THE IDENTIFICATION OF COMPETENCIES FOR ONLINE TEACHING SUCCESS

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ABSTRACT

This exploratory study examined teaching behaviors, attitudes, and beliefs (referred to as tasks) that reflect potential competencies for online teaching success. In this study, teaching tasks are those tasks performed during course delivery. A 7-point Likert scale survey instrument was constructed and distributed to experienced online faculty and staff asking them to rate the level of importance of a list of teaching tasks. Based on faculty interviews and a review of relevant research, 64 teaching tasks were identified and included in the survey instrument. A factor analysis produced seven reliable factors. Three factors contained only two tasks under each factor and half of the teaching tasks did not load into any category. Of interest was the fact that over half of the teaching tasks had a rating of 6.0 on the 7-point scale and more than half of the tasks that were rated 6.0 or higher did not load into categories using factor analysis. Further examination of the results is required to determine why highly rated teaching tasks did not fall (load onto) into any factor. Results of the importance of the tasks will form the basis of faculty development efforts aimed at providing faculty with professional development in critical competencies to ensure online teaching success.

KEYWORDS

online teaching and learning, teaching competencies, distance learning, faculty development, e-learning, Community of Inquiry, learning effectiveness

I. INTRODUCTION

Distance Education has grown rapidly over the past few decades, and online enrollments have been growing substantially faster than overall higher education enrollments [1]. Increasingly, institutions must provide students with flexible learning environments to meet student demand for online learning. Considering such a growing market, it is critical to learner success that the quality of the online learning experience be equal to or better than traditional learning methods.

Some studies and anecdotal evidence indicate that attrition rates for online courses are frequently much higher than face-to-face campus-based courses [2]. Student perceptions' of teaching quality has been a contributing factor to these attrition rates. Teaching in a technology-rich environment is complex, so the online instructor must possess a broader set of skills and competencies in order to ensure learner success.

In order to adequately provide the online instructor with the necessary skills and competencies for online teaching success, the specific teaching behaviors must be identified and prioritized. The purpose of this study was to identify and categorize the critical competencies for online teaching success from the perspective of experienced online faculty and professionals such as instructional designers, online program managers, support and technical staff, and administrators. These competencies can then be addressed in faculty development programs in order to prepare the online instructor for online teaching success. This study was based on the following research question: What are the key competencies (teaching behaviors) for successful online teaching?

II. REVIEW OF THE LITERATURE

A. Research on the Seven Principles of Effective Teaching

Much research has focused on effective teaching practices in both face-to-face and online learning environments. Chickering and Gamson [3] led a task force composed of university instructors, administrators, researchers, and students to examine the issue of quality in undergraduate education. They derived and then applied seven principles of effective teaching that served as an evaluative framework for improving the quality of the face-to-face learning experience [4]. The principles are:

1. Encourage contact between students and faculty,
2. Develop reciprocity and cooperation among students,
3. Encourage active learning,
4. Give prompt feedback,
5. Emphasize time on task,
6. Communicate high expectations,
7. Respect diverse talents and ways of learning. [3]

Since the time this article was published in 1987, these seven principles have been applied to the online learning environment in varying degrees. Graham, et al. [5], evaluated four online courses using the seven principles as their criteria for evaluating teaching and learning in the online environment. Based on their findings and informed by student feedback, the researchers developed a list of lessons learned, which corresponded to each principle. The result was a set of specific guidelines associated with each principle, which is much more helpful to faculty who wish to improve their teaching effectiveness and require more specific strategies to readily implement.

Batts, Colaric, and McFadden [6] found that these seven principles were perceived as evident by both students and instructors, which contributed to better quality instruction. Furthermore, the Task Force on Quality in Distance Education for the University System of Ohio considered these seven principles to be the foundation of effective online learning [7]. Additional empirical evidence indicates that best practices in online teaching from a faculty perspective can be linked to applying Chickering and Gamson's [3] seven principles to online instruction [8]. According to Watwood, Nugent, and Deihl [9], good teaching online is no different than good teaching face-to-face; incorporating practices based on the seven principles provides a good foundation for effective teaching. Watwood, Nugent, and Deihl state that although in many ways, "the design of an online course mirrors the design of a face-to-face course, the fundamental practices for delivering the instruction and facilitating learner interaction are quite different" [9, p. 6]. In their view, there are three major differences. For an online course to be effective, the following conditions must occur:

1. Faculty must be socially present in the learning environment;
2. Students must form a learning community;
3. Students must be actively engaged in learning activities.

The seven principles can be leveraged by the use of technology. The authors reported on ways that these principles can be translated from the face-to-face environment to the online environment. Thus, if the quality of learning has been enhanced by the use of these seven principles in the traditional higher education classroom, their application to the online environment ought to be incorporated as well. Moreover, with reference to learning effectiveness (one of Sloan-C's quality pillars), Moore expresses the same intent that the quality of learning online should be comparable to the quality of traditional programs. [10].

