How are universities involved in blended instruction?

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ABSTRACT

The purposes of this study are to examine faculty involvement in blended instruction and their attitudes towards the instructional method. The study also explored how universities support faculty in their current practices on blended instruction and the challenges in supporting faculty. The target population of this study was Institute of Higher Education (IHE) coordinators and faculty members of 151 extensive doctoral research universities classified by the Carnegie Foundations. Two online survey instruments, one for the coordinators and the other for faculty were administered to the target population. Of the 151 targeted population, 34 IHE representatives and 133 faculty members from 33 universities responded to the survey questionnaires. The study found that the most commonly selected blended method (64.4%) was face-to-face instruction with supplementary online instructional materials. In addition, faculty (95.9%) actively participated in designing, developing, and/or maintaining their instructional materials. Most had positive attitudes towards blended instruction as they believed it played a role in improving the quality of their instruction. In addition, participating universities reported providing faculty with the necessary help such as an online help desk, workshops, instructional designers, and technology specialists in support of goals to increase the number of online or blended instruction. However, faculty workload (70.6%) and lack of faculty motivation and enthusiasm (61.8%) were the biggest challenges in pursuing the institutional goals. Based on the findings, suggestions are made to promote blended instruction.

Keywords

Blended instruction, online instruction, Classroom instruction, Face-to-face instruction, Faculty involvement, Faculty motivation, University support, hybrid instruction

Introduction

Blended instruction is an instructional approach that combines the benefits of online and classroom instruction. It initially originated from efforts to improve distance learning environments. In particular, it was aimed at improving online learning environments where learners can be easily disoriented due to a lack of communication or direct guidance (Marsh II et al., 2004; Rossett, et al., 2003). Regarding the learning environment, Savery and Duffy (1995) argued that there are two factors that affect learners’ attitudes toward learning. One is the familiarity with the instructional medium and the other is the ability to make something meaningful out of the material presented. According to Savery and Duffy (1995), when comparable content is presented to learners, both on-screen and in printed text, the information presented on screen is mentally more demanding than the printed text. Learners find it difficult to make connections between information presented and its value due to the unfamiliarity of the presentation mode.

Marsh II et al., (2004) suggested that basic strategies for improving student learning are to put greater responsibility on students and to improve the presentation method by utilizing tools such as technology. Consequently, in online instruction, there have been many attempts to improve the presentation mode by employing advanced technology tools or adding classroom meetings to online instruction. Students in higher education tend to be less satisfied with totally online courses when compared to traditional classes (Sikora & Carroll, 2002). Therefore, based on many studies (Colis and Moonen, 2001; Deilialioglu & Yildirim, 2007; Donghohue, 2006; Murphy, 2002, 2003; Schmidt & Werner, 2007; Valiathan, 2002; Young & Ku, 2008), researchers have concluded that a mixture of face to face and online instructional formats is the best solution for instructional problems and needs, accelerating the students’ learning process.

However, there are still issues related to delivering blended courses with online components. These become challenges for faculty, institutions, and instruction. In particular, issues such as instructional support, faculty motivation and enthusiasm, and technology problems have been raised as problems in developing online instruction in many institutions since online instructional strategies have been available. Barr & Tag (1995). Many authors (Barr

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& Tag, 1995; Johnson, 2002) have claimed that university policies should be revised for faculty who are motivated to pursue newer instructional formats; promotion policies such as tenure should be revised based on faculty workloads and levels of engagement in extra instructional activities.

Another critical issue in blended instruction is a lack of evaluation procedures (Rovai, 2003). The process of identifying the degree to which the learning objectives are achieved is the basis for assessment of students and for course evaluation. Since evaluation is a process of reflection and revision, it is important for instructors in planning further instruction. However, few researchers have found appropriate evaluation frameworks and procedures for blended instruction in academic settings. Therefore, this study focuses on exploring faculty involvement and institutional support in delivering blended instruction and challenges and issues related to the topic.

There are many definitions possible for blended instruction. Among the definitions, the definition used for this study blended instruction is a combination of classroom and online instructional methods regardless the proportion of the instructional formats. There have been many studies conducted related to faculty attitudes, motivations, and institutional support in delivering online instruction or blended instruction. However, studies on faculty involvement in developing online instructional materials are scare. In that aspect, this study is significant to explore how practically faculty are involved in blended instruction and how universities support their faculty in pursuing innovative instructional delivery method.

Following research questions are formulated to examine these issues in detail:

a) In what ways are faculty involved in delivering blended instruction?
b) What are the faculty attitudes toward and perceptions of blended instruction?
c) How do institutions support faculty involved in blended instruction?
d) What kinds of challenges do institutions have in supporting faculty in delivering blended instruction?

**Literature review**

**Definitions of blended instruction**

Blended instruction is defined in many different ways according to the instructional methods and architectures. Valiathan (2002) defines blended instruction as a combination of different instructional systems, such as collaboration software, Web-based courses, EPSS, and knowledge management practices, as well as various event-based activities. Minocha (2005) defines blended instruction as a mixture of various instructional events and activities, such as information, interaction, simulation, games, collaborative learning, and classroom-based learning. In the same context, Mitchell and Honore (2007) define blended instruction as “learning involving multiple methods and approaches, commonly a mixture of classroom and e-learning.” According to Graham (2006), even though there are huge variations in defining blended instruction, the three most commonly mentioned definitions are (1) combing instructional modalities (or delivery media) (Bersin & Associates, 2003; Orey, 2002a, 2002b; Singh & Reed, 2001; Thomson, 2002), (2) combing instructional methods (Driscoll, 2002; House, 2002; Rossett, 2002), and (3) combing online and offline instruction (Reay, 2001; Rooney, 2003; Sands, 2002; Ward & LaBranche, 2003; Young, 2002).

