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Learner-Centered Assessment: A Comparison of Faculty Practices in US Colleges and Universities 1993 to 2004

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Abstract

Over a decade ago, Barr and Tagg (1995) declared that a shift had occurred in higher education from an instruction paradigm to a learning paradigm. A central element in this new paradigm is learner-centered assessment. While a growing body of literature suggests that this approach to assessment is a best practice in higher education pedagogy, it is still unclear whether faculty members have embraced it fully. Using data from the 1993 and 2004 *National Study of Postsecondary Faculty*, this study examines the extent to which faculty members employ learner-centered assessments in postsecondary classrooms and compares use of select assessments from 1993 to 2004. Findings show stable to increased use of some assessment techniques over the decade as well as differences by faculty gender, discipline, and institution type. Implications for faculty members, student learning, and institutional policy are discussed.

Introduction

Reforming instruction in postsecondary education continues to be a salient issue among educators, leaders in professional organizations, accrediting bodies, and elected officials, especially as it pertains to the assessment of student learning (e.g., Ewell, 2002; Glenn, 2011; Kinzie, 2010). Assessment has been a long-standing issue and an important dimension of quality instruction, however, its meaning and use have evolved significantly over the past two decades. A traditional view of assessment defines its primary role as evaluating a student's comprehension of factual knowledge. A more contemporary definition, which is growing in popularity, sees assessment as an activity designed primarily to foster student learning. This more recent definition has its roots in a movement to make higher education more learner-centered, and assessment practices aimed at this goal are often labeled learner-centered assessment techniques.

It is clear from a growing body of literature that learner-centered assessment is now considered a highly-valued practice in higher education pedagogy. Yet, it is unclear to what extent today's faculty are employing learner-centered assessment techniques and how that compares to the early 1990s, prior to extensive discussion on learner-centered education. Previous studies using US national data do not extend into the new millennium, and no studies have examined data from the most up-to-date study of postsecondary faculty, the 2004 *National Study of Postsecondary Faculty* (NSOPF: 2004**).** This study examines responses from the 1993 and 2004 administrations of the *National Study of Postsecondary Faculty* to better understand the use of learner-centered assessment techniques in today's postsecondary classrooms and to determine changes over the ~decade. This study departs from previous studies on this topic in its application of hierarchical linear modeling. An advantage over single level regression, multilevel

analysis enables us to examine the effects of individual characteristics on learner-centered assessment practice, nested within the effects of institutional characteristics. This technique provides a more precise examination of the contribution of individual and institutional characteristics on learner-centered assessment.

Conceptual Framework

The conceptual framework for this study is guided by two areas of literature, institutional theory and assessment practices in higher education. Institutional theory is most concerned with effects that have causes rooted in institutions (Powell & DiMaggio, 1991). According to Jepperson (1991), an institution "represents a social order or pattern that has attained a certain state or property" (p. 145). When this pattern is reproduced, regulated, and preserved through socially constructed rewards and sanctions, it is said to be institutionalized. Institutional theory also asserts that organizations are characterized by rules and requirements to which organizations must conform in order to be successful (Scott & Meyer, 1983). Assessment efforts endeavored by institution officials are an example of requirements that help an institution become a successful organization. In addition, institutional theory broadly argues that a need for legitimacy drives organizational behavior, which, in turn, promotes isomorphism among organizations contained in the same field, such as higher education (DiMaggio & Powell, 1983). Organizations that successfully incorporate environmentally-legitimated elements are more likely to succeed, grow, and survive over time than those that fail to conform. From this perspective, universities and colleges can be viewed as organizations seeking to conform with regulations and requirements mandated by external constituents. One area of regulation of particular importance to this study is accountability. Over the past decade, policymakers, accrediting bodies, and elected officials have continued calls for improved mechanism to foster and measure student

learning. The proceeding literature review demonstrates the extent to which these calls have been institutionalized in the field of higher education. Institutional theory would expect universities and colleges that are seeking legitimacy to align organizational structures, personnel, and instructional processes with requirements and regulations around student learning. Along this line of thought, one would predict an increase in activities, such as learner-centered assessment, over time.

Due to its value in the teaching-learning process and because it assists with accountability needs, the assessment of teaching and learning in postsecondary education has become inextricably incorporated into institutional policies and practices. Institution-wide and learning outcomes assessment is now considered imperative for institutional improvement and generally required by regional and discipline accreditation agencies. Because internal and external agents are looking for practices related to and evidence of learning outcomes, faculty are strongly encouraged to assimilate instructional and assessment techniques that provide evidence of learning. As the emphasis on assessment grows, more faculty members within and across institutions are aware of specific techniques that can achieve goals for learning. Generally, there are three different levels of assessment in colleges and universities: institution-, program-, and course-level. While a learner-centered assessment process encompasses all levels, the present research is exclusively focused on course-level assessment. Assessment techniques at this level are fundamentally similar. They: 1) derive from specified learning outcomes; 2) compel students to apply the knowledge and skills—their learning, in other words—to discipline-specific issues and problems; 3) include meaningful, constructive feedback from faculty; and 4) occur at intentional points during the learning process (Angelo, 1999; Huba & Freed, 2000; Mezeske & Mezeske, 2007). Examples of learner-centered assessment activities include: multiple drafts of

written work in which faculty provide constructive and progressive feedback; oral presentations by students on discipline-specific problems; student evaluations of each other's work; group and team projects producing a joint product related to specified learning outcomes; and service learning assignments requiring interactions with the community or business/industry. All of these activities promote learner-centered education and can provide faculty with evidence regarding how effectively students can construct their knowledge and skills to address course-related learning.

Literature Review

Over a decade ago, Barr and Tagg (1995) declared that a shift had occurred in higher education from an *instruction* paradigm to a *learning* paradigm. In the learning paradigm, faculty focus less on transferring factual knowledge to students and more on creating a learning environment that empowers students to construct knowledge for themselves and apply it to complex problems. The learning paradigm positions the learner, rather than the instructor, at the center of undergraduate education, and, for this reason, many refer to this paradigm as learner-centered education.

Since Barr's and Tagg's declaration, many theorists and leaders in higher education have endorsed learner-centered education and extended the conversation about its utility in American colleges and universities. In 1998, for example, the American Association for Higher Education (AAHE), College Student Educators International (ACPA), and Student Affairs Administrators in Higher Education (NASPA) appointed the Joint Task Force on Student Learning. The Task Force produced a report that summoned those invested in higher education to adopt key principles that encourage learner-centered education and work collaboratively to implement practices that deepen the learning experience on college campuses. Along similar lines, authors

of *Learning Reconsidered* argued for the redirection of all of higher education's resources toward the goals of transformative education, a "holistic process of learning that places the student at the center of the learning experience" (NASPA & ACPA, pg. 1, 2004). More recently, the Association of American Colleges and Universities (AACU) sponsored several reports on college learning that pointed up the important role learner-centered pedagogy plays in achieving the "essential learning outcomes" of liberal education (National Leadership Council for Liberal Education and America's Promise [LEAP], Crutcher, Obrien, Corrigan, & Schneider, 2007; Kuh, 2008).

Across this body of literature, advocates describe assessment as a central element in learner-centered education. Assessment in this approach, however, departs from its traditional role as an activity used primarily to evaluate a student's comprehension of factual knowledge. Rather, assessment becomes an activity that fosters student learning. Huba and Freed (2000) define assessment in a learner-centered approach as an, "activity, assigned by the professor, who yields comprehensive information for analyzing, discussing, and judging a learner's performance on valued abilities and skills" (p. 12). They labeled this type of assessment, "learner-centered assessment," and outlined ways in which it reinforces the attributes of learner-centered education. We distilled this outline into a more succinct bullet-point list and provided it below to aid the reader. According to Huba and Freed, learner-centered assessment:

- promotes high expectations in the learning environment;
- respects diverse talents and learning styles;
- enhances the early years of undergraduate study;
- promotes coherence in learning by providing data to direct curriculum development and revision processes;

- synthesizes experiences, fosters ongoing practice of skills, and integrates education and experience;
- involves students more deeply in learning and promotes adequate time on task during a program of study;
- provides prompt feedback to students;
- fosters collaboration with peers and faculty; and
- results in increased student-faculty contact.

This list sheds light on the characteristics found in assessment techniques or methods that align with this approach to assessment. At the same time, it demonstrates the value of learner-centered assessment in shifting the focus of undergraduate education to student learning. When faculty place the student at the center of undergraduate educational, the role of assessment transforms from purely summative to mostly formative and becomes another pedagogical tool employed to involve students more actively in the construction of their learning experience.