B. Community of Inquiry Model

In the vast research done over the past decade on the community of inquiry model [11, 12], the seven principles connect with many of the 34 community of inquiry (COI) indicators of the online learning experience as viewed in terms of teaching, social, and cognitive presences. There is compelling evidence for a strong relationship between many indicators of the social, teaching, and cognitive presences and student re-enrollment [2]. Boston, et al. [2], suggest that social interaction remains a crucial factor for student retention, whereas both social and teaching presences were found to be an important factor in student success in terms of increased understanding of content [13]. Arbaugh also found a strong relationship between social presence and learning outcomes. This study suggested strong empirical support for the COI framework and its ability to predict both perceived learning and delivery satisfaction in online management courses [14, p. 135]. In a study conducted by Shea, Li, and Pickett, teaching presence was found to be a "promising mechanism for developing learning community in online environments" [15, p. 175]. Survey results revealed that respondents (from 15-65 years of age) were "significantly more likely to report higher levels of learning and community when they also reported that their instructors exhibited more salient 'teaching presence' behaviors" [15, p. 184]. Furthermore, Richardson and Swan [16] found a high positive correlation between students' perceptions of instructors' social presence and their perceived learning and perceived satisfaction with the instructor. Social presence indicators relate to open communication, encouragement to collaborate, risk-free expression, strong sense of community, and improved socio-emotional climate. It has been described as the ability of learners to project themselves socially and emotionally in an online learning environment such that they are perceived as "real people" [11, 12] and "the degree of feeling, perception, and reaction to another intellectual entity in the CMC (computer-mediated communication) environment)" [17]. Tu and McIssac [17] also confirmed that social presence is a vital element influencing online interaction.

1. Interaction, Communication, and Active Participation: Learner-Centered Teaching

Moreover, evidence exists to connect the value of interaction among faculty and students and effective teaching practices. Young [18] found that students in an online learning environment rated teaching behaviors such as facilitating the course effectively, communicating effectively, motivating students to do their best, and being visible and actively involved in the learning process as highly effective. According to Young these behaviors, along with faculty delivering a valuable course and showing care and concern for student learning, may enhance connections between the instructor, the students, and the course content [18, p. 73]. These highly rated teaching behaviors are those that can be related to teaching and social presence in the COI framework.

Viewed from a different perspective, studies have shown that what online learners miss about face-to-face learning relates to deficiencies in cognitive, teaching, and social presence. In a study conducted by Stodel, Thompson, and MacDonald [19], results of what learners' perceived as missing in their online learning experience were interpreted in terms of the COI framework. In this study, two of the themes that emerged were "perceiving and being perceived by the other" and "getting to know others." This clearly relates to fostering social presence in the online environment. According to Garrison, et al [11], their definition of social presence includes open communication as an important factor in an effective online learning experience. Stodel, Thompson, and MacDonald [19] recommend using diverse technologies to enhance communication and social presence. Another theme that emerged, "robustness of online dialogue," clearly relates to teaching presence whereby the expectation is for the instructor to facilitate discourse [11] such that students are supported and provided guidance by instructors who actively model effective facilitative and reflective practices and who contribute to intellectual and scholarly leadership, i.e., content knowledge and teacher expertise. Finally, online learners in this study missed spontaneity and improvisation that characterizes face-to-face dialog whereby much can be learned in following tangents not prescribed in the course syllabus. Learners missed some potential teachable moments, and this can be connected to cognitive presence, i.e., opportunities for higher-level knowledge acquisition and deeper thinking and processing [11].

The foregoing research related to the COI framework and the Chickering and Gamson's seven principles lend credence to the importance of teaching practices that emphasize communication and interaction. Close correspondence can be seen with five of the Chickering and Gamson's [3] seven principles (1–4 and 6) discussed above and the teaching behaviors in the teaching and social presence categories of the COI framework. In a study about online learners' preferences for interaction conducted by Northrup [20], different attributes of interaction were studied: content interaction, conversation and collaboration, intrapersonal/metacognitive skills, and need for support. Participants in the study rated an aspect of intrapersonal/metacognitive skills related to self-directedness the highest. This self-directedness referred to cognitive guidance on assignment expectations. Also highly rated was timeliness of response (corresponding with instructor/peers), and peer discussions. The conclusions of this study reiterated the importance of different aspects of interaction in online learning "primarily because it is important to learner satisfaction and motivation" [20, p. 225].

Closely related to both communication and interaction is active learning. According to Petress [21], active learning refers to students' active participation in their education as an engaged and motivated partner in the learning process. The active learner effectively applies what he or she has learned. Engaged learning may be viewed as active learning by virtue of the necessity of interaction, whether it be instructor to student, student to student, or student to content. It may be a combination of some or all three of these facets of interaction. According to Hillman, Willis, and Gunawardena [22], *interaction is engagement in learning*. There is wide acceptance that learning takes place through active engagement/participation within a learning community rather than passive reception of information [23-25]. Research on learner-centered principles also supports the view that learning is influenced by social interactions, interpersonal relations, and communications with others—Principle #11 of the Learner-Centered Psychological Principles developed by the American Psychological Association [26, 27]. Other principles under the "cognitive and metacognitive factors" category relate to students' active learning. These cognitive and metacognitive factors state that learning involves active construction of knowledge from information and experience, as well as critical thinking and reflection on the learning process itself. Several practices associated with this category ensure that learners are provided ways for discussing problems, participating in projects, and reflecting on activities. The learner-centered framework carries substantial theoretical weight as it is based on the APA's [26] research-validated principles developed from over a century of research. This research is now being applied to e-learning contexts [28].