According to Sing & Reeds (2001), blended instruction is an instructional delivery method where more than one delivery mode is adopted for optimizing learning outcomes. In this concept, different instructional strategies and medium are integrated into learning needs. The examples of instructional attributes are (a) offline and online learning; (b) self-paced and live-collaborative learning; (c) structured and unstructured learning; (d) work and learning; and (e) synchronous online formats and self-paced asynchronous formats.

Delialiouglu and Yildirim (2007) view blended instruction as a combination of classroom instruction and online instruction in which instructors can pursue their pedagogical goals by mixing benefits of two instructional modalities. In the same context, Marsh II et al., (2004) and Rossett et al., (2003) claim that blended instruction usually describes a combination of face-to-face and online instruction in which major components of the instruction are delivered online with the remainder being face-to-face instruction. Blended instruction includes both online and classroom instructional components, yet it is considered a format for online instruction (Rossett et al., 2003). In this case, a small portion of classroom instructional components are then employed in order to fill in the gaps in online instruction.
However, in practice, it is commonly found that online instructional components are merged with offline instruction as an integral part of offline instruction. Thus, within the defined combination of offline and online instruction, many different approaches are found in the use of instructional proportion, technology tools, and instructional strategies. For instance, The Office of Educational Technology of the University of California in Los Angeles (Office of Ed Tech) defines blended instruction as a way to “offer curriculum through a combination of face-to-face and electronic mediums.” Within this definition, technologies, especially online instructional components are used to replace a significant portion of classroom instruction. This approach works well in a large classroom; since it is difficult for an instructor to accommodate diverse students’ needs in large classrooms, a strategic instructional method such as blended method is necessary (Blended Instruction Case Studies, 2005).

On the other hand, Burgon and Williams (2003) approached a blended instruction from a totally different perspective in which offline classroom lectures and online instructional materials were combined for both on and off campus students. The blended course was an undergraduate religion course with 49 on-campus students and seven distance learners. The 49 on-campus students were taught in a traditional classroom environment with lectures. The distance learners took the course asynchronously online. The class met twice a week, and traditional lecture was used as an instructional method for classroom instruction. Course materials were uploaded online for the distance learners, and both in class students and distance learners had access materials such as course syllabus, class notes, assignments, and reading. Online discussion forums were required for both on and off campus learners to share ideas, questions, comments, and experiences.

The article claimed that, in this format, distance learners could have felt as if they were in a classroom environment while they were interacting with students in the classroom rather than only talking with off-campus students. Furthermore, classroom students could enjoy talking with distance learners since the distance learners brought their various experiences to online discussion forums. The classroom students could also use online class notes for reviewing the concepts that they could not understand in class. In addition, the distance learners could experience a “more intangible aspect of the institution embedded in the cultural transmission of synchronous on-site courses” (Waddops & Howell, 2002) through discussions with in class students. The authors claim that this type of blended course benefits both in class and distance learners.

### Models of blended instruction

<table>
<thead>
<tr>
<th>Blended Instruction</th>
<th>Online instruction</th>
<th>Classroom instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Activities</td>
<td>Applications</td>
</tr>
<tr>
<td>Computer-based online learning</td>
<td>Lecture</td>
<td>Course Management Tools (CMT)</td>
</tr>
<tr>
<td>Asynchronous</td>
<td>Assignment</td>
<td>Presentation Tools</td>
</tr>
<tr>
<td>One-way communication</td>
<td>Group work</td>
<td>(PowerPoint, Flash, etc.)</td>
</tr>
<tr>
<td>Two-way communication</td>
<td>Assessment</td>
<td>Communication tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Classroom</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synchronous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group-work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tutoring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment</td>
</tr>
</tbody>
</table>

As repeatedly mentioned above, blended instruction is described in many different ways, yet online and offline instruction are the two major instructional delivery modes. Instructional components in each mode depend on characteristics of courses and instructors’ capability, knowledge, and decisions in designing instruction with the technology tools and media that are available to use on campus. Table 1 above depicts common instructional components in blended instruction based on reports from several universities such as Harvard University, the University of California system, University of Central Florida, University of Northern Texas and others.

Rossett et al., (2003) claimed that for successful blending, instructional tools and design strategies are important components, and all the components within the instructional method should be appropriately integrated. Usually, in a
blended model, there have been specific instructional elements as listed in Table 1. However, options for blending are wide open to instructors, not just limited to the activities and applications that have been known or used in the past. Instruction can be composed of a combination of formal and informal approaches, technology- and people-based activities, independent and convivial activities, or directive- and discovery-oriented items. The right blend depends on instructional conditions and instructors’ own judgment and decisions in applying their instructional strategies for their instructional needs (Rossett et al., 2003).

On the other hand, Wenger & Ferguson (2003) explain a blended learning model in a task-oriented manner with four components [teaching, coaching, studying, and practicing]. Teaching refers to online content delivery to learners. Coaching refers to instructor-guided learning in both online and offline environments. Practice refers to authentic learning through hands-on experience using simulations or virtual learning activities. Studying refers to learners’ efforts to achieve desired learning goals using resources such as online self-study tools, instructor’s help, and any other kinds of resources available. Detailed instructional components of this model are listed as Figure 1 below.