Recent Evidence

Learner-centered assessment has been the subject of much scholarship in recent years. Research in this area has covered different postsecondary sectors (Boyer, Butner, & Smith, 2007), general education and various disciplines (Goubeaud, 2010; Paradis & Dexter, 2007; Palomba, 2002; Yanowitz & Hahs-Vaughn, 2007), professional and graduate programs (Gerdy, 2002; Goubeaud & Yan, 2004; Candela, Dalley, & Benzel-Lindley, 2006; Boaten, Bass, Blaszak, & Farrar, 2009 and even international higher education (Fook & Sidhu, 2010). Taken together, studies reveal a growing interest in reforming assessment in higher education to be more learner-centered. These studies do not, however, provide convincing evidence that reform has actually occurred. Although some scholars extol the virtues of learner-centered assessment (primarily in

conjunction with problem-based learning, for example Duch, Groh & Allen, 2001; Wood, 2008; Wood, 2004), Yanowitz and Hahs-Vaughn (2007), for instance, drew data from the *National Study of Postsecondary Faculty* 1993 (NSOPF:1993) and 1999 (NSOPF: 1999) data sets to examine assessment activity among faculty in science disciplines. They found that science faculty were less likely to use learner-centered assessment practices than non-science faculty and that the former did not increase their use of these practices between the two national studies, despite science educators appealing for such an increase throughout the 1990s.

Goubeaud and Yan (2004) point to similar appeals made by teacher educators over the last two decades. They used NSOPF:93 data to explore assessment practices among teacher education faculty. Findings from their study suggested that teacher educators were more likely to employ learner-centered assessment methods, such as research papers and essay exams, than other faculty, who relied on more traditional assessment practices, such as multiple choice exams. Several scholars have advocated the need for adoption of learner-centered assessment. For example, Paradis and Dexter (2007) illustrated the benefits of learner-centered education to geography faculty and students and described in detail a field analysis course that exemplified its tenets. Similarly, Candela, et al (2006) discussed the benefits to nursing faculty and students and presented a model depicting the role assessment plays in establishing a learner-centered nursing curriculum. Gerdy (2002) argued for the implementation of learner-centered assessment in legal research instruction and provided examples of exemplary assessment activities that could be employed by law professors.

A number of studies have examined the effects of faculty demographics on teacher behaviors or pedagogical approaches. Nelson Laird, Garver, and Niskode-Dossett (2011) found female faculty use more active learning techniques than male peers Bennett (1982), Centra &

Gaubatz (2000) and Statham, Richardson, & Cook (1991) report that female faculty are more student-oriented and less authoritative than male faculty, have more class discussions, do less formal lecturing, and are more available outside class. In general, these characteristics allow students to feel more comfortable in class, and may encourage participation. Recent studies have also examined instructor effectiveness by time and tenure status. Gappa and Leslie (1993; 1997) believe part-time faculty are generally satisfied with their jobs and are important contributors to postsecondary education. Although Umbach (2008) found that part-time faculty use active learning less than full-time faculty, Leslie & Gappa (2002) report that part-time faculty, are a "stable component of the faculty workforce and have considerable teaching experience" (p.61). Leslie and Gappa agree with other reports (Bolge, 1995; Cohen & Brawer, 1998; Grubb, 1999) that find no significant differences in quality of instruction between full-time and part-time faculty.

In recent years, most part-time and increasingly more full-time instructional staff members are hired in positions that do not offer tenure. Gappa, Austin and Trice (2007) report that in 2004 only 27 percent of all new faculty appointment and 56 percent of all full-time appointments were tenure-track positions. According to Kezar & Sam (2010), findings are mixed on student success (or lack of success) based on faculty member time and tenure status. Several researchers found that enrollment in more lower division classes with part-time faculty (who were also non-tenure track) were less likely to return for the second year (Bettinger & Long, 2005), transferring to baccalaureate institution (Eagen & Jaeger, 2009), and/or graduating (Ehrenberg & Zhang, 2005), yet Waller and Davis (2009) found no significant differences in enrollment growth or retention for systems in one state by tenure status. Authors such as Kezar and Sam recognize the complexities of contingent faculty, including the implications for faculty

members themselves, students, and the overall organization of higher education, and while a number of studies have addressed the effects of contingent faculty, there is much more study needed.

Along with faculty member characteristics, scholars have also examined instructional differences by academic discipline. Some scholars purport that the teaching-learning process is different across disciplines (e.g., Becher & Trowler, 2001; Hannan & Silver, 2000; Healy & Jenkins, 2003; Neumann, 2001; Young, 2010). Neumann & Becher (2002) believe that epistemological differences affect teaching and learning. The 'hard' sciences tend to focus on experimentation, facts, and quantifiable data, whereas the 'soft' sciences leave room for context-specific interpretations of a given phenomenon. Discreet and intertwined facets of knowledge may lend themselves to different forms of assessment. The former may best be measured by a multiple choice exam that reinforces memorization of facts, while the latter may be served well by essay exams that require students to demonstrate argumentation and theoretical synthesis.

Statement of Problem

It is clear from this body of research that learner-centered assessment is now considered a valued practice in higher education pedagogy. As the paradigm shifted from one of instruction to one of learning, assessment transformed into an activity for promoting—rather than simply measuring—learning. Based on the growing volume of literature on the subject, it appears that the trend towards learner-centered assessment has gained momentum in recent years, permeating academic discourse in most traditional disciplines. Yet, it is still unclear how much this trend has actually influenced faculty assessment practices in postsecondary classrooms in the new millennium. While some faculty members seem to have embraced learner-centered assessment techniques, others appear more resistant. In addition, previous studies have analyzed national

data only through the early 1990s; researchers have yet to consider data from the most up-to-date federal study of postsecondary faculty, NSOPF: 2004. These factors indicate a need for further investigation into faculty assessment practices using the latest national data and provide the opportunity to compare use of touted assessment practices over the decade from 1993 to 2004. The purpose of this study is to address these needs by examining the extent to which today's higher education faculty incorporate learner-centered assessment methods into instruction and compare frequency rates from 1993 to 2004. The following research questions guided this study:

1. How regularly do college and university faculty members employ learner-centered assessment techniques in their classes?
2. Does assessment practice differ by Carnegie classification and faculty tenure status, gender, rank, discipline, and position type?
3. Are there differences in the frequencies of use between 1993 and 2004?
4. From 1993 and 2004 faculty responses, which individual and institutional factors help explain variation in assessment practice among higher education faculty?

Methodology

Data

This study examined faculty response data from the *National Study of Postsecondary Faculty* surveys administered in 1993 and 2004 (NSOPF:93 and NSOPF:04). Because the focus of this study is on assessment practices in undergraduate education, only a subset of institutions and respondents were included. The final dataset included only those universities and colleges defined in each dataset as Associate-granting or above. The 1993 categories were "Doctoral-granting, Comprehensive colleges, Liberal Arts, and Associates; the 2004 categories were Carnegie 2000 "Doctoral granting," "Master's granting," "Bachelor's granting," and "Associate's granting." Institutions defined as "other" were excluded. In addition, the final data

included only instructors who had faculty status, identified teaching as a principal activity, spent at least 50% of their time on instructional activities, and taught at least some undergraduate courses for credit. Otherwise, the subset included all full-time and part-time faculty at all ranks and tenure statuses. The 1993 final dataset included responses from approximately 15,000 faculty members in nearly 700 colleges and universities; the 2004 dataset included responses from approximately 16,000 faculty in over 550 colleges and universities. Using the weight provided by NCES, the samples represent approximately one million faculty members in two-year and four-year American universities and colleges.

All analyses described below included the faculty and institution weights provided in the NSOPF 1993 and 2004 data sets, as well as an additional weight calculated to correct for possible oversampling. We calculated this second weight by dividing raw faculty weight by its mean, thus creating a relative faculty weight. In a traditional one-level regression analysis, the effects of clustered samples would need to be addressed statistically; however, multilevel analysis naturally accounts for clustering by producing estimates for within and between-group variances. Therefore additional statistical manipulation, such as accounting for design effects, is not necessary (Hahs-Vaughn, 2006; Thomas & Heck, 2001).

