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THE SCHOLARSHIP OF TEACHING AND LEARNING: A Special Niche for Faculty at Comprehensive Universities?

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We investigated the involvement of faculty members at comprehensive universities in scholarship of teaching and learning publishing activities in four disciplines. Compared to to their publishing rates in research-oriented journals, comprehensive university faculty members were more involved in publishing articles and serving on editorial boards for pedagogical journals. Over the past three decades, the relative involvement in the scholarship of teaching and learning journals by faculty members at comprehensive universities and liberal arts colleges has increased whereas participation by faculty members at research universities has declined.

KEY WORDS: Carnegie Classification; comprehensive universities; Ernest Boyer; faculty evaluation; publication rates; pedagogical journals; scholarship of teaching.

The comprehensive universities (categorized as Masters I and II in the 2000 Carnegie system) often struggle with their institutional identities. Clark (1987) described the category of comprehensive universities as ''confused.'' Many of the comprehensive universities grew rapidly in size, structure and mission over the past 40 years, struggling to attain a consistent mission that distinguishes them from the doctoral universities and liberal arts colleges. Many of the pejorative terms used to describe the comprehensive universities reflect the struggle with identity: ''weaker universities,'' ''poor-boy schools,'' ''run-of-the-mill universities,'' ''unproductive universities,'' ''universities in a permanent state of academic adolescence,'' and ''institutions that are of 'higher learning'' only by the most charitable of definitions'' (see Bogue and Aper, 2000; Henderson and Kane, 1991; Lewis, 1997; Selingo, 2000; Van den Berghe, 1970).

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Faculty members at comprehensive universities are often confused about their own roles (Henderson, 2007). Comprehensive universities typically have maintained heavy teaching loads for their faculty members while also requiring that they provide service to their communities and regions. Over the past few decades a further expectation that faculty members be active in disciplinary research and publication has added more to the comprehensive university faculty member's load. Using Coser's (1974) term "greedy institutions" for organizations that place many demands on employees, sociologists Wright et al. (2004) categorized comprehensive universities as the greediest of all types of post-secondary institutions because of the combination of demands for teaching, community service and research.

The role conflicts faced by those working at greedy institutions are reflected in surveys of faculty member satisfaction. Studies of academic life show that comprehensive university faculty members are less happy with their jobs than faculty members at other types of universities (see Baldridge, Curtis, Ecker, and Riley, 1978; Bowen and Schuster, 1986; Russell et al., 1990). There also is evidence that the early part of the academic career is particularly stressful for faculty members at comprehensive universities (Perry et al., 1997). In graduate school most future faculty members learn to be researchers. A recent report from a consortium of higher education organizations (Adams, 2002) summarizes the research that documents a mismatch between the nature of graduate school preparation and the tasks involved in faculty positions outside the research university. Faculties at research universities do not provide the information or experiences to their graduate students that would allow them to learn about working in non-research settings.

The growing perception among faculty members at comprehensive universities that they are expected to engage in research and publication is also reflected in surveys (Bentley and Blackburn, 1990; Glover, 2001; Goodlad, 1990). From 1969 to 1989 the percent of respondents to a Carnegie Foundation for the Advancement of Teaching survey who strongly agreed with the item "in my department it is difficult for a person to achieve tenure if he or she does not publish" went from 6 to 43% at comprehensive universities (Boyer, 1990, p.12). But even if institutions did not make explicit demands for involvement in research and publication, most faculty members would want to participate in publication and related activities for several reasons. One is that in their preparation at doctoral institutions most faculty members were thoroughly socialized to appreciate the importance of scholarship to the health of the academic community. A second, related reason is that they have been socialized to consider scholarly activity as part of their

professional identity (Ruscio, 1987). Third, faculty members are likely to realize that publication remains the single most important factor in the attainment of status in the academic world (Brewer, Gates, and Goldman, 2002). Finally, there is evidence that across institutional types, it is involvement in research and publication that is financially rewarded (Fairweather, 1996).

Despite all the reasons for faculty members at comprehensive universities to be involved in research, with substantial teaching loads and significant expectations for the provision of regional service, funded, programmatic basic research that leads to publication is difficult to do. How can faculty members at comprehensive universities maintain their identities as scholars and attain some reasonable level of status within their disciplines? Boyer (1990) offered some help to faculty members at all kinds of institutions who wished to be scholars but who could not conduct traditional research regularly. Boyer declared that the definition of scholarship needed to change. He described four different types of scholarship in which college and university professors are engaged. These types include: the scholarships of discovery (traditional research and creative activity), of integration (synthesis of theoretical or empirical material within or across disciplines), of application (use of ideas from one's discipline for solving problems), and of teaching (Boyer, 1990). The scholarship of teaching (now generally referred to as the scholarship of teaching and learning) encourages faculty to go beyond the content of their specific disciplines, to research and apply pedagogical methods, and to share their findings with their colleagues.

