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Hiring Technical Education Faculty: Vacancies, Criteria, and Attitudes Toward Online Doctoral Degrees

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This report is one of four phases of a broader study designed to provide background information to university departments as they consider offering online doctoral programs in technical education. The four phases encompass a study of the demand for such a program by potential students; a characterization of existing face-to-face doctoral programs in the field; a comparison of models for online doctoral delivery seen in other fields; and the present phase, an assessment of employment needs of universities and their attitudes towards hiring candidates with online doctorates in technical education. This report uses findings from a survey of higher education department chairs and program coordinators to characterize faculty vacancies at the bachelor's and master's program levels in post-secondary technical education institutions, the criteria used to hire faculty, and the attitudes toward filling those vacancies with an individual who has earned a doctoral degree through an online method of delivery.

Background

The United States Bureau of Labor Statistics (2006) reported 1.6 million post-secondary teaching jobs in 2004 and predicted this number to increase 27% or more by 2014. Retirements of faculty hired in the 1960s and 1970s to accommodate the post World War II baby boom and increased enrollment due to a growing population of college age students are cited as factors contributing to this demand (Blum, 1990; Castle and Arends, 2000; Magner, 1999; Bureau of Labor Statistics, 2006). Using data from 1997 to 1999, Castle and

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Arends (2000) looked at faculty job listings across disciplines and found “that total openings rose 34% ... [and] the number of applicants per opening decreased by 19%” (p. 8), evidence that an imbalance between supply and demand has been building for some time. They also reported a failure rate of 25% in faculty searches, attributed primarily to competition among universities for a limited pool of candidates. This excess demand for faculty over supply has continued into the current decade.

Magner (1999) suggested that a healthy national economy in the 1990s facilitated the hiring of tenure track faculty as opposed to filling open positions with non-tenure track faculty, which may be more common in leaner economic circumstances. With recent changes in the economy, the trend is shifting toward hiring non-tenure track faculty: “The number of tenure-track positions is declining as institutions seek flexibility in dealing with financial matters and changing student interest” (Bureau of Labor Statistics, 2006, Training, Other Qualifications, and Advancement, ¶12). Entry level, tenure track faculty openings at four-year public colleges and universities are most likely the first to be impacted by state budget cuts, often resulting in hiring freezes or withdrawal of positions (Smallwood, 2002). Thus, the nature of the current economy may temporarily shift the demand somewhat from tenure track to non-tenure track faculty. However as Magner noted, tenure track faculty are generally preferred when finances allow. Yet, this is not likely to offset the overall imbalance between supply and demand for all types of higher education faculty.

Hiring higher education faculty in technical education (defined here to include career and technical education, technology education, and post-secondary technical fields) has been more problematic than in many other fields. The fields of technology education and vocational education were cited by Castle and Arends (2000) as having a lower than average number of applicants per position, with vocational education also showing a much higher than average failure rate (75%) for searches. More recently, Brown (2002) noted a 32% failure rate for faculty searches in technical programs. Post-secondary vocational education teachers rank third highest (127,000 jobs) in the number of faculty jobs reported for 2004 (Bureau of Labor

Statistics, 2006). If the projected rate of increase previously noted is realized, there would be 161,000 post secondary jobs in vocational education in 2014, thus requiring 34,000 new hires by 2014 due to growth alone, not considering replacements of retiring faculty.

These demand projections are cause for even greater concern when comparing them with the supply of new doctorates in technical education. Brown (2002) noted that the number of doctorates granted in "Technical/Industrial Teacher Education" dropped from 186 in 1983/1984 to 98 in 2001/2002, with an estimated 26 to 27 of those graduates available to apply for faculty positions in technical university programs in 2002. Although many of the open positions will be in community colleges and many will not require a doctoral degree, nevertheless the current demand for faculty in this field seems to outweigh the supply, and the imbalance may become more severe if there is a growing emphasis on a doctorate as a necessary criterion for hiring higher education faculty.