Variables

As discussed above, learner centered assessment includes a variety of activities that seek to involve students more deeply in the learning process, integrate education and experience, include feedback from faculty and peers, and address discipline-specific issues and problems (Huba & Freed, 2000). In the NSOPF:93 survey, respondents were ask to indicate how often they used nine assessment techniques (not used at all, used in some classes, used in all classes). Similarly, NSOPF:04 respondents were asked to indicate how often they used ten pre-determined

assessment techniques. From the 2004 data, we identified five assessment techniques that were clearly consistent with Huba's and Freed's operational definition of learner-centered assessment to serve as dependent variables. The five techniques were multiple drafts of written work, oral presentations, group projects, student evaluations of each other's' work, and service learning/co-op interactions with business. Of these five, three were included in the 1993 survey (multiple drafts of students' work, oral presentations, student evaluations of each other's work). No other items in the 1993 data were consistent with Huba and Freed's definition of learner-centered assessment. Following previous analyses of 1988 and 1993 NSOPF data (Yanowitz & Hahs-Vaughn, 2007) we also created a composite score representing a participant's overall use of learner-centered assessment techniques. This score was created by adding together a participant's scores on each of the three (1993) and five (2004) learner-centered techniques. This composite score was used as the dependent variable in the two-level hierarchical models presented in the results.

Independent variables were selected to explore the effects of faculty and institutional characteristics on assessment practice. Variables representing faculty characteristics included measures for rank, tenure status, gender, discipline, and time status. Rank consisted of full professor, associate professor, assistant profess, instructor, lecturer, and an "other" category. The variable for tenure status included tenured, on the tenure track but not tenured, not on tenure track, and no tenure system at institution. The discipline variable was derived from Biglan's classification of academic disciplines, which included eight categories (1973a; 1973b). Appendix A provides a table to show how NSOPF teaching fields were grouped in Biglan categories.

Because institutional characteristics have been shown to relate to instructional practices (Ewell, 1988; Peterson & Vaughan, 2002), we also included several institutional variables in the

analysis. The percent of an institution's total expenditures devoted to instruction was calculated to represent the value of instruction to an institution (proportion expenditures for instruction divided by total expenditures). The ratio of students to faculty was used to signify the quality of an institution's classroom learning environment. Institutional mission, organization, and scope were defined through variables for institutional control (private vs. public) and Carnegie classification (as described above in the methods data section).

Analysis

To examine research questions (RQ) 1-3, descriptive statistics were completed for selected dependent and independent variables (see Tables 1 and 2). Descriptive statistics reveal how regularly faculty members employed learner-centered assessment techniques in their classes (RQ1 and RQ3). The second stage in the analysis examined whether assessment practices differed by Carnegie classification and faculty tenure status, gender, rank, discipline, and position type (RQ2 and RQ3). Table 2 shows the proportion of faculty using learning-centered assessment in at least some classes (not used at all=1; used in classes some of the time=2; used in classes all of the time=3) by important demographic characteristics and discipline. Chi-square tests were used to determine significant associations between the categorical independent variables and selected dependent variables.

Guided by our theoretical model of assessment and results seen in the descriptive characteristics analysis, we constructed two hierarchical linear models to explain variation in assessment practices among higher education faculty (RQ4). A two-level model nested faculty members at level one, within institutions at level two. Multilevel analyses allow us to account more precisely for error in variance while controlling for differences among individuals nested within institutional environments. Tables 3 and 4 show descriptive statistics for variables

included in each multilevel model (one for 1993 and one for 2004), and Table 5 presents the results from the multilevel analyses.

Results

As shown in Table 1 for both 1993 and 2004 data, male and full-time faculty members are in the majority, comprising about 60% of the sample (unless specified, use of the term faculty member includes all rank levels). In 2004, however, the number of female faculty with instructional duties increased by about 3% in 2004 and the number of part-time faculty increased by about 8% over the decade. In terms of rank, instructors account for about 1/3 of the total group, but we see shifts in the distribution of faculty by rank over the decade. Compared to 1993, there were fewer full and associate professors in 2004, and significantly more faculty who teach with a title other than professor, instructor, or lecturer. Notable changes in tenure status are also noted from 1993 to 2004. The number of tenured faculty dropped by about 25% and as shown, the number of 2004 faculty who teach in a non-tenure-track line more than doubled since 1993.

Faculty distribution by discipline is also shown in Table 1. While the number of faculty in Hard Pure Life, Hard Pure Non-Life and Soft Pure Life stayed relatively constant, the number of faculty in the Hard Applied Life discipline dropped while Soft Applied Life and Soft Pre Non-Life increased. Overall, about 2/3 of the respondents were teaching at public institutions, and the majority were doing so in Doctoral- and Master's, and Associate-granting institutions.

Table 1 also shows the percentage of faculty using the learner-centered assessment techniques. In general across both time points, over half of the faculty said they used these assessment techniques in at least some of their classes. Of the three measures across both time points, oral presentations by students was used the most frequently. Comparing use in 2004 to 1993, we see some interesting changes. In 2004, faculty respondents said they used multiple

drafts of assignments more often, and three times the number of faculty in 2004 used multiple drafts in all classes compared to those in 1993. Compared to 1993, faculty respondents in 2004 said they used more oral presentations by students, and used more opportunities to have students evaluate each other's work.

Although comparable items for 1993 are not available, Table 1 shows the percentage of 2004 faculty who use group/team projects and service learning, community, or co-op experiences. Responses show that over half of the faculty use group/team projects and just over 35% of the faculty use service-learning/community/co-op. Of the five learner-centered techniques examined in this study, service-learning/co-op/community was used the least.

(Insert Table 1 about here)

Table 2 presents the proportion of faculty using learner-centered assessments by select demographic and institutional characteristics. Generally across the assessment techniques at both time points, female and full-time faculty reported using these techniques significantly more than male and part-time faculty, respectively. Compared to faculty in other ranks, full professors reported using all five techniques less; generally, associate and assistant professors indicated using these techniques most frequently. Tenured faculty reported lower levels of use than tenure-track faculty and those not in a tenure-track position. Differences in use by discipline were also noted. In general, faculty members in soft disciplines reported higher use than peers in hard disciplines. Examining use by Carnegie group revealed that faculty members in bachelor's/liberal arts and master's/comprehensive institutions employed these assessment techniques to measure student learning most frequently.

(Insert Table 2 about here)

Table 2 also allows us to examine changes from 1993 to 2004 for three of the learner-centered assessment techniques. Compared to responses form 1993, faculty in the 2004 study report use of multiple drafts more frequently (at all ranks and in all tenure groups), but the use of student presentations and student evaluations of each other's work was at about the same rate over the decade. Both male and female faculty reported higher use of multiple drafts in 2004 compared to 1993, however across all three measures female faculty reported high use of all assessment techniques. By time status, full-time faculty reported higher use of all three techniques in 2004. By type of institution, the use of multiple drafts increased across all institution types, and oral presentations and student evaluation of each other's work remained steady.

To further explore factors related to the use of leaner-centered assessment techniques, we constructed two 2-level hierarchical linear models (HLM) one for 1993 and one for 2004. Following the variable construction used by Yanowitz and Hahs-Vaughn (2007), the dependent variable in each model was a composite variable representing a participant's overall use of learner-centered assessment techniques. This score was created by adding together a participant's scores on each of the three or five learner-centered techniques (not used at all=1; used in some classes=2; used in all classes=3). Tables 3 and 4 presents descriptive statistics for the variables entered in each HLM model.

(Insert Tables 3 and 4 about here)

Typically, the researcher begins an HLM model with a null or unconditional model, a dependent variable, and no other variables. The null model is shown as:

Level 1 Model

$$Y_{ij} = \beta_{0} + r_{ij}$$

Level 2 Model

$\beta_{0j}=\gamma_{00+}\, u_{0j} \qquad \sim N(0, \tau_{00})$

where γ_{00} is the grand mean of learning assessment techniques across institutions and τ_{00} is the variance between institutions.