Boyer and others (e.g., Boyer, 1990; Leatherman, 1990) thought that this reconceptualization of faculty work in terms of the four kinds of scholarship would be of particular use in comprehensive universities because of the important status it gives to teaching. However, the category of the scholarship of teaching has turned out to be the one that has generated the most debate (Rice, 2005). The most common concern about the scholarship of teaching and learning is that it has become confused with scholarly teaching (e.g., Richlin, 2001). Because so much emphasis is placed on such features of scholarship as being open to public view, being peer reviewed, and being replicable, the scholarship of teaching and learning is more than just scholarly, reflective, or even effective teaching. Richlin (1993, 2001) argues that for scholarly teaching to become *scholarship* of teaching and learning, professors must take the time to write up the findings about their teaching, submit the written product to peer review outside their own institutions, and thus disseminate what has been found out about teaching and learning. As Hutchings and Shulman (1999) point out, the scholarship of teaching

and learning is "*not* synonymous with excellent teaching" (p. 13), but rather is an act of contributing one's work and leaving it "open to critique and evaluation, and in a form that others can build on" (p. 13). Only in that way does scholarly teaching and learning become part of the knowledge base of higher education teaching and learning. Weston and McAlpine (2001) see publication of findings on teaching and learning as part of the most advanced of three phases of scholarship of teaching, one that follows growth in one's own teaching and after local sharing of teaching ideas with peers. One obvious way of sharing this scholarship is in the form of a journal article. There are journals in almost every discipline that focus on teaching. The articles in these journals focus on pedagogy, methods, and tips. Many of the articles include a quantitative or qualitative study, thus fitting the more rigorous definitions of the scholarship of teaching and learning that require an evidentiary base (Hutchings and Shulman, 1999; Richlin, 2001). Regardless of how much data are provided, the scholarship of articles in the teaching journals emphasizes the *teaching process* rather than subject content. The articles are meant to help other faculty with their teaching, and the audience of a pedagogical journal often expands to secondary and elementary schools.

The problem with taking the effort to produce publishable articles on teaching and learning is that at many institutions, pedagogical scholarship is not likely to "count" towards tenure, promotion, or merit-based salary increases because of its low status (Daly, 1994). Glassick, Huber, and Maeroff (1997) argue that since World War II, the research model has taken priority: "Professors downplayed matters of curriculum and pedagogy to respond to a reward system that stressed research and publication" (p. 8). However, as Boyer anticipated, outside the research university sector (the former Carnegie Research and Doctoral classes), publications on teaching and learning indeed are likely to count. Faculty members at comprehensive universities do not actually publish a great deal in general especially compared to faculty members at research and doctoral institutions. Using the Institute for Scientific Information citation indexes (which cover over 6600 journals in over 200 fields), Toutkoushian, Porter, Danielson, and Hollis (2003) estimated that faculty members at research universities out-publish those at comprehensive universities at a ratio of 20 to 1. Because publishing at comprehensive universities is less common, "even" publications on teaching and learning are likely to be considered noteworthy. Moreover, at comprehensive universities, publications on teaching and learning combine the features of traditional research with the general teaching-orientation of the non-research sector.

The scholarship of teaching and learning appears to provide an especially appropriate outlet for the work of faculty members at comprehensive universities (and other institutions outside the research sector). Have faculty members at comprehensive universities found the scholarship of teaching and learning to be a focus for publication as Boyer suggested they might? O'Meara (2005) surveyed chief academic officers (CAOs) to see if they perceived changes in the reward systems at their institutions consistent with Boyer's categories. Over two-thirds of the 729 CAOs who responded to her survey (68.3%) reported recent changes at their institutions. O'Meara compared CAO responses from doctoral/research, masters, and baccalaureate institutions on what "counts" in faculty evaluation now compared with 10 years ago. She found that CAOs at doctoral/research universities perceived relatively greater change in emphasis on teaching and service to the profession/discipline than their counterparts at masters or baccalaureate institutions. There were no differences across institution type in CAO perceptions of change in emphasis on publication productivity, engagement/professional service, or service to the institution/citizenship. In Coser's terms, by increasing emphasis on teaching doctoral/research universities have been trying to catch up with the comprehensive (masters) universities on greediness.