<table>
<thead>
<tr>
<th>Studying</th>
<th>Learner Self-Navigation</th>
<th>Practicing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books, articles, guides</td>
<td>Authentic tasks</td>
<td>Exercise</td>
</tr>
<tr>
<td>References</td>
<td>Role play</td>
<td>Diagnostic labs</td>
</tr>
<tr>
<td>Whitepapers</td>
<td>Projects</td>
<td>Practice labs</td>
</tr>
<tr>
<td>Asynchronous contents</td>
<td>Case studies</td>
<td>Mentoring/tutoring</td>
</tr>
<tr>
<td>Job aids</td>
<td>Peer discussion</td>
<td>Experiments</td>
</tr>
<tr>
<td>Glossaries</td>
<td>Discussion forums</td>
<td></td>
</tr>
<tr>
<td>FAQs</td>
<td></td>
<td>Experience and practice Focus</td>
</tr>
</tbody>
</table>

**Figure 1.** Specific learning elements of blended model (Wenger & Ferguson, 2003)

While many models (Rossett et al., 2003; Wenger & Ferguson, 2003) deal with instructional modalities and learning tasks, Valiathan(2002) focuses on learning goals where the blended model is categorized in three ways: (a) skill-driven; (b) attitude-driven; and (c) competency-driven. In a skill-driven approach, a combination of self-paced learning modules and classroom instruction support student learning of knowledge and skills through a step-by-step learning process. In this approach, learners are expected to complete learning materials such as books and papers along with asynchronous self-paced online learning modules. Instructors support learners using online communication systems such as email discussion forums, and instructor-led contact sessions.

In addition, instructors may demonstrate procedures or processes of skills and knowledge to be achieved in synchronous web-based classes or scheduled-classroom instruction based on their students’ needs. The synchronous sessions provide opportunities for students to learn how to apply their skills and concepts obtained in class. The techniques needed in this approach involve instructors who have to align appropriate time and topics in both asynchronous and synchronous instruction with the characteristics of learners.

The attitude-driven approach is described as an instructional approach that blends various collaborative learning events in an effort to develop specific behaviors and attitudes in learners. In an attitude driven approach, since both classroom instruction and technology-based collaborative learning events are scheduled, it is useful for teaching content that requires peer-to-peer interaction. Higher order thinking, negotiation, and critical reflection skills can be developed through group work and discussions with peers using technology-enhanced communication tools.

The competency-driven approach is an instructional approach that is designed to teach tactical knowledge. In this approach, various media are applied to learning events in an effort to guide students in learning facts, principles, and skills that are required in the process of making decisions. Table 2 describes each approach briefly.
Table 2. Blended Instructional Approaches

<table>
<thead>
<tr>
<th>Methods</th>
<th>Skill-driven approach</th>
<th>Attitude-driven Approach</th>
<th>Competency-driven Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targets skills/knowledge</td>
<td>Online learning modules</td>
<td>Collaborative learning</td>
<td>Mixture of media</td>
</tr>
<tr>
<td></td>
<td>Skills and knowledge</td>
<td>Higher order thinking,</td>
<td>Tactic knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical thinking</td>
<td></td>
</tr>
</tbody>
</table>

As described above, there are huge variations in defining blended instructional practices and there is no accepted standards for formulating blended instruction. Different institutions implement it in different ways (Delialioglu, & Yildirim, 2007).

Related studies

Faculty involvement in blended instruction

For classroom instruction, instructors are involved in the organization, delivery, and assessment of the course contents. However, when online instructional materials are added, instructors have to work as an instructional designer, technology specialist, and administrative advisor at the same time (Restauri, 2007). In the case of MIT, the university requires faculty to produce their own course website using the school Learning Management System (LMS) as a part of ordinary instruction. Faculty feel that producing course materials is an unacceptable burden for them (Abelson, 2008).

Therefore, in many cases, faculty collaboratively work for developing course materials and course websites. For example, Haixia and Morris (2007) illustrate a successful example that faculty members who teach humanities worked as a team to develop blended instruction. In this case, four faculty members played a role as an instructional designer and technologists to design and develop the instruction. The faculty members worked together to decide a level of the lesson, develop content, select textbooks, review contents and resources, and develop student assessment tools. After delivering the course, the faculty expressed that they were satisfied with their job as a course designer as well as a developer since they could produce creative course materials. They also mentioned that if they had stronger technical skills, they would have been more creative and innovative in the process of designing instruction.

Ellis et al., (2006) and Gerber et al., (2008) claim that the blending of pedagogy and technology changes the nature of teaching and learning by providing a means of access to digital resources and interactive communication tools. Gerber et al., (2008) indicates that students can better understand the key concepts and construct their own knowledge when classroom lectures are combined with online discussion activities. In the same context, blended instruction is beneficial to students because it takes both inductive and constructivist approaches in its design and the process (Delialoglu & Yildirim; 2007). In a blended learning environment, students are not easily disoriented than purely online learning.

In the case of University of Central Florida (Dziuban and Moskal, 2001), a typical three hour classroom instruction was replaced with a two hour online instruction session. This change was successful for both the university and students, financially and practically. The university was able to operate multiple classes in one classroom more efficiently, using the existing infrastructure of the university. Since an instructor could handle a large class with the combination of class and online instruction, it was cost efficient for the university as well. Students were able to be engaged in the course more actively through online activities, while in a large class it is difficult to make any personal contact with professors during and after the class. As a result, it was reported that students’ withdrawal rates were reduced, and the students enjoyed the course more when compared to traditional classes.

As mentioned above, a combination of two instructional delivery methods provides great advantages for students, instructors, and institutions (Correll and Robison, 2003; Dziuban & Moskal, 2001; Ellis et al., 2006; Dalsgaard & Mikkel, 2007, Delialoglu & Yildirim, 2007; Gerber et al., 2008). For students, blended instruction provides active learning environment and flexibility in using time and resources. For faculty, the instructional method provides more time to spend with students individually and in smaller groups and improved quality of interaction with students. For
the institution, the blended approach increases flexibility in scheduling courses and improves the usage of limited resources such as classrooms and parking space.