For the 2004 model, the unconditional model for total learner-centered assessment estimated a grand mean sum of 7.833 (SE=0.23064, p <.001). For the 1993 model, the unconditional model for total learner-centered assessment estimated a grand mean sum of 4.960 (SE=0.02979, p <.001). For both models, the significant chi-square statistic indicated a non-saturated model indicated the need to include more variables, thus a broader HLM model was then developed to examine the effect of additional factors on learner-centered assessment. The full models with a random intercept and fixed slopes are similarly expressed as follows:

Level 1 Model

$$Y(\text{LC Sum})=\beta_0+\beta_1(\text{Time Status=Full-Time})+\beta_2(\text{Female})+\beta_3(\text{Rank=Full Professor})+\beta_4(\text{Tenure/Tenure-Track})+\beta_5(\text{Would choose Academic Career Again})+\beta_6(\text{HAL discipline})+\beta_7(\text{HAN})+\beta_8(\text{HPL})+\beta_9(\text{HPN})+\beta_{10}(\text{SAL})+\beta_{10}(\text{SPL})+\beta_{10}(\text{SPN})+r$$

Level 2 Model

$$\beta_0=\gamma_{00}+\gamma_{01}(\text{Ratio research expenditures/total})+\gamma_{02}(\text{Mean Faculty-Student Ratio})+\gamma_{03}(\text{Public})+\gamma_{04}(\text{Comprehensive/Master's-Granting})+\gamma_{05}(\text{Bachelor's-Granting/LiberalArts})+\gamma_{06}(\text{Associate's-granting})+u_0$$

The continuous variables (FTE student to faculty ratio and ratio of an institution's total expenditures devoted to instruction divided by total E&G expenditures) were grand mean centered; dichotomous and categorical variables were not centered. Missing data were removed for each analysis as needed, and there were no outliers present in the data.

Table 5 presents the results for both hierarchical models. As shown, in both years a number of individual and institutional characteristics significantly affected the use of learner-centered assessment techniques. In the model for 1993 responses, results for individual level characteristics demonstrated significant differences in use by gender, rank, discipline, and satisfaction with academic career. Female faculty in 1993 employed learner-centered assessment techniques more than male faculty, increasing the grand mean score from 5.502 to 5.928. However, full professors used the techniques less; the grand mean score decreased 0.103 to 5.399. Compared to the referent group in the Soft Pure NonLife discipline, 1993 faculty in all other discipline groups used the three assessment techniques significant less. The largest deviations from the referent group were generally in the Hard disciplines (generally sciences and engineering).

(Insert Table 5 about here)

An important benefit to the use of the multilevel model is that it holds constant individual characteristics (level one) to allow for precise examination of the influence of institutional characteristics on assessment practices. In the 1993 model, differences in the use of assessment techniques were not found by ratio of FTE students to faculty, control (public/private) or ratio of expenditures apportioned to instructional activities. There were, however, significant differences by level of institution. Compared to the reference group, doctoral-granting institutions, faculty at comprehensive and liberal arts colleges reported significantly higher use of learner assessment techniques. Faculty members in liberal arts institutions reported the highest use with a mean score of 5.887.

Results for the 2004 model shows that some individual and institutional characteristics contributed to the use of learner-centered assessment. Similar to 1993, female faculty employed

learning-centered assessment techniques to measure student learning more than male faculty, as being female increased the grand mean score from 8.738 to 8.596. At the same time, full professors made use of these techniques less than faculty in other ranks. The grand mean scored decreased from 8.738 to 8.533 for full professors. Faculty members in three of the four hard disciplines (Hard Applied Non-life, Hard Pure Life, and Hard Pure Non-life) used learner-centered techniques significantly less than faculty in the referent group, Soft Pure Non-life discipline. Coefficients for three Soft disciplines (shown in Table 5) did not reach significance, thus it is appropriate to say that faculty in Hard Applied Life and the three soft disciplines were not significantly different in the use of techniques compared to the reference group, Soft Pure Non-life.

In the 2004 model, all institutional variables except FTE student to faculty ratio were significant. Faculty in public institutions reported using learner-centered techniques more frequently than faculty in private institutions. Compared to doctoral-granting institutions and holding all other variables constant, faculty in master's and bachelor's level institutions employed these techniques more often. For example, being at a master's-granting institution resulted in an increase of 0.369 over the grand mean score of 8.738, and being at a bachelor's-granting institution resulted in an increase of 0.315 over the grand mean score.

Perhaps one of the most curious findings from the 2004 HLM analysis, faculty in institutions that had a higher ratio of expenditures apportioned to instruction employed learner-centered assessment techniques significantly less. Holding constant all other variables in the model, the grand mean score for dependent variable decreased by 1.710 with each standard deviation increase in the ratio of expenditures apportioned to instruction. Perhaps there are wide variations in expenses apportioned to instruction for activities such as distance learning. Initial

correlation analyses indicated no underlying relationships, thus we are not certain, but consider there might be variations in the activities included in instructional expenses that led to the negative coefficient.

Discussion

Noting the increased calls for continued assessment of student learning, this study attempted to examine current use of learner-centered assessment techniques in US colleges and universities, as well as compare reported use from 1993 to 2004. Overall, results from this study indicate that many of today's postsecondary faculty are using at least some of the assessment techniques considered to be best-practice in terms of learner-centered instruction. In addition, results examined herein show that general rate of learner-centered assessment in 2004 is at similar, and in some cases, higher rates than reported in 1993.

In both the last decade of the twentieth century as well as in the first decade of the new millennium, over 50% of all faculty members in both NSOPF surveys reported using oral presentations in at least some of their classes, and three times as many 2004 faculty used multiple drafts in all classes compared to 1993 respondents. In general, faculty in the soft disciplines (arts & humanities, education, and social sciences) reported higher use of the assessment techniques compared to hard disciplines (physical and life sciences, and engineering). This finding is consistent with differences in use of deep learning approaches and significant differences found by discipline (Nelson Laird & Garver, 2010). In addition, changes in student enrollments over the decade, changes to the undergraduate curriculum, and increasing discussion of learner-centered instruction and assessment may affect these percentages over the decade.

In 2004, two new assessment techniques were included in the survey; over 50% of the respondents said they used group or team projects in at least some classes and about 25% said they used service-learning /co-op projects. While we acknowledge the 25% use of service-learning in at least some classes, it is the least used assessment technique. This lower use may be due to the specific courses being offered during the time the survey was completed, faculty lack of familiarity with how to incorporate, and/or institutional practices (or lack of) for service activities.

The use of assessment techniques over the 11 years from 1993 to 2004 came at a time when we have experienced changes in faculty demographics and economic declines that might affect the amount of time apportioned to various work tasks, expectations for teaching versus research, institutional decisions on resource allocation, and perhaps an indication of some level of institutional isomorphism. Compared to 1993 figures, higher percentages of 2004 respondents were female, part-time, and employed on no-tenure lines. Consistent with previous reports (e.g., Laird Nelson, Garver, & Niskode-Dossett , 2011 and Centra & Gaubatz, 2000), our findings show that female use learner-centered assessment techniques more than male peers. Similar to Umbach (2008) current findings show that full-time faculty members use these assessment techniques more frequently than part-time peers. It is possible that changes in the use of learner-centered assessment by gender and time status may be affected by shifting demographics of faculty. For example, part-time faculty members may not feel as committed to putting forth extra efforts for instruction and/or receive fewer invitations for faculty development that emphasize these innovations.

Lower state appropriations in the new millennium may have forced institutions to cover a higher percentage of costs for instruction through other means, and may have resulted in reduced

resources allocated for instruction (such as computers and/or classroom renovations for small group discussions, a move to hire more part-time instructors, and/or more faculty in no-tenure lines. As competition for students and star faculty continue, institution officials seek to incorporate policies and practices that attract prospects. For some institutions, the strategy has been to market itself uniquely, while for others it is to engage in activities accomplished by aspirants. When this happens, it can lead to an institution that looks more like many others than a unique institution (perhaps affirming Powell and DiMaggio's (1991) assertion of institutional isomorphism).

Based on chi-square analyses, significant differences in use of learner-centered assessment were found in the proportion of use by gender, rank, discipline, time status, faculty to student ratio, and Carnegie classification (Table 2) and many of these findings were confirmed in the HLM analyses (Table 5). The finding that tenure and time status were not significant contributors in the hierarchical model may have to do with interactions between rank, tenure, and time status. Because the proportion of faculty using these techniques was significantly different by time and tenure status, the researchers elected to include these variables in the HLM model. However, it is possible that the effect for these variables was partially accounted for by rank, another closely related variable. Additional study of these variables, including interaction effects, is warranted. Differences by discipline are also noted and generally show that instructors who teach humanities and education courses use these assessment techniques more than faculty in other fields. This difference by discipline, however, could be affected by changes in majors and related enrollments in particular courses as well as changes in the composition of faculty (to more part-time, female, and those on no-tenure lines). Additional detailed analyses for the use of

assessment techniques by demographic characteristics within the institution level are warranted, as well as additional data that can match assessment techniques to actual learning.