A more direct assessment of the degree to which Boyer's domains of scholarship have become institutionalized comes from Braxton, Luckey, and Helland's (2002) survey of faculty members about their activities. Included among their 1,424 respondents (out of an initial sample of 4,000) were faculty members from four disciplines (biology, chemistry, history and sociology) in each of five types of colleges and universities (research and doctoral universities, comprehensive universities, and selective and less selective liberal arts colleges). Faculty members reported their scholarly activities for the scholarships of application and teaching (e.g., serving on a university committee to change the general education curriculum, developing new courses), unpublished scholarly outcomes for the scholarships of application, teaching and integration, and publications in all four areas of scholarship.

Braxton et al.'s (2002) findings about self-reported publishing activity across institutional type are of particular relevance here. They used Boyer's (1990) hypotheses about the relative emphasis different types of institutions are likely to put on different kinds of scholarship as a guide. Across institutional types, Braxton et al.'s respondents reported much higher levels of publication activity than had been reported earlier. Finkelstein (1984) reported that 43% of faculty members had reported no publications in the 2 years prior to his survey and Boyer (1990)

reported that 41% of faculty members had never published anything. Among Braxton et al.'s respondents, approximately 43% reported publishing something in the scholarship of application, 72% something in scholarship of discovery, 74% in integration and 25% in teaching. On a scale in which 1 = none, 2 = 1 or 2, 3 = 3–5, 4 = 6–10, and 5 = 11 or greater numbers of publications, the mean levels of activity ranged from 1.10 to 1.78 for research universities, 1.11 to 1.61 for doctoral universities 1.07 to 1.29 for comprehensive colleges and universities, 1.09 to 1.32 for selective liberal arts colleges and universities and 1.09 to 1.17 for less selective liberal arts colleges. In each type of institution the order of the means for amount published in each area of scholarship was discovery highest, application next highest, integration third highest and teaching lowest.

Boyer (1990) indicated that faculty members at research and doctoral universities should have a particular strength in discovery scholarship and Braxton et al.'s data supported that supposition. Faculty members at research institutions reported more publishing in the scholarship of discovery than those at doctoral institutions who reported publishing more than those at the other three types of institutions, which did not differ from each other. Boyer thought comprehensive universities would have a special interest in the scholarship of application along with those from doctoral-granting institutions. However, Braxton et al. found that faculty members from comprehensive universities reported less publishing activity in the scholarship of application than those from research and doctoral institutions and no more than those at liberal arts colleges. Boyer also thought that comprehensive universities would have a special interest in the scholarships of integration and teaching along with the liberal arts colleges. However, respondents from research and doctoral universities reported more integration publishing than those from the other types of institutions and there were no institutional differences in scholarship of teaching publication activity. The means for scholarship of teaching for all types of institutions were low.

The picture provided by the data from Braxton et al. (2002) is that more academic publishing is being done by faculty members at research and doctoral universities than anywhere else. Although other forms of scholarship might provide a place for faculty members at comprehensive and liberal arts colleges to excel, they do not seem to have done so, at least relative to their colleagues at doctorate-granting universities. Braxton et al. concluded that while the scholarship of discovery has been institutionalized at the highest level at all types of 4-year colleges and universities (i.e., has been incorporated into the normative culture of the institution), the scholarships of application, teaching and

integration have not been so institutionalized. Yet Braxton et al.'s survey included questions about the value of different types of scholarship and faculty members at all types of colleges and universities indicated that they valued all four forms of scholarship.

A different way to address the question of institutionalization of the broader view of scholarship that does not rely on self-report is to look at faculty behavior. We were particularly interested in the degree to which faculty members at comprehensive universities have become involved in the scholarship of teaching and learning. If faculty members at comprehensive universities have adopted the scholarship of teaching and learning as an appropriate, normative behavior, they should be engaging in related behaviors such as publishing in pedagogically oriented journals, participating in teaching conferences, authoring chapters and books on the scholarship of teaching and learning, and serving on the editorial boards of pedagogical journals. We looked at two of these forms of behavior, publishing in teaching-oriented journals and serving on editorial boards of those same journals. While the latter behavior does not fit the full criteria of scholarship as delineated by Hutchings and Shulman (1999) as being open to public view and criticism in an exchangeable form, it reflects both concern about the scholarship of teaching and status within the field. The general question of interest is whether the scholarship of teaching is becoming institutionalized at comprehensive universities, whether it is becoming a relatively frequent practice that is part of the institutional culture of comprehensive universities.