Given the increase in student enrollments in distance education at the post secondary levels [29, 1, 30] and growing consensus that teaching online involves some competencies that differ from face-to-face teaching [31, 32, 9], this study was undertaken to identify instructor competencies that can be integrated into a comprehensive faculty development program designed to ensure both faculty and student are successful in the online learning environment.

A great deal of empirical research has been done over the past ten years affirming the teaching effectiveness based on the broad principles put forth by Chickering and Gamson [3]; the teaching practices derived from the COI theoretical framework/model [5, 11]; and the International Board of Standards for Training, Performance and Instruction (IBSTPI) instructor competencies [31]. Moreover, many empirical studies affirmed the importance of communication, interaction, student engagement, collaboration, active learning, and learner-centered approaches to teaching on variables such as students' perception of learning, satisfaction, and retention. Smith [33] proposed a competency model that identified key competencies that online instructors would need (a) prior to the start of a course, (b) during the course, and (c) after the course. His competencies, although somewhat helpful for the purposes of this study, broadly defined competencies as knowledge, attitudes, skills, and values. His approach was to create a checklist of competencies informed by the research literature. This study included teaching practices based on those pedagogical practices shown to be effective as evidenced by empirical research discussed in this literature review. However, this study also included teaching behaviors not researched in terms of their affect on teaching effectiveness in areas such as technology, administration/leadership, and classroom management. Our intent is to create a list of critical teaching behaviors that will be the

foundation of a comprehensive faculty development program, which will lead to online teaching and subsequently learning success.

C. The Need for Quality Professional Development

In order to deliver quality online instruction, faculty needs to be adequately trained to effectively teach online. As we clarify what quality instruction looks like from the perspective of faculty, staff, and administrators experienced in online education along with input from online students, we need to incorporate training on the competencies associated with quality instruction into a comprehensive and effective faculty development program. Because online enrollments in higher education have grown at a rate that far exceeds the growth rate for the overall higher education student population [29], clearly, professional development efforts need to be in place that will serve a growing population of online faculty. Surprisingly, Allen & Seaman [29] found that 19% of the over 2,500 colleges and universities surveyed nationwide that had online course offerings reported having no training or mentoring programs for their online teaching (p. 3). The need for quality professional development is evident. Moore [34] points out "faculty preparation for teaching online measurably improves learning effectiveness and satisfaction" (p. 90). Positive consequences can accrue in terms of faculty satisfaction, student satisfaction, and higher retention of not only faculty [35], but also potentially students.

Seaman [36] found that part-time faculty have been engaged in online learning more so than their full-time counterparts. In addition, Tipple [37] asserted that the significant increase in online enrollments is closely connected with a "significant increase in adjunct (part-time) faculty." Professional development efforts need to keep pace with the trend of increasing numbers of online faculty.

A challenge to a successful professional development effort is the isolation of online adjunct faculty where many are "telecommuters" who perform their jobs remotely. Allen and Seaman [29] found that most training approaches for online faculty are internally-run training (65%) and informal mentoring (59%). Thus, accessibility to training is a potential issue. Dolan [38] explored online adjunct faculty concerns over feelings of isolation and lack of opportunities for skill development (p. 62). Dolan [38] found that a collegial community that not only shares training experiences but also avails itself to social networking channels to maintain open communication for resident faculty and adjunct faculty is warranted. Higher Education networks such as the Professional and Organizational Development Network in Higher Education (POD) provides support, services, and resources to members interested in faculty development (http://www.podnetwork.org/index.htm). This network resource can guide Institutions in setting up a suitable faculty development program to meet their respective needs and provide a community of online faculty who wish to communicate with each other.

Varvel, Lindeman, and Stovall [39] reported on an exemplary faculty development program developed by The Illinois Online Network (ION) partnership. One of the goals of the ION program "is to help faculty develop and deliver courses in an online format that incorporate best practices for engaging students in discussion and critical thinking (p. 83). ION's fastest growing component is their "Making the Virtual Classroom a Reality" (MVCR) series of online faculty development courses that expose faculty, staff, and administrators to pedagogically sound principles of teaching and learning. Also, ION's Master Online Teacher (MOT) Certificate program certifies faculty, staff, and administrators who demonstrate knowledge in many areas related to the delivery of online courses such as the changing nature of faculty and student roles, effective communications, use of appropriate technologies, assessment, learning activities, and evaluation of online courses. Moreover, ION's resource-rich website (http://www.ion.uillinois.edu/resources/) is available to institutions designing their own faculty development program. Building on the successes of other professional development programs will assist in the decision-making about not only what important topics to cover, but also the varied means of delivering training.

Yet another challenge involves determining the content (skills, knowledge, and attitudes) of a faculty development program along with the timing of the delivery of instruction for the online teaching faculty. That is, what needs to be taught at different experience levels? Palloff & Pratt [40] recommend that

faculty self-assess their level of training needs so as to determine where, on a continuum of novice to more experienced, faculty lie in order to meet their needs at the appropriate level. They provide a sample syllabus for training novice/beginner and advanced faculty covering broad topics that serve as a very good beginning. However, content for specific institutional needs may vary. Institutional contextual variables must be considered in designing a suitable faculty development program. In a synthesis of Sloan-C effective practices conducted by Moore [34], many approaches have been taken by colleges and universities demonstrating that there is no one-size-fits-all solution. What distinguishes this study is that key competencies (e.g., teaching behaviors that reflect knowledge, skills, and attitudes) are identified that will inform a faculty development program. The goal is to bring more specificity to the content of a faculty development program. This approach might prove helpful to other institutions. Further, Phase II of this study (in progress) deals with identifying when key competencies should be taught.