Challenges and issues related to blended instruction

On the other hand, there are also many studies focusing on obstacles and challenges for adapting blended instruction. Usually, faculty attitudes toward the use of technology use is addressed as one of the biggest challenges along with other things such as faculty workload, and a lack of release time and support by the university (Tabata & Johnsrud, 2008). The use of technology requires changes in the mindset of pedagogy. However, studies report that there are still many faculty members who have pedagogical difficulties in adapting new instructional delivery method because they value the traditional way of knowledge sharing (Hollis & Madill, 2006). Since they are not certain about the value of technology, and their roles and abilities in the process of teaching (Kim & Baylor, 2008), they worry that delivering instruction online would decrease the quality of the instruction and students might feel hard to achieve their educational goals. Some faculty members even perceive that online instruction threatens their academic freedom by designating the way of teaching. Chai and Lee (2008) argue that when instructors do not believe that technology does not fulfill their needs, they are not likely to adjust their instructional strategies to optimize the learning outcomes. Faculty attitudes towards the course influence quality of instruction (Deubel, 2003). As the primary key ensuring the quality of instruction, changes in the mindsets such as pedagogical assumptions, values, beliefs, and attitudes play a fundamental role. Therefore, it is important for faculty to accept the value of innovative ideas and tools (Kim et al., 2007; Papanasasiou & Angeli, 2008).

Faculty workload and instructional support are often discusses as problems as well (Crumpacker, 2003). According to Tsai et al., (2008) & Lewis & Abdul-Hamid (2006), faculty who use course specific websites have to work more compared to those who do not use them. When online instruction is involved, instructors usually have to put more time and energy for the course, dealing with various instructional and technical problems. In many cases, even though faculty are interested in technology or new delivery medium, they tend to be reluctant to participate due to the commitment of time needed to produce course content and to deliver course materials (Tabata & Johnsrud, 2008).

It is clear that designing and developing blended courses requires greater amounts of time than designing classroom instruction. In particular, blended courses should be more elaborately designed than online or classroom instruction only by balancing the portion of each delivery method. For doing that, faculty need to understand the nature of the delivery format and the medium, and have the necessary skills and knowledge (Garrison & Kanuka, 2004; Lewis & Abdul-Hamid, 2006; Young & Ku, 2008). In many cases, faculty do not have expertise in the use of technology and they have to spend quite amount of time to obtain knowledge and skills necessary to design and operate the instructional materials and systems. During the semester, it is hard for faculty to have released time as well since they have to attend the class while updating their online instructional materials at the same time.

However, universities do not have adequate support for professional teaching practices (Donoghue, 2006; Restauri, 2007). Nowadays, universities give pressure to faculty to use technology in their courses. Yet, there are not many universities that provide full support for delivering blended instruction. Some universities even expect faculty to teach themselves on necessary technical skills (Restauri, 2007). In addition, few universities provide faculty with incentives or promotions for attempting new instructional method (Tabana & Johnsrud, 2008; Wagner et al., 2008). Typically, universities evaluate faculty’s professional development by their research abilities and service efforts for the community. Time spent in developing blended learning courses is not counted as time spent on their professional development. This issue is particularly important for faculty at research universities who face high expectations in research and publications (Howell et al., 2004).

Another critical issue is instructional support regarding the evaluation of blended courses. According to Oh and Lim (2005), the evaluation process that is currently being used for university courses focuses on either online or classroom instruction. In many cases, instructors use course evaluation instruments that are designed for distance education as an alternative choice for evaluating blended instruction. The evaluation criteria in these instruments often do not take into account particular aspects of the blended instructional method. The lack of an appropriate course evaluation method raises issues regarding different evaluation needs for blended instruction. Given the fact that blended instruction is widely used in many institutions, a standardized evaluation framework for blended instruction is necessary in those settings.
Research method

Participants

The respondents consisted of two groups; faculty group and the institutions for higher education (IHE) representatives’ group. The faculty group consisted of 133 faculty members from 30 randomly selected universities out of the 151 universities that were classified as extensive doctoral universities by the Carnegie foundations. The IHE representatives’ group consisted of 33 staff of the Center for Teaching and Learning from the 151 universities. The 151 targeted universities included 109 public universities and 42 private universities.

Instruments

Two types of questionnaires were developed by the investigator, one for faculty and the other for the IHE representatives. The questionnaire for faculty (survey A) consisted of fourteen (14) questions and the questionnaire for the IHE representatives (survey B) consisted of nine (9) questions. The two questionnaires contained both multiple choice questions and 6 Likert scale questions. A comment box was given for each multiple choice question so that the respondents could provide their additional information if there was any. Detailed information about the survey instruments is shown in Table 3.

<table>
<thead>
<tr>
<th>Survey</th>
<th>Category</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Instructional delivery formats that faculty use</td>
<td>Multiple choice</td>
</tr>
<tr>
<td>A</td>
<td>Faculty participation in developing online course materials</td>
<td>Multiple choice</td>
</tr>
<tr>
<td>A</td>
<td>Faculty skills in developing online course materials</td>
<td>6 Likert scale</td>
</tr>
<tr>
<td>A</td>
<td>Faculty attitude towards blended instruction</td>
<td>6 Likert scale</td>
</tr>
<tr>
<td>B</td>
<td>Institutional support</td>
<td>6 Likert scale</td>
</tr>
<tr>
<td>B</td>
<td>Institutional goals</td>
<td>Multiple choice</td>
</tr>
<tr>
<td>B</td>
<td>Assessment methods</td>
<td>Multiple choice</td>
</tr>
</tbody>
</table>

Four experienced researchers in the field of instructional technology examined the survey instruments to confirm the validity of the questions and the pilot test was conducted with like respondents to confirm the reliability and validity of the instruments. According to the pilot test, the reliability of the survey showed 0.86 for survey A and 0.83 for survey B.

Data collection procedures

The participating departments were randomly selected by the investigator using the random number selecting process in Excel and the email addresses of faculty members and staff were obtained from the participating universities’ websites. An email message describing the purposes and procedures of study, and the request for participation were created and sent to the potential participants. The survey instruments and informed consent form were developed by the investigators and uploaded on the investigators’ personal Website. All the participants in the selected universities were invited to participate in the study, but it was clear that participation was voluntary and that participants could withdraw their participation at any time. Reminder messages were sent to the faculty who had not responded to the questionnaire one week later the initial contact, and second reminders were sent one week later the first reminder. The completed survey was also submitted to the investigator’s email account when the participants completed and clicked the “submit” button placed at the bottom of the survey.