Although it would disconfirm a hypothesis for institutional isopmorphism across all Carnegie types, it is not fully surprising that faculty at bachelor's- and master's-granting institutions reported the highest use of these techniques. Typically, the missions of bachelor's and master's level institutions are more focused on teaching, and, therefore, the researchers would expect to find greater emphasis and reward for progressive teaching and assessment practices. With a focus on vocational training, associate-granting institutions may be less likely to adopt learner-centered assessment practices and more likely to emphasize students' comprehension of factual knowledge. While some scholars such as Ewell (2002) argue in the value of learner-centered assessment at all levels of postsecondary education, we found evidence of similarity for bachelor's/liberal arts and master's/comprehensive institutions in their use of assessment practices, but differences for these institutions compared to doctoral- and associate-granting institutions. This difference might indicate that similarity in institutional accountability is not needed or yet strong enough to be seen across all institution types perhaps due to differences in institution mission.

Larger institutions and/or those with a higher student to faculty ratio have relatively more resources (both facilities and operating dollars). More resources may include faculty development and training that facilitate learner-centered education. However, some smaller colleges that specifically seek a high student focus may have activities and instructional innovations that facilitate learner-centered assessment that are embedded in the institution's culture. In the multilevel model for 2004 (Table 5) the ratio of expenses apportioned to instruction over total E&G expenditures is significant but negative. We acknowledge that

differences may be due to activities such as one-time expenses for technology related to instruction or a heavy emphasis on distance learning, yet still find this perplexing. Although differences in institutional apportionments to instruction would e counter to the concept of isomorphism, we thought that institution officials who allocate more funds to instruction would have more faculty who use these techniques frequently. Additional funds, we thought, would prompt the inclusion of faculty workshops and other training that would contribute to an enlivened culture of innovative instruction and assessment for learning. We do not know that faculty training did not occur; perhaps it did, but is not part of the available data. Since the effect for instructional expenses is nonsignificant for 1993, the negative effect for 2004 may be due a one-time result, or differences in activities such as face-to-face and distance learning. Results in Tables 2 and 5 show significant differences in the use of the assessment techniques across Carnegie type; additional study of the role of resources apportioned to instruction is merited. Perhaps our use of the instructional expense ratio is not detailed enough; for example we do not what portion of instructional funds are being committed for instructional salaries versus classroom renovation, versus expenses for assessment.

Limitations

While we believe the use of the learner-centered assessment is an effective gauge that can measure authentic learning, the use of these techniques alone does not ensure high levels of student learning. Data in the NSOPF surveys do not include measures of learning, so it is not possible to know from this dataset the true relationship between use of assessment techniques and actual learning outcomes. Data that directly links instructional pedagogy, assessment techniques and discreet learning outcomes is needed, but we know of no multi-institution or national data that is available for study.

Findings presented in the multilevel model are only for faculty who apportion at least 50% of their time to instruction and do not generalize to others who teach at a lower percentage of time. The decision to select this subsample may miss high quality teaching and assessment that may occur with individuals who teach occasionally or graduate only courses. Grouping the research disciplines into the established Biglan categories may mask effects of unique disciplines (or innovative contributions that occur in subdisciplines such as medical school instruction), In addition. The Biglan grouping schema does not take into account interdisciplinary teaching. However, Biglan's classification of academic disciplines has been tested and confirmed as a valid method for grouping academic disciplines by several, including Smart and Elton (1982) and Stoecker (1993) and the eight categories presented herein are thought to provide a good balance of eight categories that allow for distinction across two and four-year colleges yet bring together discipline groups that share intellectual content.

These findings examine assessment practices over a two-year period, and there are other facets of learning-centered assessment (e.g., measure of student and/or instructor motivation and direct involvement in curriculum development) that are not included in our analyses. Achievement motivation theory (Atkinson & Feather, 1966) posits a positive relationship between achievement motivation, behaviors, and outcome. Perhaps highly motivated faculty will seek to develop more learner-centered activities and assessments. As well, highly motivated students might respond more positively to learner-centered instruction, which might in turn, prompt or reinforce faculty to develop more learner-centered assessments.

It is also acknowledged that all data is captured from a self-report survey. In general, however, self-report data is purported to be reasonably accurate (Tourangeau, Rips, & Rasinski, 2000). While analyses presented in the multilevel model represent a number of important

individual and institutional characteristics that may contribute to learning-centered assessment, an important next step would be to include additional interaction effects. Not included here presents a limitation in findings, and a call to include interactions among variables such as gender, rank, time status, and discipline in future studies.

Implications and Recommendations

It is clear from this body of research that learner-centered assessment is considered a valued practice in higher education pedagogy. Findings from this study confirm the stable to increased use of learner-centered assessment techniques in higher education in the new millennium and reveal that many faculty members have embraced learner-centered assessment techniques as an effective way to measure and promote student learning. Findings lead us to believe that the larger assessment movement in higher education has taken hold in the classroom as well, and the use of these assessment techniques can be one effective piece of an institution's effectiveness plan. The increased use of learner-centered assessment may indicate some institutional isomorphism in that accountability agencies are seeking evidence of learning, and may be comfortable when familiar techniques are used across institutions. While we see evidence of assessment of learning in all levels of postsecondary education, the extent to which faculty use these techniques varies by institution, faculty type, and assessment technique. For example, faculty appears less likely to use peer evaluation and service-learning/co-op opportunities. This may be due to less familiarity with these techniques and/or more resources (time and money, in particular) needed to implement them. However, a growing body of literature propels service-learning as a highly effective pedagogical technique. Smith (2008), for example distinguished it as, "one of the most pervasive education innovations of the past generation" (p. 5). Vogelgesang and Astin (2000) described it as a, "potentially powerful form of pedagogy," highlighting the value of students connecting content learned in the classroom to

"real world" problems (p. 25). These quotes capture the widely-held belief that infusing service-learning into traditional curricula can improve student learning outcomes. In addition, it would be helpful to explore the effect of residential living on these techniques, service learning in particular. It is plausible that students who live on campus might believe they have more time for or proximity to service-learning activities, compared to students who live off campus. To ensure continued and increased use of these techniques, senior administrators might showcase existing good practice as well as consider the allocation of resources for workshops or other training seminars to help faculty become familiar with these techniques. In addition, skilled professionals in offices of teaching and learning should be called upon to lead or facilitate such workshops. These professionals are often quite knowledgeable of proven and best practice activities related to teaching and learning.

In addition to contributing to the success of faculty, these findings have implications for student success. If these techniques promote more effective learning, and if students become aware of differences based on the use of these techniques, students may wish to enroll in courses that include these assessment activities. The strong increase in multiple drafts may indicate that students learn best in successive approximation. Multiple drafts may allow students to focus on one or two points at a time, gradually incorporating pieces of knowledge or more advanced writing skills. By using these techniques more often, female faculty may develop a more interactive, friendly environment in the classroom. Because a positive environment and good rapport between instructor and students encourages student engagement (Angelo & Cross, 1993; Kuh, 1996; McKeachie, Lin, & Mann, 1971), institutional leaders may wish to encourage the use of these assessment techniques, perhaps through faculty workshops or other additional expenditures apportioned to instruction. If, however, more female faculty members are using

these techniques than male peers, institutional leaders may wish to emphasize the benefits of these techniques to male faculty and monitor enrollments by faculty gender to ensure even enrollments for male and female faculty.

The fact that full-time faculty are using these techniques more than part-time faculty may indicate greater dedication to instruction. Another explanation is that full-time faculty have more time to prepare for instruction generally and assessment activities in particular. Full-time faculty may also have more opportunities to participate in professional development opportunities, such as training workshops and discussions with other faculty on innovations in teaching and learning. As a result, full-time faculty may also be more motivated to integrate progressive practices in their classes. As institution officials employ more part-time faculty during economic downturns, caution must be taken and to ensure that the quality of instruction and assessment of learning does not decrease. Clear messages on the importance of effective assessment as well as faculty training to provide needed information and guidance on how to ensure effective pedagogy and learner-centered assessment may be required.

Interestingly, results demonstrated that tenured faculty members use these assessment techniques less than non-tenured faculty. Consistent with that reported by Kezar and Sam (2010) this finding may be due to the fact that non-tenured faculty are younger in their career, recently our of graduate school and/or more focused on instruction (while full professors may be more engaged in research), and/or could also indicate that non-tenured faculty members are working in institutions that have a stronger focus on instruction. These institutions may provide training in learner-centered assessment or otherwise encourage the use of these assessment techniques. If institutional leaders desire higher use of these activities, clear messages on the value of learner-centered assessment as well as faculty training should be put in place.