In order to meet this growing demand, graduate programs must produce qualified applicants who meet the criteria used by faculty search committees. While search criteria are likely to be specific to both the field and the needs of the institution, there are often common elements, such as degrees/credentials, communication skills, teaching ability, and research potential (Carr & Tsai, 1994; Hettich, Cleland, & Jewett, 1997; and Sudzina, 1991). Brown (2002) reported that, among other search criteria in technical education, the ranking of the doctorate increased from third to first place between 1986/1987 and 2001/2002.

One aspect of the search criterion not mentioned in previous studies is the method of delivery for an applicant's doctoral degree. Recently, there has been an increase in online degree offerings, including those at the doctoral level (Allen & Seaman, 2005), although technical education seems to be a latecomer to this delivery mode. It has been suggested that one obstacle to the success of online doctoral programs is that those evaluating the credentials of faculty applicants may consider online doctoral degrees substandard compared to face-to-face degrees. In a nationwide study that spanned various fields,

Adams and DeFleur (2005) found that applicants with traditional degrees were preferred by hiring committee chairs over applicants with doctoral degrees from virtual institutions or from degree programs that used mixed method coursework. However, the field of technical teacher education is based on the use of ever-changing technology; therefore in this field, attitudes toward degree programs utilizing newer technology, such as online delivery, may not align with the findings of Adams and DeFleur.

Methods

Sample

The survey sample included department chairs or program coordinators of bachelor's and master's programs in technical education in the United States. Subjects for this study were located using the following resources: the *Industrial Teacher Education Directory* for 2005-2006 (Schmidt & Custer, 2005); a search of the 2004 directory of the National Association of Industrial Technology (NAIT, 2004); a search at the International Technology Teacher Education Association website; an online search at Petersons.com (Peterson's, n.d.); and an online search at Gradschools.com (2006) for bachelor's and master's level programs in technical education or technical fields. The searches identified a target population of 105 subjects. Verification of programs at the institutions' Websites reduced this to 94 eligible candidates. The chair or coordinator likely to be involved in the hiring practices of the department or program was then identified.

When an institution had more than one program related to technical education with different coordinators listed, the following criteria were put in place to identify equivalent contacts at different institutions: (a) Priority was given to a master's level degree. If both programs were master's level, priority was given to the education-based degree (e.g., MEd over MA or MS) if applicable. (b) If both programs were master's level and both were education based, priority was given to degrees in technology education. These criteria were used because this study is one phase of a larger project intended to characterize the appropriateness of an online doctoral program in technology

education or career and technical education. All duplications were able to be rectified using these two criteria.

Instrumentation

An anonymous, online survey was used to collect data due to its ease for respondents, its low cost, the anonymity it guaranteed to respondents, and its avoidance of data entry errors. The survey contained both closed- and open-ended items geared to determine the demographics of both the individual and the institution; the current and predicted faculty vacancies; the criteria for hiring new faculty; the factors evaluated in tenure decisions; and the respondent's perception of the institution's likelihood of hiring an individual with a doctorate that was earned online. Pilot testing of the survey instrument was performed in January of 2006. A dean, two department chairs, and one program coordinator for technical education, from four different universities, completed the survey instrument and provided feedback on its clarity, usability and appropriateness, given the objective of the study. On February 8 and 9 of 2006, following human subjects protocol approval, prospective survey participants received an Email invitation to participate. The survey was available from February 8, 2006 through February 28, 2006. Due to the ranked nature of the data, non-parametric procedures using SPSS software were performed to evaluate the data.

Limitations

The sample in this study was self-selected and therefore may not have been representative of the greater population. Also, this survey was sent only to chairs and coordinators of programs found through the means listed above, and the attitudes of the chair or coordinator may not be representative of the entire department or university. The survey was not sent to any institutions that offered a doctoral degree in technical education because these subjects were utilized in another phase of this research and the investigators did not want overlapping samples. Lastly, hiring practices and criteria change over time; therefore future results may differ from present findings.