Analysis of Data

Responses to the questions were entered into SPSS, and the data were summarized descriptively using frequency tables and figures. In addition, Chi-square test, LSD-test, and Turkey-test were used to compare the data by variables such as gender, institutional type, and participants’ teaching experience.
Findings

Demographic Information

Total 133 faculty members participated in the study. Of the total 133 faculty respondents, 68 respondents (50.8%) were male and 65 respondents (49.2%) were female. When analyzing the data by age, seven (7) respondents (5.3%) were younger than 30 years old, 10 respondents (6.8%) were between the ages of 31-40, 19 respondents (14.4%) were between the ages of 41-50, 32 respondents (24.2%) were older than 51 years old. Table 4 provides participant data by their gender and age.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>30 or less</td>
<td></td>
<td>7</td>
<td>5.3%</td>
<td>4</td>
<td>3.0%</td>
</tr>
<tr>
<td>31-40</td>
<td></td>
<td>10</td>
<td>6.8%</td>
<td>13</td>
<td>9.8%</td>
</tr>
<tr>
<td>41-50</td>
<td></td>
<td>19</td>
<td>14.4%</td>
<td>23</td>
<td>17.4%</td>
</tr>
<tr>
<td>51 or more</td>
<td></td>
<td>32</td>
<td>24.2%</td>
<td>25</td>
<td>18.9%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>68</td>
<td>50.8%</td>
<td>65</td>
<td>49.2%</td>
</tr>
</tbody>
</table>

In the case of the IHE representative group, 34 IHE representatives returned the survey instruments. Representatives of 28 public universities (28 of 109) and five private universities (11%) returned survey questionnaires. The overall response rate was 22%, and the response rate of public universities was more than two (2) times higher than the case of private universities. Respondents in the IHE representatives group varied in titles, roles, and responsibilities in their respective universities, and in the focus of their activities. Categorizing the respondents by position, there were 18(52.9%) directors/coordinators, three (8.8%) assistant directors, and 13(38.2%) instructional specialists/media specialists.

<table>
<thead>
<tr>
<th>Position</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Director, Coordinator</td>
<td>17</td>
<td>51.45%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>Assistant director</td>
<td>2</td>
<td>5.75%</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>Instructional specialist/</td>
<td>9</td>
<td>25.7%</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>Media specialist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>82.9%</td>
<td>6</td>
<td>17.1%</td>
</tr>
</tbody>
</table>

In what ways are faculty involved in blended instruction?

In order to examine the ways of being involved in blended instruction, responses to the questions about the instructional formats, faculty involvement in developing online instructional components, and technology skills were analyzed.

When analyzing the responses about the instructional format that faculty deliver, 127 faculty of the total 133 participants responded the question. The most commonly selected instructional delivery formats used by faculty was face-to-face instruction with supplementary online instructional components (64.4%). The second most commonly selected method was blended instruction in which less than 50% of the instruction is delivered online with remainder being face-to-face instruction (19.7%). Blended instruction in which more than 50% of the instruction is delivered online with the remainder being face-to-face instruction (12.1%) was ranked third. As a result, the most common instructional delivery format that faculty has taken was offline instruction with supplementary online instructional components. Table 6 depicts the information about the delivery method in detail.
Table 6. Instructional delivery formats (n=127)

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Face-to-face instruction with supplementary online instructional Components</td>
<td>85</td>
<td>64.4%</td>
</tr>
<tr>
<td>2. Blended instruction in which less than 50% of the instruction is delivered online with remainder being face-to-face instruction</td>
<td>26</td>
<td>19.7%</td>
</tr>
<tr>
<td>3. Blended instruction in which more than 50% of the instruction is delivered online with the remainder being face-face instruction</td>
<td>16</td>
<td>12.1%</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>84.1%</td>
</tr>
</tbody>
</table>

When analyzing the responses to the question about faculty involvement in developing online instructional components, 122 faculty responded to question. Of the 122 respondents, 117 respondents (95.9%) reported participation in at least one of the five(5) course development activities (see Table 7) while five(5) respondents (4.1%) answered that they did not participate in any of the activities at all. Of the 117 respondents, 96 respondents (78.7%) were involved in designing course content, 98 respondents (80.3%) were involved in organizing instructional materials, and 94 respondents (77%) were involved in developing course materials (77%). A small number of respondents were involved in maintaining a developed course website (55.3%), and fewer than half (45.9%) were engaged in designing a course website.

Table 7. Faculty Participation in Online Course Development Activities (N=122)

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Designing course content</td>
<td>96</td>
<td>78.7%</td>
</tr>
<tr>
<td>(b) Organizing instructional materials</td>
<td>98</td>
<td>80.3%</td>
</tr>
<tr>
<td>(c) Designing course website(s)</td>
<td>56</td>
<td>45.9%</td>
</tr>
<tr>
<td>(d) Developing course materials</td>
<td>94</td>
<td>77.0%</td>
</tr>
<tr>
<td>(e) Maintaining a developed course website</td>
<td>68</td>
<td>55.3%</td>
</tr>
<tr>
<td>(f) None of the above</td>
<td>5</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

* Q 2. Which of the following procedures are you involved in when delivering online instruction?

When analyzing faculty technology skills, the responses to Q3 showed that the faculty were confident in their technology skills needed to develop online instructional components of their courses. Question 3 required Likert scale responses to six (6) items (strongly agree --> strongly disagree) and the responses were converted to number systems in order to identify degrees of faculty technology skills. A score of 6 was assigned to “strongly agree” and the minimum score of 1 was assigned to “strongly disagree”. A mean score larger than 3.5 was considered positive. When analyzing the responses, faculty members’ competency in developing online instructional components appeared to be high (M=4.03), as Table 8 shows.