Differences in frequency of use by discipline may be the result of different pedagogies, topical content, and/or cultural differences by department. For example, faculty who teach courses with more hands-on applications of content may find it more natural to integrate learner-centered techniques in their courses. It is noteworthy that in general, faculty members in many of the hard disciplines report using these techniques less than peers in the soft disciplines. While medical school and some biology curricula have used problem-based learning for at least two decades (Wood, 2004) and biology (Duch, Groh & Allen, 2001), some other science disciplines may not be incorporating this or other pedagogies that include learner-centered assessment. Institution officials may wish to showcase the innovations of select faculty who can serve as peer mentors and role models to other faculty. To help propel the message, institutions officials may wish to provide a small summer stipend for faculty members who incorporate new assessment techniques in their courses or designate a learner-centered instructor of the year.

Although we acknowledge the steady, and in some cases, increased use of some learner-centered assessment techniques from 1993 to 2004, we also note that some faculty members chose to not incorporate these techniques into any of their courses. Of note, over 60% of the respondents said they did not use student's evaluations of each other's work and nearly ¾ of the 2004 respondents did not use service-learning, co-op or other community-related activities is *any* of their courses. Although it is unclear from the data, perhaps faculty members believe peer feedback is less helpful than that given by the instructor. Or perhaps the need to apportion time across multiple tasks encourages faculty to complete assessments that are quick and easy. While we understand the challenges that may exist related to resources and determining activities that assist in authentic learning, we also acknowledge the long-term value for both faculty and students when this occurs. For example, academic courses with a group/team or service-learning

component are critical and effective ways to enable students to cognitively understand the connection between themselves and others in society, one of the enduring goals of postsecondary education.

References

American Association of Colleges and Universities. (2007). *College learning for the new global century: A report from the National Leadership Council for Liberal Education and America's Promise (LEAP)*. Washington, DC: Association of American Colleges and Universities.

Angelo, T., & Cross, P. (1993). *Classroom Assessment Techniques* (2nd ed.). San Francisco: Jossey-Bass.

Atkinson, J. W., & Feather, N. T. (Eds.). (1966). *A theory of achievement motivation.* New York: John Wiley.

Barr, R. B. & Tagg, J. (1995, November/December). From teaching to learning--a new paradigm for undergraduate education. *Change Magazine*, 27 (6): 12-25.

Becher, T. & Trowler, P. (2001). *Academic tribes and territories*. (2nd ed.). Buckingham, UK: SRHE and Open University Press.

Bennett, S.K. (1982). Student Perceptions of the Expectations for Male and Female Instructors: Evidence Relating to the Question of Gender Bias in Teaching Evaluations. *Journal of Educational Psychology, 74*, 170-179.

Bettinger, E. & Long, B. (2005). *Help or hinder? Adjunct professors and student outcomes*. Ithaca, NY: Cornell University Press.

Biglan, A. (1973a). The characteristics of subject matter in different academic areas. *Journal of Applied Psychology, 57* (3), 195-203.

Biglan, A. (1973b). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology, 57*(3), 204-213.

Boateng, B.A., Bass, L.D., Blaszak, R.T., & Ferrar, H.C. (2009). The development of a competency-based assessment rubric to measure resident milestones. Journal of Graduate Medical Education, 1(1): 45-48.

Bolge, R. (1995). *Examination of Student Learning as a Function of Instructor Status (Full-Time versus Part-Time) at Mercer County Community College*. Retrieved from http://www.eric.ed.gov/PDFS/ED382241.pdf

Boyer, P. G., Butner, B. K., & Smith, D. (2007). A portrait of remedial instruction: Faculty workload and assessment techniques. *Higher Education, 54*(4), 605-613.

Candela, L., Darrell, K., & Benzel-Lindley, J. (2006). A Case for Learner-Centered Curriculum. *Journal of Nursing Education, 45*(2), 59-66.

Centra J. & Gaubatz, N. (2000). Is There Gender Bias in Student Evaluations of Teaching? *Journal of Higher Education, 71*, 17-33.

Cohen, A. & Brawer, F. (1998). *The American community college* (3rd ed.). San Francisco: Jossey-Bass.

Crutcher, R., Obrien, P., Corrigan, R., & Schneider, C. (2007). *College learning for the new global century: A report from the national leadership council for liberal education and America's promise.* Washington DC: American Association of State Colleges and Universities.

DiMaggio, P. & Powell, W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review, 48*, 147-160.

Duch, B., Groh, S., & Allen, D. (2001). *The power of PBL*. Sterling, VA: Stylus Publishing.

Eagen, M.K., & Jaeger, A.J. (2009). Effects of Exposure to Part-time Faculty on Community College Transfer. *Research in Higher Education, 50*, 168-188.

Ehrenberg, R. & Zhang, L. (2005). Do Tenured and Tenure-track Faculty Matter? *Journal of Human Resources, 45*(3), 647-659.

Ewell, P. (2002). An Emerging Scholarship: A Brief History of Assessment. In T. Banta and associates (Eds). *Building a scholarship of assessment*. NY: John Wiley.

Ewell, P.T. (1988). Outcomes, Assessment and Academic Improvement: In Search of Usable Knowledge. In J. Smart (Ed.) *Higher Education: Handbook of Theory and Research*. Volume 4, 53-108. New York: Agathon.

Fook, C.Y., & Sidhu, G.K. (2010). Authentic assessment and pedagogical strategies in higher education. *Journal of Social Sciences, 6*(2): 153-161.

Gappa, J., Austin, A., & Trice, A. (2007). *Rethinking faculty work: Higher education's strategy imperative*. Baltimore: Johns Hopkins University Press.

Gappa, J., & Leslie, D. (1993). *The invisible faculty : improving the status of part-timers in higher education.* San Francisco: Jossey-Bass.

Gappa, J., & Leslie, D. (1997). *Two Faculties or One? The Conundrum of Part-Timers in a Bifurcated Work Force.* AAHE Working Papers, No.6, Washington DC: American Association for Higher Education.

Gerdy, K.B. (2002). Teacher, Coach, Cheerleader and Judge: Promoting Learning Through Learner-Centered Assessment. *Law Library Journal, 94*, 59-88.

Glenn, D. (2011, March 7). Higher-education leaders grapple with the growing demand for quality assurance. *Chronicle of Higher Education.* Retrieved March 26, 2011, from http://chronicle.com/article/More-From-the-ACE-Meeting-/126638/

Goubeaud, K. (2010). How is Science Learning Assessed at the Postsecondary Level: Assessment and Grading Practices in College Biology, Chemistry and Physics. *Journal of Science Education and Technology, 19*, 237-245.

Goubeaud, K & Yan, W. (2004). Teacher Educators' Teaching Methods, Assessments, and Grading Practices: A Comparison of Higher Education Faculty's Instructional Practices. *The Teacher Educator. 40* (1). 1-16.

Grubb, N.W. (1999). *Honored but invisible: An inside look at teaching in Community colleges.* New York: Routledge.

Hahs-Vaughn, D. (2006). Weighting Omissions and Best Practices When Using Large-Scale Data in Educational Research, *AIR Professional File*, No.101.

Hannan, H., & Silver, S. (2000). *Innovating higher education*. Buckingham, UK: SRHE and Open University Press.

Healey, M., & Jenkins, A. (2003). Discipline-Based Education Development. In H. Eggins & R. MacDonald (Ed.). *The scholarship of academic development*. Buckingham, UK: SRHE and Open University Press.

Huba, M. E. & Freed, J. E. (2000). *Learner-centered assessment on college campuses: Shifting the focus from teaching to learning*. Boston: Allyn & Bacon.

Jepperson, R.L., & Meyer, J.W. (1991). The Public Order and the Construction of Formal Organizations. pp. 204-231. In Powell, W., & DiMaggio, P. *The new institutionalism in organizational analysis.* Chicago: University of Chicago Press.

Kezar, A. & Sam, C. (2010). *Understanding the new majority of not tenure-track faculty in higher education: Demographics, Experiences and Plans of Action*. ASHE Higher Education Report, *36*(4), Hoboken, NJ: Wiley.

Kinzie, J. (2010). *Perspectives from Campus Leaders on the Current State of Student Learning Outcomes Assessment: NILOA Focus Group Summary 2009-2010*. Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Kuh, G.D (1996). Guiding Principles for Creating a Seamless Learning Environment for Undergraduates. *Journal of College Student Development, 37*(2), 135-148.

Kuh, G. D. 2008. *High-impact educational practices: Who they are, who has access to them, and why they matter.* Washington, DC: Association of American Colleges and Universities.