Specifically, we examined publishing patterns in the pedagogical journals in four disciplines by institutional type. We looked at authorship of articles and participation on editorial boards of four journals that publish articles on pedagogy. We compared participation in the pedagogical journals to participation in basic research and research review journals in the same disciplines. We expected to find that the relative participation by comprehensive university faculty members would be greater in the pedagogical journals than in basic research journals. We gathered data on involvement in the scholarship of teaching and learning for five different time periods, one well before Boyer's seminal work in 1990, one about the time of his report, and one about 5 years after his report, another more than a decade afterward, and a final one right before the preparation of this paper. We gathered data on publication in basic research journals and research review/theoretical journals for three of those same periods.

The questions we addressed were: (a) are faculty members from comprehensive universities better represented in pedagogical journals (reflecting the scholarship of teaching) than in basic research journals

(reflecting the scholarships of discovery and integration)?; and (b) has the participation of faculty members from comprehensive universities in pedagogical journals increased over time, particularly since the publication of Boyer's 1990 report? Based on the growing acceptance of Boyer's models of scholarship, we expected to find the relative participation of comprehensive faculty members in pedagogical journals to have increased over time.

METHOD

Carnegie Classifications

We used the pre-2005 Carnegie Foundation's system for classifying colleges and universities to identify author and editor affiliations (the November, 2005 version is radically different from previous systems). The system has changed several times over the years (we describe here the 1976 and the 2000 systems). In 1976, the classifications were as following: Research Universities I and II, Doctorate-Granting Universities I and II, Comprehensive Universities I and II, Liberal Arts Colleges I and II, Two-Year Colleges, Professional Schools and other specialized institutions, and institutions for non-traditional study (Carnegie Council on Policy Studies in Higher Education, 1976). In 1976 doctorate-granting universities were classified according to their purpose, financial support, and number of Ph.D.s they awarded. Comprehensive Universities were defined as having a liberal arts curriculum in addition to ''professional or occupational programs'' (Carnegie Council on Policy Studies in Higher Education, 1976, p. xvi). Comprehensive universities in this category had at least 1000 students.

The classification descriptions state that there is not always an obvious difference between baccalaureate colleges and comprehensive universities. Generally, the baccalaureate colleges have fewer or no occupational or professional programs and their emphasis is on the liberal arts. These colleges are usually smaller than comprehensive universities. Liberal Arts colleges were divided into their two categories according to a selectivity test or by a ranking based on the success (number of earned Ph.D.s at top-ranking institutions) of their graduates (Carnegie Council on Policy Studies in Higher Education, 1976).

By 2000 (Carnegie Foundation for the Advancement of Teaching, 2000) the categories had changed to the following: Doctoral/Research Universities—Extensive, Doctoral/Research—Intensive, Masters Colleges and Universities I and II, Baccalaureate Colleges—Liberal Arts, Baccalaureate Colleges—General, Baccalaureate/Associate's Colleges,

Associates Colleges, and Specialized Institutions. Masters Universities were formerly known as Comprehensive Universities. Masters Universities offer an array of baccalaureate degrees, as well as graduate programs offering a master's degree (Carnegie Foundation for the Advancement of Teaching, 2000). Masters I and II are also classified by the number of degrees that they grant per year—at least 40 master's degrees in 3 disciplines and at least 20 master's degrees, respectively. Baccalaureate Colleges are separated into two categories, liberal arts and general, based on whether or not half or more of their students major in liberal arts disciplines, respectively.

For our purposes, we combined the relevant categories that for each year created a category for institutions that granted doctorates (Research Universities I and II plus Doctorate-Granting when they were separated), the traditional public and private comprehensive universities (Comprehensive Universities I and II and, for 2000, Masters I and II), and the baccalaureate colleges (Baccalaureate I and II). Creating three categories simplified comparisons and allowed for more consistent comparisons over time. Some institutions changed categories over the period covered by this study. However, the relative proportion of institutions in each of the three categories remained relatively stable from 1977 to 2004. The relative proportion of research/doctoral, comprehensive, and baccalaureate colleges and universities in the 1976 and 2002 Carnegie classes were 14, 44, 42%, and 18, 41, 41%, respectively. Of the members of comprehensive university category in 1976, 75% were still in that category in 2000. The most common change was that many of the very small (fewer than 1500 enrolled) comprehensive institutions from the 1976 classification had moved to the baccalaureate-general category (many in the 1994 reclassification).