Table 8. Faculty Technology Skills as Reported by Faculty Respondents (N=129)

<table>
<thead>
<tr>
<th>Minimum score</th>
<th>Maximum score</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>4.03</td>
<td>1.375</td>
</tr>
</tbody>
</table>

Q3. How do you rate your technology skills in developing designing and maintaining online courses or online components of your courses?

Table 9. Technology Skills by Age as Reported by Faculty Respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean</th>
<th>N</th>
<th>Rank</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 30 or less</td>
<td>3.73</td>
<td>11</td>
<td>Third</td>
<td>1.421</td>
</tr>
<tr>
<td>2. 31-40</td>
<td>4.63</td>
<td>22</td>
<td>First</td>
<td>1.086</td>
</tr>
<tr>
<td>3. 41-50</td>
<td>4.33</td>
<td>39</td>
<td>Second</td>
<td>1.383</td>
</tr>
<tr>
<td>4. 51 or more</td>
<td>3.63</td>
<td>57</td>
<td>Fourth</td>
<td>1.345</td>
</tr>
<tr>
<td>Total mean</td>
<td>4.03</td>
<td>129</td>
<td></td>
<td>0.375</td>
</tr>
</tbody>
</table>

* Maximum score is 6 and the minimum score is 1.
* The mean score larger than 3.5 was considered positive.

When analyzing the data by four age groups ((a) less than 30 years of old, (b) 31-40 years old, (c) 41-50 years old, (d) 51 or more years old), group (b) (M=4.68) and group (c) (M=4.33) showed high confidence in using technology
for developing their blended courses while group (d) (M=3.63) and group (a) (M=3.73) showed relatively lower confidence than the other groups (see Table 10).

<table>
<thead>
<tr>
<th>Table 10. Comparison of Technology Skills Between Age Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Groups</strong></td>
</tr>
<tr>
<td>Age (1)</td>
</tr>
<tr>
<td>31-40</td>
</tr>
<tr>
<td>41-50</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.

<table>
<thead>
<tr>
<th>Table 11. Technology Skills by Rank As Reported By Faculty Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>Assistant professor</td>
</tr>
<tr>
<td>Associate professor</td>
</tr>
<tr>
<td>Full professor</td>
</tr>
<tr>
<td>Instructor</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 12. Comparison of Technology Skills Between Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position (1)</strong></td>
</tr>
<tr>
<td>Assistant professor</td>
</tr>
<tr>
<td>Assistant professor</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the .05 level.

When comparing the results by variables such as age and position, there were significant differences in the mean scores by age (p < 0.01) and rank (p < 0.01) among groups. The comparison of responses of four (4) age groups showed a significant difference between the groups (p<0.01) (see Table 10). In particular, the LSD Tests revealed that there was a significant difference between the age groups such as 31-40 years of old age and 51 or more (p<0.01) and 41-50 years of old and 51 or more (p<0.05) in their skills in developing online instructional components.

When analyzing the data by faculty rank, assistant professors (M=4.48) expressed the strongest confidence in their technology skills and instructors (M=3.67), associate professors (M=3.69), and full professors (M=3.81) were confident in their skills in developing online instructional components, yet their confidence level was somewhat lower than assistant professors (see Table 11). When comparing the mean scores among the four (4) positions (instructor, assistant professor, associate professor, full professor), there were significant differences between the assistant and associate professor groups and between the assistant and full professor groups as Table 12 above shows. Compared to the other groups, assistant professors revealed exceptionally strong confidence in their technology skills.

Of the five (5) respondents who reported no participation in any of the online course development activities, three faculty provided extra information regarding their strategies for online course delivery as follows:

One faculty member in the department takes the lead in developing the course websites for the required courses (e.g. theory, methods), and all faculty share the course websites to keep the consistency.

Most of faculty at the University use a locally developed program called Toolkit and do not need to be involved in developing activities.

Faculty mainly use email for assignment submission to provide feedback, using a course website developed by somebody else.

What are the faculty attitudes toward and perceptions of blended instruction?

In order to investigate faculty attitudes toward and perceptions of blended instruction, responses to the questions consisted of attitudinal and perception statements were analyzed. The items required Likert scale responses to six (6) items (strongly agree --> strongly disagree). The responses to the question were converted to number systems in
order to identify faculty attitudes and perceptions. A score of 6 was assigned to “strongly agree” and a score of 1 was assigned to “strongly disagree”. A mean score larger than 3.5 was considered positive.

### Table 13. Faculty Attitudes Towards and Perceptions of Blended Instruction

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I prefer classroom instruction to online instruction</td>
<td>4.57</td>
<td>1.451</td>
<td>114</td>
</tr>
<tr>
<td>2. I like both online and classroom instruction</td>
<td>4.09</td>
<td>1.570</td>
<td>111</td>
</tr>
<tr>
<td>3. Blended instruction can overcome the limitations of online instruction</td>
<td>4.72</td>
<td>1.218</td>
<td>109</td>
</tr>
<tr>
<td>4. I am motivated to try blended instruction</td>
<td>4.49</td>
<td>1.489</td>
<td>113</td>
</tr>
<tr>
<td>5. I am willing to learning new technology for my classes.</td>
<td>5.09</td>
<td>1.211</td>
<td>115</td>
</tr>
<tr>
<td>6. Blended instruction is an option for students on or near campus only</td>
<td>3.42</td>
<td>1.714</td>
<td>108</td>
</tr>
<tr>
<td>7. Student learning outcomes care influenced by instructional delivery methods</td>
<td>5.17</td>
<td>1.116</td>
<td>115</td>
</tr>
<tr>
<td>8. Quality of instruction is influenced by instructional methods.</td>
<td>5.05</td>
<td>1.329</td>
<td>114</td>
</tr>
<tr>
<td>9. I am regularly involved in online instruction</td>
<td>2.99</td>
<td>1.998</td>
<td>111</td>
</tr>
<tr>
<td>10. I am regularly involved in blended instruction</td>
<td>4.46</td>
<td>1.682</td>
<td>112</td>
</tr>
</tbody>
</table>

* Maximum score is 6 to be “strongly agree” and minimum score is 1 to be “strongly disagree”.
* The mean score larger than 3.5 is considered positive.

