based on their classroom notes.)

Please complete the following tasks:

1. Student should discuss with their parent the definition of technology education, then write to explain the meaning of technology education.

2. After the student/parent discussion, the student should request that the parent call (teacher's name) between 3 p.m. and 8 p.m. at (teacher's home phone number) or (school phone number).

3. If (teacher' s name) is unavailable, please leave a message.

4. Student should return this paper by (due date) with both the student and parent signatures.

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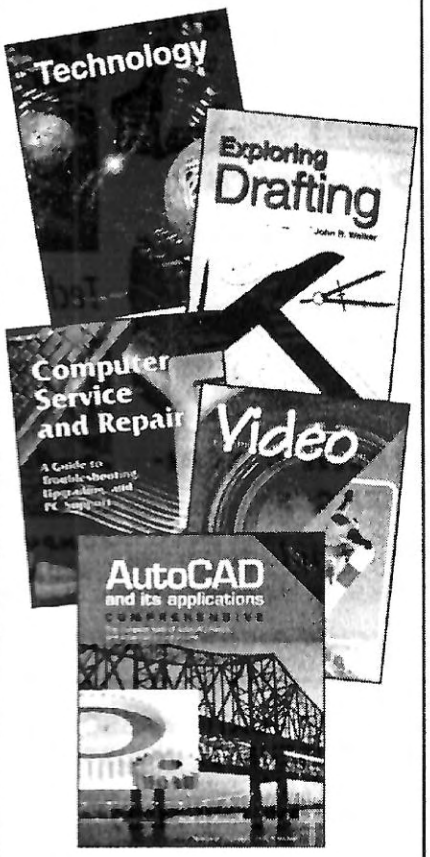

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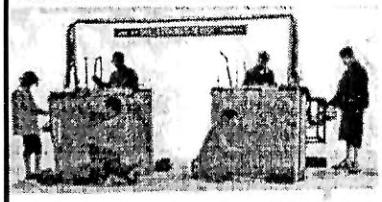

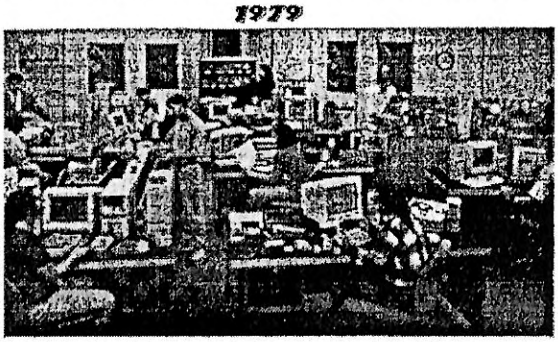

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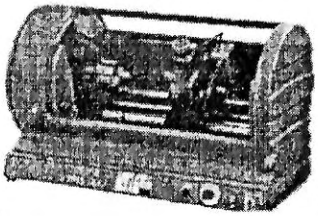
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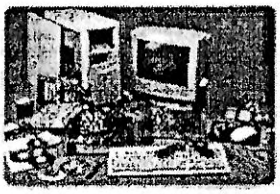
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