Results

Demographics

After two surveys were discarded because the respondents indicated that they did not make hiring decisions for their universities, the overall return rate for this online survey was 30% (28 out of 94). The respondents to the survey had fairly uniform demographics. Most were employed as professors, chairs, or coordinators at colleges or universities. Each respondent made hiring recommendations for his or her institution, usually for a single department that housed multiple programs related to technical education. Most survey participants indicated that they felt it was most appropriate to respond from this department level when answering the survey. Therefore, this survey speaks to the hiring practices of a four-year college or university at the department level, for a department that houses technical education.

The respondents were asked to characterize their institutions as well as themselves. The average department size in this sample had 8.9 full time tenure track faculty and 2.9 full time non-tenure track faculty ($n = 28$). However, the standard deviations for these questions were large (7.9 and 3.6), indicating the sample contained small, medium, and large departments. The majority of the institutions in this study reportedly require a faculty member to teach either three (13/28) or four (14/28) three-credit hour courses a semester. The mean percentage for the value of the following criteria for tenure evaluations is 54% for teaching, 25% for research, and 21% for service ($n = 27$).

Twenty-two of 28 departments offered online courses. This accounts for 79% of the institutions surveyed, which is an increase in the percentage of departments in the field offering online classes from the 60.4% found by Ndahi and Ritz's (2002) study based on the 1999-2000 edition of the *Industrial Teacher Education Directory*. The average number of online courses offered per department in the current study was 5.0 ($n = 28$). However, a standard deviation of 6.9 indicates there is much variation within the sample with regards to online offerings. Survey participants were also asked how many classes their

departments planned to begin offering online within the next three years. The mean response to this question was 5.3 (n = 25). Again, the standard deviation was quite large (5.0), indicating a considerable range in the answers to this question. On average, respondents predicted their departments would more than double their online offerings in the next three years.

Vacancies

If the reported addition of online courses does not replace face-to-face courses in these programs, the predicted growth from this factor will contribute to a need for more faculty members in technical education. The sample was asked a series of questions regarding the current and anticipated vacancies within their departments. Within these departments, there is on average 1.0 current tenure track vacancy (n = 28), and 0.22 (n = 27) current non-tenure track vacancies. Anticipated vacancies within the next three years were 2.0 (tenure track, n = 28) and 0.7 (non-tenure track, n = 25). This also supports projections of a need for new faculty members. The sample was then asked, "How difficult has it been to attract qualified applicants to the last few vacancies?" The answer choices were presented on a Likert scale ranging from 1—"not difficult" to 5—"extremely difficult." The sample mean response for this question was 3.5, corresponding to "moderately difficult" (n = 28).

Respondents were asked to indicate in an open-ended item "what specific content areas or teaching specializations will likely be central to the next tenure faculty search?" Most responses indicated technical expertise in certain areas, such as "control/automation/robotics technology," "engineering technology education," and "transportation and construction." This suggests that in this sample there is a greater need for applicants who would teach courses at the bachelor's level in technical areas (compared to graduate instructors or non-technical areas, such as curriculum).

Hiring Criteria

The survey respondents rated the importance of seven criteria for hiring a new tenure-track faculty member. The criteria were ranked using a Likert scale with the following

choices: 1—"very little," 2—"little," 3—"moderate," 4—"much," and 5—"very much." The results were compared to the center of this Likert scale (3—"moderate") using a Wilcoxon Signed Ranks test. Survey respondents ranked all hiring criteria except "ability to bring in external research funding" as more important than moderate, with no significant differences ($p > .05$) found between them. The criteria "having a doctoral degree or ABD" (All But Dissertation), "ability to teach particular course work," "ability to communicate effectively," and "ability to work well with others" were ranked between "much" and "very much" in importance. "Ability to write refereed journal articles and make