As shown in Table 13, respondents generally had positive attitudes toward blended instruction, and they perceived that blended instruction improves the quality of their instruction ($M=5.05$). Most of the respondents were motivated to try blended instruction ($M=4.49$), and were willing to learn technology necessary ($M=5.09$) as well. Furthermore, the faculty were favor of both online and blended instructional formats ($M=4.09$) and perceived that blended instruction could overcome the limitations of online instruction ($M=4.72$). Most faulty preferred classroom instruction to online instruction ($M=4.57$).

Consequently, while a large number of faculty were regularly involved in blended instruction ($M=4.46$), a low number of faculty were involved in online instruction only ($M=2.99$). Regarding faculty perceptions of blended instruction, faculty were regularly involved in blended instruction since they perceived that student learning outcomes were influenced by instructional delivery methods ($M=5.17$). Detailed information is presented in Table 13. In some cases, faculty preferred traditional offline methods, due to various instructional situations. Following is an example:

Students don't always, or perhaps seldom, prefer a course where they learn a lot because that's a lot more effort; students and faculty will continue to choose mostly lecture because it's much easier for both faculty and students; younger students often like to have strong direction and in an online setting they may feel more isolated and unsure of themselves.

Many faculty also commented that it costs extra time and effort to develop and maintain their course websites when pursuing blended instruction and that there should be institutional support or incentives to compensate for their extra work.

### How do institutions support faculty involved in blended instruction?

In order to determine levels of instructional support for faculty in delivering blended instruction, responses to the question asking about the levels of instructional support, kinds of support, and institutional goals for course delivery were analyzed. When analyzing the levels of institutional support for using online technology, the results showed that the participating university representatives perceived that their institutions were very supportive in assisting faculty in developing and delivering online instructional components as Table 14 indicates ($M= 4.42$, $SD = 1.37$).

### Table 14. Levels of Institutional Support for Faculty in Using Online Technology for Teaching

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4</td>
<td>33</td>
<td>1</td>
<td>6</td>
<td>4.42</td>
<td>1.370</td>
</tr>
</tbody>
</table>

*Q4. How do you rate your school’s support for faculty in using technology for teaching? * Maximum score is 6 to be “very positive” and the minimum score is 1 to be “not at all.”

In order to examine the kinds of support provided by universities, responses to the questions about the kinds of institutional support were analyzed. Of the total 33 universities, 31 universities (96.9%) had a help desk for students
and faculty, 29 universities (87.9%) provided some kinds of help necessary for delivering online courses, 26 universities (78.8%) offered workshops about instructional design practices for different instructional delivery systems, and 24 universities (77.4%) provided instructional designers or specialists. However, only a fewer participating universities employed incentive systems (32.3%) to encourage faculty. Faculty were required to participate in certain training sessions or workshops prior to teaching online courses in only eight (8) universities (24.2%). Detailed information is presented in Table 15.

Table 15. Institutional Support for Online Course Development as Reported by the coordinators

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency (N=33)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A help desk is available to students and faculty for assistance with technical problems.</td>
<td>31</td>
<td>96.9%</td>
</tr>
<tr>
<td>2. My university supports faculty in delivering courses online by providing necessary help of other kinds.</td>
<td>29</td>
<td>87.9%</td>
</tr>
<tr>
<td>3. My university offers workshops about instructional design practices for different instructional delivery methods.</td>
<td>26</td>
<td>78.8%</td>
</tr>
<tr>
<td>4. My instruction provides faculty an instructional designer or instructional technology specialist for online course development.</td>
<td>24</td>
<td>77.4%</td>
</tr>
<tr>
<td>5. My university offers incentives for faculty members who agree to deliver courses online.</td>
<td>10</td>
<td>32.3%</td>
</tr>
<tr>
<td>6. Faculty are required to participate in certain training sessions or workshops prior to teaching courses with online instructional components.</td>
<td>8</td>
<td>24.2%</td>
</tr>
<tr>
<td>7. My universities provides faculty with specific standards for online course development.</td>
<td>7</td>
<td>21.9%</td>
</tr>
</tbody>
</table>

In addition, several respondents who provided extra information reported that choice of format is left to faculty and departments; faculty make their own decisions regarding their instructional modality and the universities did not require faculty to employ certain types of instructional delivery formats. In other cases, the departments and programs decided to offer blended courses, yet the universities did not mandate any types of instructional formats in any centralized manner.

Regarding instructional goal(s) for course delivery, the participating universities desired to increase students’ accessibility to their programs by increasing online instructional components or offering online courses. For instance, a majority of universities’ goals were to increase the number of blended courses (63.3%), online degree programs (53.3%), and putting materials online (53.5%) in order to provide students with more options in their learning. Only one university responded that creating a fully developed virtual campus was the instructional goal. Detailed information is summarized in Table 16.

Table 16. Institutional Goals for Course Delivery responded by the coordinators

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency (n=33)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our goal is to increase the number of blended courses in order to provide students with more options in their learning.</td>
<td>19</td>
<td>63.3%</td>
</tr>
<tr>
<td>2. Our goal is to increase the number of online degree programs in order to increase student accessibility to our programs.</td>
<td>16</td>
<td>53.3%</td>
</tr>
<tr>
<td>3. Our goal is to put our course materials online as often as possible in order to complement classroom instruction.</td>
<td>16</td>
<td>53.3%</td>
</tr>
<tr>
<td>4. We do not have a specific goal for course delivery.</td>
<td>5</td>
<td>17.2%</td>
</tr>
<tr>
<td>5. Our goal is to create a fully developed virtual campus, not requiring class attendance.</td>
<td>1</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

* What is your instructional goal in delivery of online or blended courses?