III. METHODOLOGY

A. Procedures

In order to identify key competencies associated with online teaching success, a survey was administered to participants with experience in the field of online teaching. Their perspectives on the most important teaching behaviors associated with successful online teaching were solicited through the survey. The instrument consisted of 64 statements, each of which identified a teaching behavior. The following sentence provided the guideline for responses: "Indicate how important you believe each behavior, belief, or attitude is for online teaching success." Participants responded on a scale of 1 to 7, where one was described as "not important" and seven was described as "very important." One open-ended question asked participants to identify any additional key competencies that may have been omitted but were thought to be important. The survey also gathered demographic information about the participants, asking that they identify their number of years of online teaching experience, their gender, their current academic position, and their primary academic discipline.

An invitation to participate in this research project was sent via e-mail to professional listservs such as Penn State Faculty, Penn State Learning Design, and Sloan-C, whose membership includes those experienced in the field of online education. In addition, extensive personal contacts of the principals of this study were used. Those interested in participating were given directions for requesting a pass code; a total of 260 requests were received. A unique pass code was generated for each participant, which allowed him or her to access the survey. The pass code also recorded that a participant had submitted the survey, thus preventing the participant from submitting the survey more than once. Of the 260 requests to participate in the survey, 197 surveys were submitted. The survey was administered online, through a secure website, and remained open from October 2009 to March 2010. When a participant submitted the survey, data were stored in a secure database. Data were exported into Excel/SPSS for analysis.

B. Survey Instrument

The survey instrument was constructed based on an extensive review of the literature and interviews with experienced faculty and staff, documenting their best practices for online teaching. Note that this study focused on teaching behaviors exclusively; thus, any tasks related to instructional design were excluded. Effective practices related to behavioral, philosophical, and attitudinal aspects of teaching online were identified, resulting in a list of approximately 100 items. Using several focus groups comprised of experienced online faculty, an instructional designer, a program evaluator, and several research associates, all teaching tasks collected were reviewed for clarity, comprehensibility, and redundancy. The purpose for each session was to come to a consensus on which important teaching tasks to include in the survey instrument while keeping in mind that an appropriate number of survey items would increase our likelihood of a better response rate.

IV. RESULTS

A. Participants

There were 197 participants (113 female, 64 male, and 20 not reporting) from a wide array of job positions, academic disciplines, and experience. Survey respondents were given the opportunity to identify their roles and responsibilities in multiple categories. Eight different job positions were represented as well as an "other" category: professor (n=55), adjunct (n=46), instructor (n=34), administrator (n=30), lecturer (n=21), staff (n=21), instructional designer (n=18), affiliate (n=2) and other (n=33). In all, six academic disciplines were represented: professions (n=83), humanities (n=33), social sciences (n=33), formal sciences (n=20), applied sciences (n=16) and natural sciences (n=13). The remaining fifteen respondents indicated the "other" category (n=15). The number of years of experience was also diverse: no teaching responsibilities (n=17), less than 1 year (n=16), 1 to 3 years (n=57), 4 to 5 years (n=40), 6 to 9 years (n=40), 10 to 15 years (n=23), 16 to 20 years (n=2), and more than 20 (n=1).

Several analyses were used to examine the research questions. First Cronbach's alpha was calculated to assess reliability of the survey instrument (alpha = 0.94). An exploratory factor analysis was conducted to examine the research question related to competencies for successful online teaching (see Table 1). A factor analysis groups items together based on their inter-item correlations to see what behaviors fit together based on participant response patterns. To examine item strength, means and standard deviations were calculated (see Table 2). Thirty-three tasks did not cluster into any of the seven competencies through the factor analysis.

Competency	**Items (inter-item correlations)**
Active Learning (10 items, eigen=14.00)	▪ The instructor encourages students to interact with each other by assigning team tasks and projects, where appropriate. (r=.819) ▪ The instructor includes group/team assignments where appropriate. (r=.766) ▪ The instructor encourages students to share their knowledge and expertise with the learning community. (r=.721) ▪ The instructor encourages students to participate in discussion forums, where appropriate. (r=.682) ▪ The instructor provides opportunities for hands-on practice so that students can apply learned knowledge to the real-world. (r=.582) ▪ The instructor provides additional resources that encourage students to go deeper into the content of the course. (r=.574) ▪ The instructor encourages student-generated content as appropriate. (r=.531) ▪ The instructor facilitates learning activities that help students construct explanations/solutions. (r=.506) ▪ The instructor uses peer assessment in his/her assessment of student work, where appropriate. (r=.472) ▪ The instructor shows respect to students in his/her communications with them. (r=.427)
Administration/ Leadership (5 items, eigen=3.79)	▪ The instructor makes grading visible for student tracking purposes. (r=.683) ▪ The instructor clearly communicates expected student behaviors. (r=.682) ▪ The instructor is proficient in the chosen course management system (CMS). (r=.591)