Leslie, D. & Gappa, J. (2002). Part-time faculty: Competent and committed. In *Community College Faculty Characteristics*, New Directions for Community Colleges, # 118, pp. 59-68, Hoboken, NJ: Wiley.

McKeachie, W., Lin, Y., & Mann, W. (1971). Student Ratings of Teacher Effectiveness. *American Educational Research Journal, 8*(3), 435-445.

Mezeske, R.J., & Mezeske, B.A. (2007). *Beyond tests and quizzes: Creative assessment in the college classroom*. Hoboken, NJ: Wiley.

National Association of Student Personnel Administrators & American College Personnel Association. (2004). *Learning reconsidered: A campus-wide focus on the student experience*. Retrieved June 10, 2010, from http://www.myacpa.org

Nelson Laird, T., & Garver, A. (2010). The Effect of Teaching General Education Courses on Deep Approaches to Learning: How Disciplinary Context Matters. *Research in Higher Education, 51*, 248-265.

Nelson Laird, T., Garver, A., & Niskode-Dossett, A. (2011). Gender Gaps in Collegiate Teaching Styles: Variations by Course Characteristics. *Research in Higher Education, 52*(3), 261-277.

Neumann, R. (2001). Disciplinary-Differences in University Teaching. *Studies in Higher Education, 26*, 135-46.

Neumann, R., & Becher, T. (2002). Teaching and Learning in Their Disciplinary Contexts: A Conceptual Analysis. *Studies in Higher Education, 27*(4), 405-417.

Palomba, C. (2002). Scholarly Assessment of Student Learning in the Major and General Education. In T.Banta & Associates (Eds). *Building a scholarship of assessment*. NY: John Wiley.

Paradis, T., & Dexter, L. (2007). Learner-centered teaching and assessment in an undergraduate field analysis course. *Journal of Geography 106*(4), 171-180.

Peterson, M. & Vaughan, D. (2002). Promoting Academic Improvement: Organizational and Academic Dynamics That Support Student Assessment. In T.Banta & Associates (Eds). *Building a scholarship of assessment*. NY: John Wiley.

Powell, W.W., & DiMaggio, P.J. (1991). *The new institutionalism in organizational analysis*. Chicago: University of Chicago Press.

Scott, W.R., & Meyer, J.W. (1983). The organization of societal sectors. In J. Meyer & R. Scott (Eds). *Organizational environments: rituals and rationality*. Beverly Hills, CA: Sage.

Smart, J. & Elton, C. (1982). Validation of the Biglan Model. *Research in Higher Education*, 17(3), 213-229.

Smith, M. C. (2008). Does service-learning promote adult development? theoretical perspectives and directions for research. *New Directions for Adult and Continuing Education 118*, 5-15.

Statham, A., Richardson, L., & Cook, J. (1991). *Gender and university teaching*. Albany, NY: State University of New York Press.

Stoecker, J.L. (1993). The Biglan Classification Revisited. *Research in Higher Education, 34*(4), 451-64.

Thomas, S.L. & Heck, R.H. (2001). Analysis of large-scale postsecondary data in higher education research: Potential perils associated with complex designs. *Research in Higher Education, 42*(5), 517-540.

Tourangeau, R., Rips, L. & Rasinksi, K. (2000). *The Psychology of Survey Response*. Cambridge: Cambridge University Press.

Umbach, P.D. (2008). *The Effects of Part-Time Faculty on Instructional Techniques and Commitment to Faculty*. Paper presented at the 33rd annual Association for the Study of Higher Education, Jacksonville, FL.

Vogelgesang, L. J., & Astin, A. W. (2000). Comparing the effects of community service and service-learning. *Michigan Journal of Community Service-learning*, 25-34.

Waller, R., & Davis, (2009). *An Examination of the Relationship of a Tenure System to Enrollment Growth, Affordability, Retention Rates, and Graduation Rates in Texas Public Two-Year Colleges*. Retrieved at: http://academicleadership.org/article/an-examination-of-the-relationship-of-a-tenure-system-to-enrollment-growth-affordability-retention-rates-and-graduation-rates-in-texas-public-two-year-colleges

Wood, D. (2008). Problem-Based Learning. *BMJ*, 336 (7671), 80.

Wood, E.J. (2004). Problem-Based Learning. *Acta Biochimica Polonica Quarterly*, *51*(2), 1-6.

Yanowitz, K.L., & Hahs-Vaughn, D.L. (2007). Changes in student-centered assessment by postsecondary science and non-science faculty. *Teaching in Higher Education, 12*(2), 171-184.

Young, P. (2010). Generic or discipline-specific? An Exploration of the Significance of Discipline-Specific Issues in Researching and Developing Teaching and Learning in Higher Education. *Innovations in Education and Teaching International, 47*(1), 115-124.

Table 1. Descriptive Statistics

Variable Label		1993		2004	
		*N**	%	*N**	%
Gender					
	Male	9220	61.1	9340	57.5
	Female	5870	38.9	6900	42.5
Position type					
	Full-time	9110	60.4	8550	55.6
	Part-time	5980	39.6	7700	47.4
Rank					
	Full Professor	3280	22.4	2770	17.5
	Associate Professor	2490	17.0	2130	13.5
	Assistant Professor	2580	17.7	2330	14.7
	Instructor	4890	33.4	3960	25.0
	Lecturer	980	6.7	1020	6.4
	Other title	400	2.6	3620	22.9
Tenure Status					
	Tenured	5440	36.1	4630	28.5
	On tenure track but not tenured	2170	14.4	2130	13.1
	Not on tenure track	3430	22.7	8110	49.9
	No tenure system at institution	980	6.5	1380	8.5
	No tenure for my faculty status	3060	20.3	NA	
Discipline					
	Hard Applied Life	2190	14.5	1550	9.6
	Hard Applied Non-Life	1060	7.0	1680	10.4
	Hard Pure Life	620	4.1	700	4.3
	Hard Pure Non-life	1620	10.7	1670	10.3
	Soft Applied Life	2640	17.5	3860	23.8
	Soft Applied Non-life	2020	13.4	1630	10.1
	Soft Pure Life	1040	6.9	1370	8.5
	Soft Pure Non-life	3100	20.5	3720	23.0
Institutional control					
	Public	580	72.5	390	63.3
	Private	220	27.5	220	36.7
Carnegie classification					
	Doctoral-granting institutions	180	23.0	140	23.5
	Comprehensive/Master's universities and colleges	220	27.2	130	22.8
	Liberal Arts/Baccalaureate Colleges	70	8.6	110	19.0
	Associates-granting institutions	330	41.1	200	34.7

Table 1, continued.
Descriptive Statistics

Variable Label	1993		2004	
	*N**	%	*N**	%
Learner-centered assessment techniques				
Multiple drafts of written work				
Used in all classes	1650	13.5	5610	41.1
Used in some classes	2360	19.3	2290	16.9
Not used at all	8200	67.2	5650	41.7
Oral presentations by students				
Used in all classes	3080	25.3	4950	36.5
Used in some classes	4700	38.5	3250	24.0
Not used at all	4430	36.3	5360	39.6
Student evaluations of each other's work				
Used in all classes	1710	14.0	2860	21.1
Used in some classes	2900	23.7	2180	16.1
Not used at all	7600	62.3	8510	62.8
Group and team projects producing a joint product				
Used in all classes	N/A		4290	31.7
Used in some classes	N/A		2980	22.0
Not used at all	N/A		8510	46.4
Service-learning, co-op experiences or assignments requiring interactions with the community or business/industry				
Used in all classes	N/A		1720	12.7
Used in some classes	N/A		1900	14.0
Not used at all	N/A		9940	73.3
TA in one or more class(es)				
Yes	2190	14.5	2970	18.3
No	12900	85.5	12480	81.0

*All Ns are weighted and rounded

Table 2. Proportion of Faculty Using Learning-centered Assessment in at Least Some Classes by Demographic Characteristics and Discipline