Data Sources

For our main data source, we used four pedagogical journals: *Teaching of Psychology, Teaching Sociology, Journal of Chemical Education*, and*Journal of Marketing Education*. These journals were chosen because (a) each one has been published for a considerable time; (b) as a group they represented a broad range of disciplines that generally are in the curricula of institutions of all types (we wanted a business discipline represented, but marketing *per se* is not always offered in selective liberal arts colleges); and (c) they are in disciplines that, unlike disciplines such as English and history, are article- rather than book-oriented so that comparisons to pedagogical journals were more appropriate. To provide a baseline comparison with research-oriented outlets, we chose

in each discipline a respected basic research journal and a research/theory review journal. While the former map roughly onto the scholarship of discovery domain and the latter to the scholarship of integration domain, journals that are pure versions of either type of scholarship are unlikely to be found in practice. For the basic research journals, we chose the *Journal of Experimental Psychology: General*, the *American Journal of Sociology*, the *Journal of the American Chemical Society*, and the*Journal of Marketing Research*. For the basic research/theoretical review journals we chose *Psychological Bulletin*, *American Sociological Review*, and *Chemical Reviews* (we were unable to identify a suitable review journal in marketing). The data for the basic research journals were recorded for only three of the target years because the pattern of institutional differences emerged very quickly. Except for the *Journal of Chemical Education and Journal of the American Chemical Society*, an entire year's volume (usually 4–6 issues) was used. Because of the large number of articles in the *Journal of Chemical Education* and the *Journal of the American Chemical Society*, the issues for only the first half of a year and for the first issue of the year, respectively, were used for each year. *The Journal of Marketing Education* did not begin publication until 1979, so we used the 1979 volume (see the Appendix for descriptions of all journals used).

Procedure

We examined each of the journals article by article, recording the institutional affiliation for the senior author. Only articles, not editorials, letters, news items, or similar material, were included. The editorial board membership was taken from the first issue of the journal for each year. The Carnegie category for each author's or board member's institution was determined for those authors and board members whose institution was in the United States or its territories. We left out articles by authors with foreign affiliations because they could not be classified. The representation of authors from outside the United States was high for the chemistry journals, but relatively low for the others, ranging from 20–40%, median 31% for the chemistry journals to 0–15%, median 6% for the other journals. Also left out of our calculations were faculty members at high schools and 2-year institutions (such instances were rare, but more common in *Journal of Chemical Education* than in any of the other journals). The essential statistic used was the number of authors or editorial board members who were affiliated with doctoral institutions (research universities and doctoral universities), comprehensive universities, and baccalaureate colleges for each journal/year

divided by the total number of authors or board members in all three groups for that journal year. Proportions were then averaged across journals to obtain a proportion for each institutional type for each year. Proportions rather than simple counts were calculated before being combined for each year because the number of articles was different for each journal (ranging from a low of 20 for the 2004 volume of the *Journal of Marketing Education* to a high of 219 articles in the first half of the 1990 volume of the *Journal of Chemical Education*).

RESULTS

The first research question was whether participation by faculty members outside the research sector was relatively greater in the journals reflecting the scholarship of teaching and learning than in journals reflecting the scholarships of discovery and integration (traditional basic research reports and reviews). In terms of journal articles in the four disciplines we examined, the answer is clearly yes. In each of the four disciplines, authorship of articles in research-oriented journals by comprehensive university and baccalaureate faculty members was rare. The proportion of articles by comprehensive university and baccalaureate college authors in any of the basic research journals ranged from .00 and .00 (several journals), respectively, to a high of .07 and .07 (both 1990 psychology). Across journals and years, the proportions of articles from authors at doctoral, comprehensive and liberal arts institutions were .94, .04, and .02, respectively. Similarly, the proportion of articles in research/theoretical review articles for comprehensive university and liberal arts authors ranged from .00 and .00 (several journals), respectively, to a high of .14 (1977 chemistry) and .05 (2001 chemistry), respectively. Across journals and years, the proportion of research/theoretical review articles authored by doctoral authors was .93, .06 for comprehensive university authors and .01 for baccalaureate authors. In comparison, the proportion of pedagogical articles authored by comprehensive university and baccalaureate college authors ranged from .06 (1985 sociology) and .00 (marketing for several years), respectively, to a high of .62 (2001 marketing) and .29 (1990 psychology), respectively. Across journals and years, comprehensive university faculty and baccalaureate college faculty authorship of articles in pedagogical journals was considerably higher than in research-oriented journals, at .50 for doctoral authors, .37 for comprehensive university authors, and .13 for baccalaureate authors.

