College faculty's perception of technology tools & support: Supporting faculty to teach online

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The purpose of this survey research was to understand the perceptions of college of education (COE) faculty members about technology tools and how to support online teaching faculty. Results indicate that the majority of COE faculty were confident with using technology tools for their professional career needs and for teaching with students. The COE faculty also reported being confident in using the university-supported Laulima online course management tool (asynchronous) and the Blackboard Collaborate web conferencing tool (synchronous). Additionally, many faculty acknowledged the COE for providing excellent training and support for using technology for teaching. The top three ways faculty preferred to learn new features or skills related to technology for teaching were asking a support person, followed by attending formal coursework or training sessions and working with an individual tutor. The results of this study have implications for those who teach online as well as those who support them.

Keywords: Faculty beliefs, online teaching, professional development, technology tools

Introduction

Online course course delivery in US higher education is on the rise. According to the 2018 Babson Survey Research Group's "Tracking Distance Education in the United States" report, the number of online students in 2017 grew by 337,016, up 5.6% from 2016 and exceeding the growth seen in the prior three years (J. E. Seaman, Allen, & Seaman, 2018). As a result, faculty are under increasing pressure to teach online, yet may be resistant or unready to do so (Mitchell, Parlamis, & Claiborne, 2015). In order to effectively support faculty with online teaching, institutions and their support staff need a clear understanding of the tools faculty use and their perceptions about technology support.

Literature Review

The introduction of technology and rise of the knowledge economy have had a significant impact on higher education (Altbach et al., 2019) including the faculty member's role (Au-Yong-Oliveira et al., 2018). Technology has transformed the research process as well as teaching for many faculty (Allen & Seaman, 2012). Yet adopting and using technology in teaching is difficult, and university faculty have been among the last educators to experience the changes brought on by technology integration in education (Nicolle & Lou, 2008).

Most institutions of higher education in the United States have seen online education as a critical component of their long-term strategy (Allen & Seaman, 2013). In 2011, 89% of four-year, public institutions offered online courses, and enrollment over the past 10 years has grown at a greater rate than in traditional courses (Parker et al., 2011). More recently, the proportion of all college students taking at least one online course was at an all-time high of 32% (Allen & Seaman, 2013). This number has increased dramatically due to the Covid-19 pandemic in which a majority of institutions worldwide shifted most of their course offerings from face-to-face to online formats (Marinoni, 2020).

Despite the increase in online courses, teaching online can be challenging for faculty, often due to the technical tools and skills required to facilitate an online course. Skills with technology tools play such an important role in online teaching, "technologist" is one of the eight roles of the online instructor as identified by Bawane and Spector

(2009).

Perhaps the most common tool used in online course delivery is the learning management system (LMS). Faculty self-efficacy in using an LMS is often reported as a critical component of successful online teaching (Martin et al, 2020; Zhen et al, 2008). The support an institution provides to faculty when using an LMS, such as professional development and faculty technical assistance significantly impacts faculty self-efficacy with the LMS. Subsequently, faculty with higher levels of LMS self-efficacy perceive more benefits to using an LMS (Zheng et al, 2018).

More generally, faculty with higher technology skill levels report being more satisfied with teaching online (Green et al., 2009; Osika et al., 2009), while those who experience technical difficulties report less satisfaction with online teaching (Bolliger & Wasilik, 2009). Faculty satisfaction has been identified by the Sloan Consortium as one of the five pillars essential to support quality learning in higher education (Moore, 2005). In addition, more experienced and competent faculty report higher levels of self-efficacy with regard to teaching (Chang et al., 2011). This finding aligns with Ryan and Deci's (2017) Self-Determination Theory (SDT) that posits that feelings of competence, also referred to as "effectance and mastery" (p. 11) are a basic psychological need for humans to fully function and thrive. SDT contends that feeling competent in an activity is motivating and promotes further engagement. This may explain why faculty teaching online who are more self-efficacious are also more likely to persist through negative experiences and outcomes (Horvitz et al., 2015). In addition, faculty that feel confident in their technology skills are also more willing to teach online (De Gagne & Walters, 2010). Indeed, after a systematic literature review of faculty willingness to teach online, Wingo et al. (2017) concluded that confidence in personal technology skills was a critical factor in faculty willingness to teach online.

Historically, faculty professional development has been an important strategy for institutions to overcome challenges and respond to change (Sorcinelli et al., 2005). More recently, faculty development has become an even more critical support for institutional initiatives (Beach et al., 2016). Because most faculty have not been not been specifically trained to teach online, specific professional development for online tools and strategies is critical for faculty satisfaction (McQuiggan, 2012) and success with online teaching (Horvitz et al., 2015; Prottas et al., 2016; Stewart et al., 2010). Lack of training is often cited as a barrier to faculty integration of technology (Donovan & Green, 2010; Porter & Graham, 2016) and can serve as a barrier to faculty adoption of online teaching (Maguire, 2005).

Faculty professional development takes many forms. While much has been conducted in face-to-face formats, demand for the flexibility of online delivery is growing in order to meet the needs of a changing faculty body (Alexander et al., 2019). To achieve results and have lasting impact, those taking a systems thinking approach argue that faculty development must align to and gain the support of the institution (Stroh, 2015). Others contend that traditional models of professional development may be too focused on the change desired, not the faculty impacted by the change (Senge, 2006), and may be too limited to address the specific and unique technology needs of individual faculty (Baran & Correia, 2014). On the other hand, faculty professional development models that take a social learning approach and incorporate communities of practice, learning communities, conversational connections and mentoring have been found to be effective (Bond & