Critical Issues and Problems in Technology Education

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"This is our decade, we will either develop as a strong and viable instructional program or we will wither and die as an insignificant relic of a failed curriculum" (Custer, 2003). These prophetic words by the 2002-2004 president of the Council on Technology Teacher Education (CTTE) seem to be ringing more true with the passing of each school year. In these critical times it is imperative that we utilize every available resource to build and establish our field of study and to address and solve the issues and problems that we now face. Therefore, if we are to guide our profession successfully through the myriad of problems and concerns that impact us, we will need to be strategic in every decision.

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Research Goals
To address the need of identifying a comprehensive base for the critical issues and problems, research was conducted to ascertain the perspectives of classroom teachers, university professors, and supervisors of technology education. The goal of the research was to determine the critical issues and problems based on the following two (2) questions:

- What are the critical issues that are currently impacting the technology education field of study?
- What are the critical problems that are currently impacting the technology education field of study?

In order to obtain standardized information from the most knowledgeable subjects integral to this topic, survey-based research methodologies were deemed appropriate to collect data. A combination of random sampling and total population data collection strategies were employed. Stratified random sampling was used to collect data from classroom teachers of technology education. A total of 347 middle school and high school teachers were randomly selected from the four regions of the International Technology Education Association (ITEA) to participate in this study. In addition, the entire population of 132 university department heads/program leaders in technology teacher education, as well as the total population of 55 state and regional supervisors, were selected to receive the survey questionnaire. These individuals represented an appropriate cross-sectional perspective of the current needs and difficulties facing the field of technology education.

Survey Construction
The survey was divided into four (4) sections. Section 1 – Demographics – sought to collect data on the appropriate demographic categories, including instructional position, (e.g., middle school teacher, high school teacher, etc.), years of experience, gender, and age. Section 2 – Directions – explained the procedures for completing the survey and defined the terms used in the survey (e.g., Critical – high degree of importance for the field; Issue – a concern that may affect progress or development for the field; Problem – an obstacle that is preventing progress or development for the field). Section 3 – Critical Issues – sought the rating and ranking on 18 pre-identified critical issue items. Section 4 – Critical Problems – sought rating and ranking on 21 pre-identified critical problem items. Participants were asked to rate their level of agreement or disagreement on each item by using a likert-type scale, indicating Strongly Agree, Agree, Disagree, and Strongly Disagree. In addition, each participant was asked to independently rank order the top three (3) critical issues and problems that they deemed the most vital to the field of technology education.

Results
Of the 534 survey questionnaires that were mailed, 301 were completed in some fashion and returned. Five (5) surveys were incompletely or inaccurately filled out and were deemed unusable, therefore, 296 surveys, or 55%, were analyzed for evaluation. Table 1 presents the results of the demographic data collected in this study.

Participants were asked to identify their level of agreement or disagreement on each survey item. A likert-type scale was utilized to ascertain participant perspectives with 4 = Strongly Agree, 3 = Agree, 2 = Disagree, and 1 = Strongly Disagree. Table 2 represents the analyses of the overall group mean...
scores and standard deviations for the top five (5) critical issues for technology education. Each of the top five (5) mean score ratings ranged in the Agree to Strongly Agree choice.

Table 3 represents the analyses of the overall group mean scores and standard deviations for the top five (5) critical problems for technology education. Again, each of the top five (5) mean score ratings ranged in the Agree to Strongly Agree choice.

When asked to rank order the top three (3) critical issues and problems by importance and significance for the field of technology education, the participants in this study provided an interesting mixture of issues and problems. Several of the top ranked issues and problems were consistent with the overall mean scores as reported in Tables 2 and 3; however, other items surfaced as being vital to the field, yet were not evaluated highly in the mean scores ratings. Table 4 presents the rank orders for the critical issues.

Table 5 represents the analyses of the rank order for the critical problems in technology education.

There was consistency among ratings in levels of agreement/disagreement and rank orders on some of the critical issues and problems. Recruitment of students/teachers into teacher education programs was identified as the highest rated critical issue as well as the number one ranked item across all categories of technology educators (e.g., overall, middle school, high school, university professor, and supervisor). Another critical issue that had consistency both in the mean score ratings and rank order was, Identifying and procuring adequate funding sources for technology education. This item was rated as the 3rd highest critical issue and was also ranked 3rd highest on the overall status order. Conversely, Enhancing business and industry connection with technology education was rated as the 4th highest critical issue as analyzed by mean scores but was not identified by any of the educator groups when rank ordered.

The matching of rating scores with rank order for the critical problems met with much more consistency. Four (4) of the top rated critical problems were also categorized within the top five in rank order. The critical problem items, Insufficient quantities of qualified technology education teachers, Inadequate understanding by administrators and counselors concerning technology education, and Inadequate understanding by general populace concerning technology education, were rated and ranked identically (position 1, 2, 3) on both measurements. In addition, Inadequate financial support for technology education programs was rated as the 5th most important critical problem and ranked 4th most significant critical problem.
Table 4
Rank Order of Critical Issues in Technology Education

<table>
<thead>
<tr>
<th>Critical Issue</th>
<th>Rank Order</th>
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</thead>
<tbody>
<tr>
<td>Recruitment of students/teachers into teacher education programs</td>
<td>Overall: 1</td>
</tr>
<tr>
<td>Curriculum design and development for technology education</td>
<td>Overall: 2</td>
</tr>
<tr>
<td>Identification of a knowledge base for technology education</td>
<td>Overall: 3</td>
</tr>
<tr>
<td>Positioning technology education within the whole school curriculum</td>
<td>Overall: 4</td>
</tr>
<tr>
<td>Identifying and procuring adequate funding sources for technology education</td>
<td>Overall: 5</td>
</tr>
<tr>
<td>Integration of technology education with other school subjects</td>
<td></td>
</tr>
<tr>
<td>Revisions and development in technology teacher education</td>
<td></td>
</tr>
</tbody>
</table>

Table 5
Rank Order of Critical Problems in Technology Education

<table>
<thead>
<tr>
<th>Critical Problem</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient quantities of qualified technology education teachers</td>
<td>Overall: 1</td>
</tr>
<tr>
<td>Inadequate understanding by administrators and counselors concerning technology education</td>
<td>Overall: 2</td>
</tr>
<tr>
<td>Inadequate understanding by general populace concerning technology education</td>
<td>Overall: 3</td>
</tr>
<tr>
<td>Lack of consensus of curriculum content for technology education</td>
<td>Overall: 4</td>
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<tr>
<td>Inadequate financial support for technology education programs</td>
<td>Overall: 5</td>
</tr>
<tr>
<td>Increased high school graduation requirements impacting on technology education programs</td>
<td>Overall: 3</td>
</tr>
<tr>
<td>Inadequate marketing and public relations of technology education</td>
<td></td>
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<tr>
<td>Resistance to change in technology education</td>
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Conclusions
Each of the critical issues and problems identified in this study bears further investigation and possible action to correct the crisis. Clearly, some of the issues and problems are more critical to specialized groups, at certain times, and in particular locations. However, other issues and problems are serious and systemic to the entire profession of technology education. Some actions will require the efforts of literally every person involved in the profession, while others will need to be addressed by a select group of educators. The crux of the matter is that strategic actions by technology educators at all ranks are needed if the profession is to take its rightful place within the school curriculum.

The most obvious conclusion from this research is the concern and crisis over the insufficient quantities of qualified new technology educators entering the instructional ranks. As the strongest indicator in this research, the dilemma over recruitment and preparation of new technology teachers coming from university programs dwarfs all of the other concerns. Identified as the highest priority in both the critical issues and problems sections of the study, Recruitment of students/teachers into teacher education programs and Insufficient quantities of qualified technology education teachers are vital to the current and future health of the technology education profession. Without a serious and immediate effort to address these needs, the field of technology education, as we know it, will cease to exist in the short-range future.

Inadequacies seem to also plague the field of technology education. Inadequate understanding by administrators and counselors concerning technology education and Inadequate understanding by general populace concerning technology education speak to the issue and problem of confusion and misunderstanding of what technology education is about. Technology
educators commonly experience the inaccurate assumptions by professional educators and general public alike as to the goal, purpose, and activities of the field. Serious efforts need to be directed at developing a clear and distinct description of the profession that can be easily grasped and understood by those inside and outside of the profession. The common assumption held by many technology educators is that an explanation of technological literacy will suffice in describing our goals and purpose. This is a mistaken assumption that continues to confuse many decision-makers as well as the general public.

Curriculum design and development and the need for consensus of curriculum content were ranked within the top five (5) critical issues and problems; however, they were not rated (mean scores) highly in this study. In addition, funding of technology instructional programs ranked high for both issues and problems but was not rated within the top five (5) of these categories. These inconsistencies may be indicative of a separation of general needs when compared to prioritizing considerations. In whatever capacity, curriculum design, development, and consensus, along with procuring adequate financial support for technology education, remain as high needs for the field.

Recommendations

The majority of the issues and problems that were identified in this study were also evaluated as significant in similar studies conducted in 1993 and 1996 (Wicklein, 1993; Wicklein & Hill, 1996). The uniqueness of the issues and problems facing technology education at this time in its history may very well be at a point of no return, where solutions must be found if the field is to survive.

The following recommendations will serve to help guide our profession through the issues and problems facing us:

- Undertake significant efforts aimed at recruiting and preparing new technology education educators at all levels.
- Identify and communicate a clear and understandable purpose of technology education to all populations.
- Reach consensus in curriculum design and development as high priorities.
- Evaluation of this data by professional leadership to aid in future planning and focus of the profession.
- Conduct research of this type at regular intervals.

“This is our decade” (Custer, 2003); if we are to grow into an instructional field that is clear, distinct, and highly valued, it will take the efforts of every available human resource technology education has—elementary teachers, middle school teachers, high school teachers, university professors, and supervisors. We are all in this boat together.

References


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