The results for participation on editorial boards were very similar. The proportional representation on editorial boards by comprehensive

university and baccalaureate college authors for any of the basic research journals ranged from .00 and .00 (several journals), respectively, to a high of .05 (1979 marketing) and .01 (2001 sociology), respectively. Across journals and years, the proportion of editorial board members was .99, .00 and .01 for doctoral, comprehensive, and liberal arts faculty members. For the review/theoretical journals, the proportions ranged from .00 and .00 (several journals), respectively, to a high of .04 (2001 psychology) and .02 (2001 sociology), respectively. Across research review/theoretical journals and years, the proportion of board membership by doctoral board members was .96, .02 for comprehensive university board members and .01 for baccalaureate board members. In comparison, the proportion of editorial board members for pedagogical journal editorial board membership from comprehensive university and baccalaureate college faculties ranged from .07 (1977 psychology) and .00 (marketing for 1979 and 1990), respectively, to a high of .59 (2001 psychology) and .21 (1977 psychology), respectively. Across journals and years, comprehensive university faculty and baccalaureate college faculty board membership for pedagogical journals was considerably higher than for research journals. The proportion was .52 for board members from doctoral institutions, .39 for board members from comprehensive universities, and .09 for board members from baccalaureate colleges.

The second major research question was whether involvement in the scholarship of teaching and learning by faculty members at comprehensive universities had increased over time relative to faculty members at other kinds of institutions. The relevant data are provided in Figs. 1 and 2. In Fig.1, an initial gap between the proportion of articles in

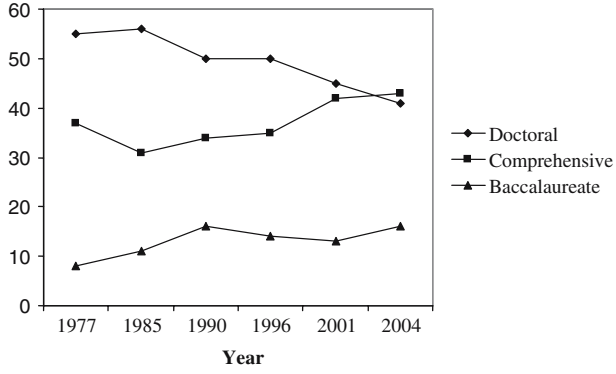

FIG. 1. Proportion of articles by author institutional affiliation.

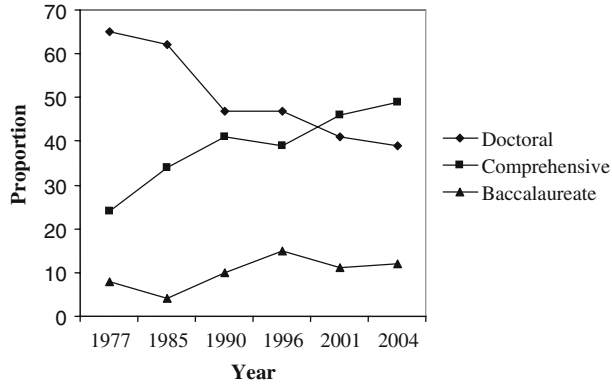

FIG. 2. Proportion of editorial board membership by institutional type.

pedagogical journals by comprehensive university faculty members and doctoral institution faculty members in 1977 had disappeared by 2001 (and remained about the same in 2004). There was also an increasing linear trend in the proportion of articles by baccalaureate college faculty members. The closing of the comprehensive-doctoral gap was due to both an increase in authorship by comprehensive university faculty members and a decrease in authorship by doctoral faculty.

Similar trends are shown in Fig. 2 for pedagogical journal editorial board membership. A rather dramatic decrease in the gap between doctoral faculty member and comprehensive university faculty board membership occurred between 1977 and 2001 when a cross-over in membership became apparent that appeared to be continuing in the 2004 data. Like in the data for article authorship, the closing of the gap resulted from both a decline in board membership by faculty at doctoral universities and an increase by faculty members at comprehensive universities. As in the article data, there was an increasing linear trend in editorial board membership by faculty members at baccalaureate colleges.

DISCUSSION

Relative to their involvement with top-tier journals linked to the scholarships of discovery and integration, faculty members at comprehensive universities are more involved with journals related to the scholarship of teaching and learning. Moreover, their relative involvement in the scholarship of teaching has increased gradually over time. Does this

mean that the scholarship of teaching has become institutionalized at comprehensive universities?