	▪ The instructor adheres to the university's policies regarding the Federal Educational Rights & Privacy Act (FERPA). (r=.509) ▪ The instructor integrates the use of technology that is meaningful and relevant to students. (r=.454)
Active Teaching/ Responsiveness (5 items, eigen=2.99)	▪ The instructor provides prompt, helpful feedback on assignments and exams that enhances learning. (r=.741) ▪ The instructor provides clear, detailed feedback on assignments and exams that enhances the learning experience. (r=.714) ▪ The instructor shows caring and concern that students are learning the course content. (r=.514) ▪ The instructor helps keep the course participants on task. (r=.429) ▪ The instructor uses appropriate strategies to manage the online workload. (r=.426)
Multimedia Technology (2 items, eigen=2.44)	▪ The instructor uses a variety of multimedia technologies to achieve course objectives. (r=.788) ▪ The instructor uses multimedia technologies that are appropriate for the learning activities. (r=.749)
Classroom Decorum (4 items, eigen=2.38)	▪ The instructor helps students resolve conflicts that arise in collaborative teamwork. (r=.761) ▪ The instructor resolves conflicts when they arise in teamwork/group assignments. (r=.680) ▪ The instructor can effectively manage the course communications by providing a good model of expected behavior for all course communication. (r=.533) ▪ The instructor identifies areas of potential conflict within the course. (r=.431)
Technological Competence (2 items, eigen=2.14)	▪ The instructor is proficient with the technologies used in the online classroom. (r=.884) ▪ The instructor is confident with the technology used in the course. (r=.724)
Policy Enforcement (2 items, eigen=1.93)	▪ The instructor monitors students' adherence to policies on plagiarism. (r=.847) ▪ The instructor monitors students' adherence to Academic Integrity policies and procedures. (r=.803)

Table 1. Items organized by competencies

B. Exploratory factor analysis

As these items were being examined for the first time, an exploratory factor analysis (principle components, varimax rotation) was conducted. Seven reliable factors (competencies) emerged, although several of these competencies ended up with only two items as a result of the conservative exploratory procedures. All factors had eigen values over the accepted 1.0 cutoff score; 6 of the 7 had eigen values higher than 2, with the final 1 approaching two (1.93, Table 1). Items were only included that had inter-item correlations of 0.40 or greater, resulting in 30 of the 64 items loading on a single factor. In all, 46 percent of the variance in the items was accounted for by the seven competencies. Competency labels

were devised for the first seven reliable factors. These labels represent the general theme of the tasks included.

The first competency was labeled by the researchers "active learning" (eigen=14.00) and included ten items with inter-item correlation ranging from 0.47 to 0.82. Reliability for the factor was 0.93 (Cronbach's alpha).

The second competency was called "administration/leadership" (eigen=3.79). This competency included five items with inter-item correlations ranging from 0.45 to 0.68. Reliability for the factor was 0.46 (Cronbach's alpha).

Next was a competency labeled "active teaching/responsiveness" (eigen=2.99). Responsiveness included five items with inter-item correlations ranging from 0.43 to 0.74. Reliability for the factor was 0.72 (Cronbach's alpha).

The fourth competency was deemed "multimedia technology" (eigen=2.44). Reliability for the factor was 0.84 (Cronbach's alpha).

The fifth competency was called "classroom decorum" (eigen=2.38). Classroom decorum consisted of four items with inter-item correlations ranging from 0.43 to 0.76. Reliability for the factor was 0.77 (Cronbach's alpha).

Next "technological competence" (eigen=2.14) emerged as a factor. Reliability for the factor was 0.79 (Cronbach's alpha).

Finally the competency of "policy enforcement" (eigen=1.93) emerged. Reliability for the factor was 0.82 (Cronbach's alpha).

The first five competencies accounted for 40% of the variance.

C. Item ratings

Means and standard deviations were calculated for each of the sixty-four items referenced in the survey instrument (see Table 2). The mean for all items was 6.00 on a Likert scale from 1 (least important) to 7 (most important). Thirty-seven items had a mean higher than the overall average; one matched the average; and twenty-six had means lower than the average. The standard deviation for all items was 1.07.

The highest rated item was "the instructor shows respect to students in his/her communications with them" with a mean of 6.83 (s.d. =0.46, Table 2). The lowest rated item was "the instructor uses peer assessment in his/her assessment of student work, where appropriate" (M=4.59, s.d. =1.51, Table 2).

Competency	**Items by Mean**	**Mean**	**s.d.**
Active Learning	The instructor shows respect to students in his/her communications with them.	6.83	0.46
Did not load	The instructor provides students with clear grading criteria (e.g. rubrics, description of how assignments will be graded).	6.74	0.65
Did not load	The instructor clearly communicates course goals.	6.73	0.54
Did not load	The instructor clearly communicates course content.	6.70	0.56
Did not load	The instructor shows enthusiasm when interacting with students in the learning environment.	6.69	0.56

Active Teaching	The instructor provides clear, detailed feedback on assignments and exams that enhances the learning experience.	6.65	0.58
Did not load	The instructor communicates with students about course changes, reminders of due assignments, relevant additional resources through announcements/e-mails.	6.62	0.70
Classroom Decorum	The instructor can effectively manage the course communications by providing a good model of expected behavior for all course communication.	6.61	0.68
Active Teaching	The instructor provides prompt, helpful feedback on assignments and exams that enhances learning.	6.57	0.70
Administration/ Leadership	The instructor clearly communicates expected student behaviors.	6.55	0.67
Did not load	The instructor is helpful in guiding the class towards understanding course topics in a way that helps students clarify their thinking.	6.55	0.66
Did not load	The instructor creates a learning environment that is safe and inviting.	6.54	0.73
Active Teaching	The instructor shows caring and concern that students are learning the course content.	6.49	0.79
Administration/ Leadership	The instructor adheres to the university's policies regarding the Federal Educational Rights & Privacy Act (FERPA).	6.43	1.16
Did not load	The instructor is actively involved in monitoring student progress.	6.41	0.77
Did not load	The instructor provides meaningful examples that help students understand course content.	6.39	0.85
Active Teaching	The instructor uses appropriate strategies to manage the online workload.	6.37	0.90
Technological Competence	The instructor is proficient with the technologies used in the online classroom.	6.35	0.74
Active Learning	The instructor encourages students to participate in discussion forums, where appropriate.	6.32	0.92
Active Learning	The instructor facilitates learning activities that help students construct explanations/solutions.	6.30	0.95

Technological Competence	The instructor is confident with the technology used in the course.	6.30	0.82
Administration/ Leadership	The instructor is proficient in the chosen course management system (CMS).	6.28	0.81
Did not load	The instructor communicates accessibility of resources to students with disabilities.	6.26	1.07
Administration/ Leadership	The instructor makes grading visible for student tracking purposes.	6.25	0.88
Did not load	The instructor provides guidance on how students can link new information to their existing knowledge.	6.23	0.89
Did not load	The instructor plays an active role in online discussions when appropriate.	6.22	0.90
Policy Enforcement	The instructor monitors students' adherence to policies on plagiarism.	6.20	0.90
Administration/ Leadership	The instructor integrates the use of technology that is meaningful and relevant to students.	6.18	0.97
Did not load	The instructor's communication demonstrates sensitivity to disabilities and diversities including: cultural, cognitive, emotional, and physical.	6.18	1.04
Did not load	The instructor communicates course expectations regarding classroom behavior (netiquette guidelines).	6.16	1.00
Did not load	The instructor uses various assessment methods to evaluate student performance.	6.15	1.12
Did not load	The instructor demonstrates flexibility in efforts to accommodate different student needs/circumstances.	6.15	0.97
Did not load	The instructor adheres to instructional policies related to syllabus development.	6.11	1.03
Did not load	The instructor responds to student questions within 24 hours.	6.10	1.19
Policy Enforcement	The instructor monitors students' adherence to Academic Integrity policies and procedures.	6.09	0.93
Did not load	The instructor is open to students' ideas and incorporates students' ideas for improving the course.	6.09	0.99

Active Learning	The instructor provides opportunities for hands-on practice so that students can apply learned knowledge to the real-world.	6.00	1.29
Did not load	The instructor logs into the course daily in order to monitor and engage students in the course content.	5.99	1.25
Did not load	The instructor communicates to students the required technological equipment and software for the course.	5.97	1.42
Active Learning	The instructor provides additional resources that encourage students to go deeper into the content of the course.	5.96	1.13
Active Learning	The instructor encourages students to share their knowledge and expertise with the learning community.	5.95	1.26
Active Teaching	The instructor helps keep the course participants on task.	5.93	1.07
Multimedia Technology	The instructor uses multimedia technologies that are appropriate for the learning activities.	5.87	1.11
Did not load	The instructor monitors students' adherence to copyright policies.	5.80	1.29
Did not load	The instructor promotes student reflection by providing students with opportunities to evaluate their work.	5.71	1.21
Did not load	The instructor varies their use of teaching methods to accommodate students' different learning styles.	5.70	1.28
Did not load	The instructor teaches students the code of ethics relevant to their discipline.	5.68	1.27
Did not load	The instructor is a facilitator of the learning process and does not direct the students' learning process.	5.65	1.42
Classroom Decorum	The instructor helps students resolve conflicts that arise in collaborative teamwork.	5.63	1.17
Did not load	The instructor has an understanding of the course technologies sufficient to help students with basic technical issues.	5.57	1.42
Did not load	The instructor is the expert and directs the learning process.	5.55	1.30
Active Learning	The instructor encourages student-generated content as appropriate.	5.55	1.32
Active Learning	The instructor encourages students to interact with each other by assigning team tasks and projects, where appropriate.	5.50	1.45

Multimedia Technology	The instructor uses a variety of multimedia technologies to achieve course objectives.	5.46	1.34
Classroom Decorum	The instructor identifies areas of potential conflict within the course.	5.40	1.28
Active Learning	The instructor includes group/team assignments where appropriate.	5.35	1.44
Classroom Decorum	The instructor resolves conflicts when they arise in teamwork/group assignments.	5.26	1.39
Did not load	The instructor acknowledges the receipt of assignments within two days of submission.	5.24	1.53
Did not load	The instructor is familiar with resources that relate to academic advising.	5.13	1.49
Did not load	The instructor conducts office hours that accommodate students' schedules.	5.11	1.63
Did not load	The instructor returns graded assignments within 48 hrs. of the due date of the assignment.	5.09	1.81
Did not load	The instructor gathers data on students' background, interests, and experiences in order to relate them to course content.	4.84	1.44
Did not load	The instructor provides choices for graded projects so students can choose topics based on interest.	4.80	1.65
Active Learning	The instructor uses peer assessment in his/her assessment of student work, where appropriate.	4.59	1.51

Table 2. Item means and standard deviations with competency label

Thirty-three items did not cluster onto the seven competencies. However, nineteen of them had a mean above the survey average of 6.0, and therefore may still be important behaviors for online teaching in and of themselves.