Variable Label	1993*			2004**				
	Multiple drafts	**Oral presentations**	**Student evaluations each other's work**	**Multiple drafts**	**Oral presentations**	**Student evaluations each other's work**	**Group projects**	**Service-learning assignments**
Rank								
Full professor	33.2	67.5	33.2	43.8	62.7	33.4	51.4	23.3
Associate professor	34.4	65.1	37.5	45.4	63.1	38.1	58.1	28.5
Assistant professor	37.2	68.8	42.0	46.7	67.1	41.9	59.5	29.3
Instructor	29.3	60.8	37.4	36.0	58.2	38.9	53.3	29.6
Lecturer	34.9	65.0	42.8	40.2	62.3	41.3	53.7	23.4
Tenure Status								
Tenured	33.3	63.3	34.8	44.5	62.1	35.1	54.6	25.9
On tenure track but not tenured	38.5	68.4	42.4	47.2	68.6	44.2	63.0	32.2
Not on tenure track	31.3	64.5	40.5	33.6	57.6	36.9	52.2	24.4
No tenure system at institution	31.5	66.2	35.4	32.9	57.9	37.2	54.9	33.3
Gender								
Male	28.2	58.8	31.6	34.1	54.6	30.2	49.1	21.3
Female	39.9	71.3	47.1	44.7	68.5	46.8	59.8	34.1
Discipline								
Hard Applied Life	25.2	67.9	34.1	28.0	61.8	34.4	56.0	47.7
Hard Applied Non-life	18.3	45.2	21.7	24.6	52.4	31.8	59.8	22.8
Hard Pure Life	24.3	48.7	24.3	31.6	49.5	25.3	48.4	12.1
Hard Pure Non-life	12.1	33.7	14.3	19.0	31.1	15.9	40.1	8.6
Soft Applied Life	32.4	78.6	56.7	36.5	69.4	47.6	56.7	37.5
Soft Applied Non-life	22.5	59.4	27.3	33.7	63.8	34.9	63.5	29.0
Soft Pure Life	38.3	72.2	29.8	49.4	73.9	34.0	53.4	27.6
Sort Pure Non-life	58.8	72.9	53.4	58.1	64.5	44.9	50.9	21.6

Table 2, continued

Variable Label	1993*			2004**				
	Multiple drafts	**Oral presentations**	**Student evaluations each other's work**	**Multiple drafts**	**Oral presentations**	**Student evaluations each other's work**	**Group projects**	**Service-learning assignments**
Position type								
Full-time	35.3	65.5	37.7	44.5	39.3	39.3	58.3	29.3
Part-Time	28.7	60.8	37.7	31.5	34.8	34.8	48.1	23.4
Carnegie Classification								
Doctoral-granting institutions	31.8	59.1	34.1	39.1	34.46	34.4	49.9	21.6
Master's universities and colleges	35.9	68.9	40.3	43.0	40.5	40.5	58.3	28.9
Baccalaureate colleges	43.1	78.3	44.5	49.7	41.9	41.9	59.8	28.4
Associate's colleges	28.6	59.0	36.2	32.6	35.7	35.7	51.3	28.0

*all chi-square values were significant except oral presentations by time status
**all chi-square values were significant
all percentages are based on weighted scores

Table 3. Descriptive Statistics for NSOPF: 1993 Variables in The HLM Model

Variable label	*N**	Min.	Max.	Mean.	SD
Rank (1=full; 0=other)	15300	.00	1.00	.59	.491
Tenure and Tenure-track (1=tenure; 0=other)	15300	.00	1.00	.505	.500
Female	15300	.00	1.00	.389	.487
Discipline					
Hard Applied Life	15300	.00	1.00	.145	.352
Hard Applied Non-life	15300	.00	1.00	.069	.255
Hard Pure Life	15300	.00	1.00	.041	.199
Hard Pure Non-life	15300	.00	1.00	.103	.309
Soft Applied Life	15300	.00	1.00	.175	.380
Soft Applied Non-life	15300	.00	1.00	.128	.341
Soft Pure Life	15300	.00	1.00	.081	.275
Soft Pure Non-life	15300	.00	1.00	.241	.431
Position type (1=full-time; 0=other)	15300	.00	1.00	0.74	.443
Faculty student ratio	680	0.4	77.6	18.39	10.412
Carnegie classification					
Doctoral-granting	680	.00	1.00	.248	.428
Master's universities and colleges	680	.00	1.00	.277	.445
Liberal Arts/ Baccalaureate Colleges	680	.00	1.00	.091	.281
Associate's Colleges	680	.00	1.00	.393	.492
% of total expenditures devoted to instruction	680	.041	.723	.438	.723
Institutional control (1=public; 0=other)	680	0	1	.725	.447

*All Ns are rounded

Table 4. Descriptive Statistics for NSOPF: 2004 Variables in The HLM Model

Variable label	*N**	Min.	Max.	Mean.	SD
Rank (1=full; 0=other)	10280	.00	1.00	.192	.390
Tenure and Tenure-track (1=tenure; 0=other)	10550	.00	1.00	.501	.502
Female	10550	.00	1.00	.452	.496
Discipline					
Hard Applied Life	10550	.00	1.00	.095	.281
Hard Applied Non-life	10550	.00	1.00	.093	.294
Hard Pure Life	10550	.00	1.00	.048	.208
Hard Pure Non-life	10550	.00	1.00	.109	.312
Soft Applied Life	10550	.00	1.00	.237	.425
Soft Applied Non-life	10550	.00	1.00	.091	.289
Soft Pure Life	10550	.00	1.00	.101	.301
Soft Pure Non-life	10550	.00	1.00	.239	.429
Position type (1=full-time; 0=other)	16250	.00	1.00	.5263	.49932
Faculty student ratio	550	1	86.00	15.31	5.78
Carnegie classification					
Doctoral-granting	550	.00	1.00	.241	.426
Master's universities and colleges	550	.00	1.00	.227	.421
Baccalaureate Colleges	550	.00	1.00	.187	.388
Associate's Colleges	550	.00	1.00	.336	.469
% of total expenditures devoted to instruction	550	.01	.704	.416	.087
Institutional control (1=public; 0=other)	550	0	1	.662	.475

*All Ns are rounded

Table 5. HLM Results for the 1993 and 2004 Models

	1993 (range of score 3-9)		2004 (range of score 5-15)	
	β Coefficient	**Sig**	**β Coefficient**	**Sig**
Intercept	5.502	**	8.738	**
Level 2				
FTE Student-FTE Faculty Ratio	0.001		0.012	
Ratio instruction expenditures to total	0.012		-1.710	*
Control (1=public, 0=private)	-0.153		0.394	**
Carnegie2-Master's-granting/Comprehenisive [a]	0.275	**	0.315	*
Carnegie 3-Bachelor's-granting/Liberal Arts	0.385	*	0.369	*
Carnegie4-Associates-granting	0.069		-0.059	
Level 1				
Female (1=yes, 0=no)	0.426	**	0.858	**
Rank-full professor (1=yes, 0=all others)	-0.103	*	-0.205	*
Tenure (1=yes, 0=no)	0.034		0.140	
Time status (1=FT, 0=PT)	-0.043		-0.075	
Would choose academic job again	-0.067	*	-0.039	
Hard-Applied-Life Discipline [b]	-0.917	**	-0.300	
Hard Applied Nonlife	-1.120	**	-0.779	**
Hard Pure Life	-1.176	**	-0.912	**
Hard Pure Nonlife	-1.609	**	-2.000	**
Soft Applied Life	-0.0207	**	0.163	
Soft Applied Nonlife	-0.933	**	-0.084	
Soft Pure Life	-0.655	**	-0.091	
Variance Components				
Level 1 $\sigma 2$	2.214		5.872	
Level 2 τoo	0.0597	**	0.282	**
ICC	.0267		.0458	

*p<.05; **p<.01
[a]referent group is doctoral-granting institutions
[b]referent group is Soft Pure Non-life discipline

Appendix A

NSOPF Teaching Field Variables to Biglan Categories

Biglan Category	NSOPF Teaching Field
Hard-Applied-Life (HAL)	Agriculture/natural resources/related Construction trades Health professions/clinical sciences Transportation and materials moving
Hard-Applied-Non-life (HAN)	Architecture and related services Computer/info sciences/support tech Engineering technologies/technician Mechanical/repair technologies/techs Science technologies/technicians Transportation & materials moving
Hard-Pure-Life (HPL)	Biological and biomedical sciences
Hard-Pure-Non-life (HPN)	Mathematics and Statistics Precision Production Physical Sciences
Soft-Applied-Life (SAL)	Visual and Performing Arts Business/management/marketing/related Economics Education Multidisciplinary studies Parks/recreation/leisure/fitness studies Personal and culinary services Public administration/social services Security and protective services
Soft-Applied Non-life (SAN)	Legal professions and studies
Soft-Pure-Life (SPL)	Family/consumer science, human sciences Foreign languages/literature/linguistics Psychology Area/ethnic/cultural/gender studies
Soft-Pure-Non-life (SPN)	Community/journalism/community tech English languages and literatures Philosophy, religion and theology Library science Social sciences (except psych) and history