The publishing and editorial board service by comprehensive university faculty members in the scholarship of teaching and learning does reflect a structural level of institutionalization, the lowest form of institutionalization (Braxton et al., 2002). Many faculty members know about the scholarship of teaching and learning (whether or not they use the term) and engage in it. There are two major reasons why they may do so. First, the reward systems at all types of colleges and universities traditionally have rewarded publishing behavior (Braxton and Del Favero, 2002). Faculty members at comprehensive universities have imitated the publishing behavior of the high status models at the research universities. However, at least part of the time they likely are under somewhat less pressure to publish traditional basic research (or those who evaluate them may be less discriminating about what is published) and they have used the pedagogical journals as an alternative outlet for their scholarly work. Doing research and writing for pedagogical journals requires fewer fiscal, physical, and human resources in most disciplines than does doing basic research. Because most faculty members at comprehensive universities were trained in research universities, they have the skills, and maybe even the values of the basic researcher (Braxton and Del Favero, 2002), but not the same opportunities to express them. The scholarship of teaching and learning allows them to use their research and writing skills in practical ways.

Perhaps the most important reason for the tendency of comprehensive university faculty members to engage in the scholarship of teaching and learning is that it fits the teaching mission of the comprehensives. The scholarship of teaching and learning seems a natural fit for teaching-intensive settings where the blend of scholarship and teaching issues can lead to work that will be appreciated and rewarded by colleagues in the faculty and administration (although see O'Meara and Rice, 2005, for studies of individual campuses showing a wide range of faculty member reactions to a broadened view of scholarship). The data for editorial board membership suggests that involvement in the scholarship of teaching and learning provides opportunities for leadership that would not typically be available to faculty members at comprehensive universities and baccalaureate colleges in the rarified status hierarchies of the basic research world.

In contrast, the relative decline in participation in the scholarship of teaching and learning at the doctoral universities suggests that pedagogical efforts do not fit well with their reward systems and missions. At the research university, participation in the scholarship of teaching and

learning is in competition with writing grants and articles on cutting-edge research. Although there has been rhetoric designed to increase the emphasis on teaching at doctoral institutions (O'Meara, 2005; O'Meara and Rice, 2005), the data reported here suggests that at least some faculty members who had been involved in the scholarship of teaching and learning are less involved or have retired.

Despite the data reported here that support a structural level of institutionalization, there are good reasons to doubt that the scholarship of teaching and learning has been institutionalized at the higher levels of procedure and incorporation (Braxton et al., 2002). Using data from their earlier report Braxton, Luckey and Helland (2006) showed that faculty members have a generally positive attitude about the scholarship of teaching, but they value the scholarship of discovery most and believe that both their institutions and departmental colleagues do too. Furthermore, in their self-report data, Braxton et al. (2002) found that faculty members reported less publishing activity in the scholarship of teaching than in the other scholarship domains. A relatively small portion of comprehensive university faculty members may be accounting for the bulk of the involvement in the scholarship of teaching and learning documented here. O'Meara (O'Meara, 2005; O'Meara and Rice, 2005) points out that there are a number of barriers to the incorporation of multiple forms of scholarship into the culture of comprehensive universities, including mission drift and the discovery scholarship bias of newly hired faculty members.

Our approach to the study of faculty scholarship has several important limitations. First, the distinction between articles reflecting discovery and integration could be questioned. Although the journals we used to tap integration would clearly fit some of Boyer's criteria, they contain work that is closely related to the basic research of discovery. The cross-disciplinary integration that Boyer suggested might characterize the work of liberal arts college faculty is probably more closely related to teaching than to cutting-edge basic research. Second, we used journals that would be considered to have high status in their disciplines. It is possible that the participation by faculty members at comprehensive universities is much greater in lower-tiered or more subdisciplinarily-specific journals. A related concern is that the scholarship of integration might be better reflected in the publication of textbooks or book reviews at comprehensive universities. Third, we used journals from only four disciplines. The scholarship of teaching versus scholarships of discovery and integration differences we identified may not be as sharp in creative arts or other disciplines that are less journal-article oriented. Finally, the use of only first authors may have over- or under-represented institutions.

Dey, Milem, and Berger (1997) argued that the increasing pressure to publish at all types of colleges and universities is leading to institutional isomorphism as universities all begin to look and act alike. However, when Dey et al. assessed the frequency of publication by institutional type, they did not take into account *what* was being published. If a substantial portion of the publications coming from comprehensive universities are related to the scholarship of teaching and learning and the trends in Figs. 1 and 2 continue, there actually may be increasing institutional diversity. Comprehensive universities and other ''teaching institutions'' may have found a way for their faculty members to stay professionally active in scholarly publishing without simply copying the research model. The scholarship of teaching and learning provides a fruitful domain for faculty members at teaching institutions. And it seems that faculty at comprehensive universities have taken advantage of this scholarship for a long time—even before Boyer defined it.