Table 1

Importance for Seven Hiring Criterion—Results from Wilcoxon Signed Ranks Test against "Moderate" (3)

n = 28

Hiring criterion	Mean	z	p
A-"having a doctoral degree, or ABD"	4.68	-4.716	<0.001
B-"ability to teach particular course work"	4.64	-4.689	<0.001
C-"ability to communicate effectively"	4.64	-4.71	<0.001
D-"ability to work well with others"	4.64	-4.66	<0.001
E-"ability to write refereed journal articles and make refereed presentations at conferences"	3.71	-3.47	0.001
F-"ability to provide service to the profession, nation, region, locality, or institution"	3.64	-3.045	0.002
G-"ability to bring in external research funding"	3.21	-1.734	0.083

refereed presentations at conferences,” and “ability to provide service to the profession, nation, region, locality, or institution” ranked between “moderate” and “much” in importance. The high importance of the doctorate and the ability to teach specified coursework confirms the rankings of criteria found by Brown (2002). However, Brown’s study did not find communication skills and the ability to work with others to be important, although their importance has been identified by studies in other fields (Hettich, Cleland, & Jewett, 1997; Sudzina, 1991), as well as in the present study.

Attitudes toward Hiring Online Doctorates

Suspecting that the field of technical education might exhibit the same reported reluctance to hire candidates who had earned their degrees online that Adams and DeFleur (2005) found, respondents were asked, “Do you believe your institution would be less likely or more likely to hire an individual to a tenure track position because their doctorate was earned through an online program?” A parallel question was asked regarding a non-tenure track position. Respondents ranked their answers on Likert scales between 1—“much less likely” and 5—“much more likely” with 3 assumed to be neutral. A Wilcoxon Signed Ranks test against neutral (3) was performed to analyze the data. As shown in Table 2, the sample was significantly less likely to hire an individual to either a tenure or non-tenure track position because his or her doctorate was earned online, confirming Adams and DeFleur’s findings.

Table 2

Likelihood of Hiring an Individual with a Doctoral Degree Earned Online—Results from Wilcoxon Signed Ranks Test against Neutral (3)

n = 27, 28

Track for new Hire	Mean	<i>z</i>	<i>p</i>
Full-time Tenure	2.1	-3.348	0.001
Full-Time Non-tenure	2.4	-2.769	0.006

The Likert scale answers to the question concerning hiring a tenure track candidate with an online doctorate were dichotomous, with only a few answers other than 1—“much less likely” or 3 (assumed to be neutral). The respondents were also asked to indicate the main reason for their choices. Among those who answered “1,” the overwhelming sentiment was that online programs are not thought to have the quality of a face-to-face program, and that an online program cannot develop the types of personal skills a professor needs. Two telling quotations are:

- Online programs do not provide for the personal interactions of a classroom environment that enrich one's preparation nor do online programs encourage development of personal/social interaction skills.
- We value the Ph.D. experience that a student receives in a formal Ph.D. program. Research is too important to our new faculty to take a chance on them learning research techniques on line.

As the following responses indicate, among those who answered “3,” the most common sentiment was that the method of delivery for the doctorate was not important, so long as the degree was earned at an accredited institution and was of sufficient quality:

- How the degree was obtained is less important than the credibility of the degree and the granting institution.
- Doesn't matter the delivery...the content is what matters.

In answering the item regarding filling a non-tenure position with a candidate whose degree was earned online, responses were a bit more diverse, but still with a large number of 1—“much less likely” and 3—(assumed to be neutral) responses. The attitudes expressed for a non-tenure hire were very similar to those provided for a tenure hire, with the majority of responses being “same as above” or a comparable statement referring the investigators to the tenure question's explanation.

Respondents' Comments

Lastly, the respondents were reminded that the purpose of the survey was to investigate the perceived need for new

faculty hires in technical education, and respondents were asked to provide other comments that would help inform the investigators of their opinions. There were very few of these responses and most were in support of an online doctoral program, which is not what the investigators have deemed the majority opinion of the sample. A few examples are: Online degrees from accredited programs will serve a real niche demand. We want people with solid technical backgrounds and these are often people who aren't in a position to do full-time residential doctoral programs. The key will be to create truly well-devised and rigorous doctoral programs.

- New hires who have experience with distance education (curriculum development or participation) will definitely be more valuable to a department than those who only have traditional classroom experience.
- Will be a growing need.

There was one response that seemed characteristic of the negative feelings found in this study toward hiring an individual with an online doctoral degree:

- ...At one time I personally was interested in an online doctoral degree but the “low- value” placed on this type of degree from our administration has been a deterrent.