What are the challenges in supporting blended instruction?

In order to find out the biggest challenges in supporting blended instruction, questions about the challenges in assisting faculty in developing online courses and evaluation procedures were analyzed.

According to the data analysis (Table 17), the biggest challenges in assisting faculty in delivering blended instruction reported to be faculty workload (70.6%), lack of faculty motivation and enthusiasm (61.8%), and financial support
from school (26.5%). In order to examine whether there is an appropriate evaluation method available for blended instruction, question about the assessment method was analyzed. According to the data (Table 18), course evaluation procedures for blended instruction in the participating universities were not appropriately developed and were not available for the use of faculty and students in most of the participating universities; evaluation formats/instruments were available in only seven (7) universities (21.2%) of the total 33 universities surveyed. Evaluation forms for students and instructors were available in six (6) universities, and forms for instructors were available in two universities. Eleven (11) university representatives reported that they were not sure about the evaluation methods used by faculty (see Table 18).

| Table 17. Challenges in Supporting Blended Instruction responded by the coordinators |
|--------------------------------------|--------|--------|
| Statement                             | Frequency | Percent |
| 1. Faculty workload                   | 24     | 70.6%   |
| 2. Lack of faculty motivation and enthusiasm | 21     | 61.8%   |
| 3. Financial support from school       | 9      | 26.5%   |
| 4. Insufficient infrastructure         | 4      | 11.8%   |
| 5. Lack of equipment                   | 1      | 2.9%    |

| Table 18. Assessment of Blended Instruction as Reported by coordinators |
|--------------------------------------|--------|--------|
| Item                                 | Frequency | Percent |
| 1. Forms available for both students and instructor. | 7      | 21.2%   |
| 2. Forms available for students only  | 6      | 18.2%   |
| 3. Forms available for instructors only | 2      | 6.1%    |
| 4. No forms available                 | 7      | 21.2%   |
| 5. Not sure                           | 11     | 33.3%   |
| Total                                | 33     | 100%    |

* Are appropriate instruments available to students and instructors for evaluating blended courses?

There was no significant difference found in the use of evaluation methods for blended instruction by university type, when analyzing the data with a T-test, (p>0.05). Since blended instruction is a fairly new concept and not adopted broadly as a format for instruction in many universities, appropriate course evaluation forms and procedures did not seem to be available, or else many university staff are not familiar with the evaluation instruments available in their universities.

**Conclusion**

The purposes of this study are to examine faculty involvement in blended learning instruction and their attitudes towards this instructional method. The study also explored how universities support faculty in their current practices on blended instruction and the challenges involved in supporting faculty.

The most common instructional delivery format used by the universities and their faculty was classroom instruction using online instructional components as supplementary materials. Blended instruction has become a common instructional delivery format in most universities, yet appropriate procedures or instruments for evaluating blended instruction were minimal in most universities. More than 50% of the participating universities have a goal to increase student accessibility to their programs by increasing the number of blended courses or placing institutional materials.

Most faculty were actively involved in blended instruction by designing course content, organizing instructional materials, and developing course materials, and felt comfortable using technology. However, differences were found in the levels of technology competency in different faculty age groups and levels. Assistant professors between the ages of 31-40 expressed the highest confidence level compared to other groups, but associate and full professors had relatively low confidence in their skills. This study is congruent with the findings of previous studies (Chai and Lee, 2008) that age is one of the important factors that affect faculty attitudes towards technology. Faculty who did not participate in online course development activities employed commercially developed programs or shared websites developed by colleagues for the same courses.
Faculty who participated in this study perceived that blended instruction improves the quality of their instruction. The majority of faculty strongly believed that blended instruction can overcome the limitations of online instruction and was willing to learn the necessary technology skills for their classes. While previous studies (Ellis et al., 2006; Gerber et al., 2008; Papanasasiou & Angeli, 2008) often point out that faculty attitudes toward using technology is one of the obstacles in employing online instructional components in particular, this study revealed that many faculty are participating and have the willingness to improve instructional quality by being involved in the developing and delivering process.

However, ironically, the technology coordinators reported a lack of faculty motivation and enthusiasm as the biggest challenges for the universities. This lack of motivation may be due to the lack of incentive system in most universities as Donoghue (2006) and Restauri (2007) discussed. When analyzing university support, most universities seemed to be supportive in assisting faculty, providing online help desk, faculty workshops, and necessary technical help. Despite this support, only 32% of the participating universities provide incentives for faculty who agree to deliver courses online. This shows that problems such as lack of policies for providing promotions or incentives still resides. It is clear that current challenges for administrators of higher education institutions are to provide incentive systems for extra workloads or do not provide any adequate instructional support; faculty members may not take the risks associated with blended instructional method.

As discussed in this study and the literature (Howell et al., 2004), there is a critical need for institutions to change their support systems. If universities want to effectively involve faculty in their transformation efforts, they must align their institutional goals with faculty evaluation systems and promotional policies that improve faculty motivation (Howell et al., 2004; Tabana & Johnsrud, 2008; Wagner et al., 2008). If universities do not have any incentives for extra workloads or do not provide any adequate instructional support, faculty members may not take the risks associated with blended instructional method.

Recommendations for Future Research

This study has provided valuable information for higher education institutions as they seek to develop technology based-courses. Among other findings, this study identifies the issues of evaluation of blended instruction that has been neglected in other studies. This study provides institutions with insight into faculty perceptions of institutional support, instructional situations, and needs in the area of blended instruction. Technology coordinators may better understand from the study what they need and how to support them in pursuing their instructional goals. However, more research is needed in order to better understand the use of blended instruction to enhance learning and teaching practices. Therefore, it is recommended that (a) this study should be replicated and extended to different classifications of universities; (b) the effect of incentives on participation rate in this sample and other should be conducted; and (c) a way to share best practices and evaluation should be conducted.

References