APPENDIX: DESCRIPTIONS OF JOURNALS USED AS DATA SOURCES

The journals we used cover three types of scholarship: teaching, discovery, and integration. The research-oriented journals do not necessarily provide pure representations of ''integration'' or ''discovery.'' They are sometimes a combination of the two. The journals in the discovery category are traditional empirical research journals. The ones that we have put in the integration category are review journals. The teaching journals vary according to their definition of the scholarship of teaching. The *Journal of Chemical Education* contains informal teaching tips such as illustrations or chemical equations. The others generally have a more rigorous view of the scholarship of teaching. The articles in the latter journals often report an experiment or study, and usually include a literature review. All of the teaching journals focus on pedagogy rather than simply the subject content of the discipline. We have accepted the broader view of the scholarship of teaching and learning: taking what one has learned about teaching and making that knowledge public.

The descriptions of the journals in this appendix are based on current issues and recent descriptions of the journals. The journals have remained fairly consistent over the years that this paper covers. The year in which the journals were first published, the type of scholarship they generally represent, and brief descriptions of the content of each journal are provided below.

American Journal of Sociology (1895)

Scholarship Emphasis: Discovery

Description: A leading sociology research journal, published by the University of Chicago. According to *Magazines for Libraries*, this journal covers all areas of sociology and articles "cover a broad spectrum of theoretical and empirical sociological research" (LaGuardia, 2005, p. 943).

American Sociological Review (1936)

Scholarship Emphasis: Integration

Description: The *American Sociological Review* is the "flagship" journal of the American Sociological Association. It offers "original" articles in sociology (research results, methods, and new theory) with an emphasis on items of "exceptional quality and general interest" (American Sociological Association, 2006).

Chemical Reviews (1924)

Scholarship Emphasis: Integration

Description: Published by the American Chemical Society, *Chemical Reviews* provides articles that review and summarize research in all fields of chemistry (American Chemical Society, 2006a). *Magazines for Libraries* calls it, "a core title, which as of 2003, boasted the highest impact factor of any multidisciplinary chemistry journal" (LaGuardia, 2005, p. 217).

Journal of Chemical Education (1924)

Scholarship Emphasis: Teaching and Learning

Description: This publication by the American Chemical Society's Division of Chemical Education contains articles written by and written for chemistry teachers at all levels. There are hundreds of articles in each volume including illustrations, equations, and other teaching aids, which are "useful in both the classroom and laboratory" (Division of Chemical Education, Inc., American Chemical Society, 2006).

Journal of Experimental Psychology: General (1916)

Scholarship Emphasis: Discovery

Description: This journal replaces/continues (in part) the *Journal of Experimental Psychology*. The "high-quality, cutting-edge" research

articles focus on general areas of experimental psychology, as opposed to more specialized areas. (*Journal of Experimental Psychology*: General Editorial Office, 2006).

Journal of the American Chemical Society (1879)

Scholarship Emphasis: Discovery

Description: The *Journal of the American Chemical Society*, a weekly research journal by the American Chemical Society, is ''the preeminent journal in the field'' (American Chemical Society, 2006b).

Journal of Marketing Education (1979)

Scholarship Emphasis: Teaching and Learning

Description: Aimed at those in higher education, this journal is officially published by Sage Communications and is focused on the discussion of teaching experiences and methods in the field of marketing (Marketing Educators' Association, 2006).

Journal of Marketing Research (1964)

Scholarship Emphasis: Discovery

Description: The *Journal of Marketing Research*, published by the American Marketing Association, includes articles that focus on issues in marketing ''from its philosophy, concepts, and theories to its methods, techniques, and applications'' (American Marketing Association, 2006).

Psychological Bulletin (1904)

Scholarship Emphasis: Integration

Description: This American Psychological Association journal publishes review articles and ''interpretations of issues in scientific psychology'' (American Psychological Association, 2006). Review articles feature, and sometimes critically assess, ''past'' empirical research (American Psychological Association, 2006).

Teaching of Psychology (1974)

Scholarship Emphasis: Teaching and Learning

Description: *Teaching of Psychology* is published by the American Psychological Association. Teaching and learning articles, often empirical,

include discussion, opinions, and teaching aids for psychology teachers (Beins, 1997).

Teaching Sociology (1973)

Scholarship Emphasis: Teaching and Learning

Description: This American Sociological Association publication provides articles to assist in the teaching of sociology. It includes research studies and essays relating to pedagogy (Department of Sociology and Anthropology, Le Moyne College, 2006).

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