Summary and Conclusions

There are job openings in technical education at the post-secondary level. The survey reported an average of one tenure track faculty vacancy per department, with respondents estimating two vacancies per department over the next three years. Given an average department faculty of about nine tenured or tenure track faculty members, two tenure track openings within three years represents an annual department faculty hiring/replacement rate of about 16%. (It should be noted that faculty openings are not synonymous with “a perceived need for additional faculty,” since job openings are dependent on funding, and it is likely that faculty are needed in some programs where there may be insufficient funds to hire new faculty.) There was moderate difficulty reported in attracting qualified applicants. Both the number of vacancies and the difficulty in attracting

applicants provide evidence of a need for the greater production of qualified applicants.

Faculty hiring criteria reported as more-than-moderate in importance included preparation (i.e., “having a doctoral degree, or ABD”) and skills in teaching, communication, working with others, authoring articles and presentations, and providing service. However, the ability to attract external research funding was reported to be of moderate importance, a finding likely linked to the fact that the survey targeted programs at the bachelor’s and master’s, rather than doctoral, levels.

This online survey uncovered a bias against hiring an individual with an online doctoral degree to teach in technical education undergraduate and master’s programs. This confirms the findings of Adams and DeFleur (2005) and extends their findings into the field of technical education. Additionally, it also confirms findings of a concurrent phase of the present study (Flowers & Baltzer, 2006) in which those who have completed a face-to-face doctoral degree were found to be less likely to consider an online doctorate as a valid option. In these studies, the most prominent issue was the perceived lack of quality of online doctoral programs.

Currently there are means of promoting the quality of an online program. The Higher Learning Commission (n.d.) developed accreditation standards specifically for online programs. However, evidence from this study has revealed that this accreditation process will not be enough to ensure that an individual with an online doctoral degree is evaluated equally when applying for a professorship alongside a similar candidate who earned a doctorate face-to-face.

This survey uncovered negative hiring attitudes for candidates with online doctorates. Hiring attitudes that disfavor candidates with online degrees should not change if they are well-founded. However, if they are based on insufficient or incorrect data and can be shown to be inaccurate, measures should be taken to promote change. This may be best accomplished by greater commitment to quality assurances from online degree providers and by providing higher education faculty with accurate information about the rigor of online education. In the meantime, those considering pursuing an online doctoral degree should be

cognizant of the attitudes of prospective employers toward these programs and should evaluate the benefits and drawbacks of online doctorates and their alternatives in relation to the time, effort, and expense of such programs.

Online education is growing (Allen & Seaman, 2005). According to this survey, online offerings in technical education may double in the next three years. As online education grows and more faculty teach online courses, attitudes may change toward online education. Interestingly, two of the respondents who said they would be more likely to hire an individual with an online doctoral degree indicated that they or another member of their faculty earned their doctorate online. This creates the glimmer of hope for those who support online education that, as online offerings expand within the field, the perceived quality and validity of online education may increase.

Previous research on the attitudes of higher education faculty towards distance education tended to consider a faculty member as an online instructor, or a potential online instructor, rather than as someone making hiring decisions. One strategy to alleviate bias in hiring decisions based on an ignorance of distance education may be to address a bias in attitudes toward teaching online. Yick, Patrick and Costin (2005) suggested one mechanism, coined the “bring along effect,” to address negative faculty attitudes toward teaching distance education: “These ‘vicarious observations’ of the hesitant or resistant faculty, where they observed the practices of colleagues who are teaching online, may be key to the process of changing negative attitudes toward distance education” (Discussion and Implications, ¶ 2). As more courses are taught online, more faculty will likely be “brought along” by their colleagues, and in the process the hiring attitudes of their departments toward applicants with online degrees may change.

Overall, this survey found a variety of employment situations within the field of technical education. For example, some positions require teaching three courses per semester while others require four. Those pursuing a professorship in this field should match prospective employers with their credentials, abilities, and goals. There are pockets of support for online education. Therefore, those who do intend to pursue an online

doctoral degree may have opportunities to teach in higher education, though currently these opportunities may be limited.

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