Ⅴ. DISCUSSION

The first pattern worth noting, as presented in the results section, is that all items in the survey had relatively high means, scoring between 4.59 and 6.83 on a 7-point scale. Additionally, more than half (n=37) of the items had a mean of 6.0 or above. This data indicates that the survey participants thought all of the items were of relative importance and needed to be addressed in online faculty preparation programs. Despite the fact that a small number of participants had less than one year of online teaching experience (n=16) or no online teaching experience (n=17), there seemed to be a consensus on the top ranking teaching behaviors needed for successful online teaching. Since data was not collected on how much non-online teaching experience participants had, it may be that part of the explanation for the consensus lies in the influence of their prior teaching experience. Nonetheless, this result may not be

surprising, given that most of the behavioral statements on the survey originated from other published studies on competencies in effective online teaching practices. The challenge this data presents, however, is how to effectively prepare the online instructor with sixty-four different behaviors thought to be important to online teaching success.

A second pattern worth noting can be found by comparing the means, first by ranking the tasks overall and second by organizing them by competency. In comparing the means overall, twenty-three of the top thirty-seven items (all with means of 6.0 or higher) can be related to various aspects of communication. This suggests that communication in the online learning environment is perceived as very important, in alignment with previous published research [2, 16, 13, 18].

When comparing the means organized into competencies, the emerging patterns support existing research on effective teaching practices. Two of the first three competencies reflect current research issues in higher education surrounding active learning and active teaching/responsiveness (see Table 1). Active learning, also referred to as student-centered teaching, has been viewed as a strategy to increase student engagement and motivation. Although there is not yet a universal definition for active learning, it is in alignment with a movement from lecture-based teaching toward the active engagement of the learner. This makes it relevant for online environments where a strictly lecture-based teaching model may prove more difficult and of questionable effect [28].

The types of activities, strategies, and beliefs often associated with active learning are also reflected in this project's competency groupings. For example, commonly cited student-centered learning activities are open-ended and problem-based, involve critical thinking, simulations, role play, team/group activities [34], demonstrations, writing prompts, visual diagrams, debates, peer teaching [42], games, case studies, student-generated exam questions, blogging and concept-mapping [43]. This project's first competency grouping, which was labeled Active Learning, includes tasks such as constructing explanations/solutions, hands-on practice, student-generated content, team tasks and projects and peer assessment (see Table 1), all of which are referenced in the literature about active learning.

The second competency grouping, labeled Administration/Leadership, acknowledges the critical role of the instructor as the director of the teaching and learning process. The specific tasks grouped in this competency reflect the same degree of leadership, supervision, and class management that would be expected in a traditional face-to-face classroom, including behavior management, transparent grading policies, and proficiency in the teaching platforms (see Table 1).

The third competency, labeled Active Teaching/Responsiveness, reflects the research literature describing the essential role of the online instructor as the "connector" between the learner and his or her learning system. Behaviors in this competency describe aspects of responsiveness, the quality of feedback and the value of establishing a caring approach and concern for student success. This competency is also reflected in models such the Community of Inquiry (COI). The Teacher Presence dimension of this model emphasizes the need for the online instructor to be visible, active, and responsive to the online learner in order to support student progress; it is also connected to the cognitive and social aspects of the learning experience. Although closely related to the Active Learning competency, the Active Teaching/Responsiveness competency describes more instructor behaviors and responsibilities and stresses the role of the instructor as a visible presence in the class activities.

One competency of interest, Technological Competence, generally considered as a critical aspect of online course instructor preparation, was ordered sixth amongst the top seven competencies. The two behaviors that loaded onto this competency reflect the need for adequate instructor preparation with the technological learning system and the subsequent instructor confidence with these technologies. It is not clear why this competency would not have ordered higher among the listing unless the survey participants presumed the online instructor would already possess the necessary technical skills.

The remaining three competencies (Multimedia Technology, Classroom Decorum, and Policy Enforcement) represent a wide range of instructor behaviors necessary for successful course completion. In a technologically dependent delivery system such as online learning; it is not surprising that the survey

respondents would deem behaviors related to the use of, and variety of, multimedia technology as important. The remaining behaviors include tasks that, although not exclusive to online learning, reinforce their increased importance in the online environment.

Using a factorial analysis to group online teaching behaviors is one method to examine how experienced online experts organize or categorize these behaviors into themes. As such, it is worth noting that nineteen of the top thirty-seven individual behaviors did not factor into any of the seven competencies (see Table 2). It is important not to devalue these behaviors as less critical to instructor or student success in the online classroom. For reasons not totally evident, they simply did not load onto the top seven competency categories. Reviewing these nineteen items, all of which had a mean of 6.0 or higher, several appear to be similar to items that grouped into competencies or seem to reflect the spirit of the overall competency categories. Although the analysis supports the clustering of behaviors into competencies, it does not reveal causal pathways that might describe why items grouped together.

The outcomes of this phase of the competencies for online teaching success research provide some insight into the required skills as viewed by many experienced online educators. This research data informs the design and development of professional development programs by focusing attention on not only the broad competencies category, but also, more specifically the detailed behavioral tasks necessary for teaching success. As may be expected, the results support the emphasis in training of communications related teaching strategies and techniques. This critical aspect of the role of the online instructor is identified as a critical dimension of teaching, and perhaps subsequently learning success. When twenty-three of the top thirty-seven items can be related to various aspects of communication, it suggests that training skills for the online instructor must include an immersion in communications-rich professional development experiences, as well as adequate practice and refinement of these skills. The professional development providers need to carefully consider embedding and highlighting and demonstrating the best practices for employing communications techniques.

In reviewing the top seven overall competencies, it is obvious that a breadth of skills and behavioral tasks must be included in any professional preparation program. Other descriptive competencies research tends to focus on the development of specific online teaching skills. Although these are indeed critical for online teaching success, this study reveals other critical areas for skill development as well, such as the necessary administrative (operational), policy adherence, and technical behaviors. In order to adequately prepare a novice or intermediate instructor for online teaching success, the ability to track student performance, submit grades, mark papers, and manage the course roster and other functional skills necessary for general course operation are also necessary.

This study also presents differences that are difficult to explain or rationalize. Most perplexing, for example, is why didn't nineteen of the top thirty-seven behaviors, all with a mean score of 6.0 or higher, load with other items into competencies? Another observation is the loading of some items into competencies that appear not to be a natural fit;--for example, "The instructor uses appropriate strategies to manage the online workload" (r=.426) loading onto Competency 3: Active Teaching/Responsiveness. This may be explained by a variety of interpretations of that item.

It is also important to consider the value of these competencies as item groupings as indicated by the online expert survey participants, but not to be interpreted as the definitive competencies required for online teaching success. They do provide, however, an organizational structure that may aid the design and development of faculty development programs in order to adequately prepare online instructors. Professional development experts need to consider the context of their programs including a thorough analysis of their target audience as they craft instructional and training solutions to address their needs.

As may be expected, these initial research findings suggest more questions to be explored. Primary among these is how faculty development programs sequence the instruction of these behaviors over the course of a professional's career. Attempting to develop sixty-four behaviors for the novice online instructor is likely to lead to frustration due to overload resulting in instructor and subsequently student failure.

VI. CONCLUSIONS

The data reported in this paper represent one phase of a multi-phase research project that aims to address the need of identifying and training the online instructor with the skills they need to succeed when teaching online. The results of this study provide a framework for approaching the content, in the form of competencies that should be included in professional development programs. The specific behavioral tasks described in the study provide one constellation of necessary skills. Individual professional development programs, based on their institutional context and unique attributes, need to create their own constellation to meet the local needs of their online instructors. The approach outlined in this study may prove helpful to other academic institutions as they determine which competencies to target for their professional development programs. Furthermore, the survey instrument used in this study may serve as the basis of an assessment tool that can be given to faculty for needs assessment purposes.

This project's research question asked about overall importance of specific behavioral tasks and grouped them into competencies to begin constructing the broad groupings of skill sets. The results can begin to inform the learning outcomes of professional development programs for the online instructor. The results demonstrate that there is a consensus of teaching behaviors considered important to online teaching success; i.e., over half of the teaching behavior items had a mean of 6.0 or more on a Likert scale of 1-7. Despite the differences in the experience levels of the participants, the roles occupied in the online teaching field and disciplines represented in the study, it is encouraging to see agreement on what constitutes important teaching behaviors that can result in successful online teaching. Furthermore, the teaching behaviors that grouped together very closely based on the factor analysis results provide some structure to the development of workshop content. Content can be more manageably delivered in meaningful segments.

The next phase of this study will seek to identify the most effective timing of where these tasks should be addressed in an online instructor's career: when they are new to teaching in the online environment, when they have been teaching online for a few years, or when they can be considered "seasoned" or "expert" online instructors. A third phase will examine the individualization of competencies to match disciplines, teaching styles and learner characteristics. Ultimately, a set of metrics should be defined in order to measure individual online instructor preparation against a set of defined behaviors that lead to online teaching success.

VII. ABOUT THE AUTHORS

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Janet May serves as Associate Director for Evaluation and Senior Program Manager at Penn State World Campus. As Associate Director for Evaluation, she evaluates the success of courses, programs, and faculty through multiple surveys. Her program management responsibilities include managing the portfolio of courses and programs offered in conjunction with the College of Science. She taught mathematics for fourteen years at Penn State DuBois before joining the World Campus. In 1988, she began teaching a correspondence mathematics course for Penn State's Independent Learning unit, which subsequently became the World Campus's first online mathematics course. Additional professional interests include how technology can be used to enhance mathematics education.

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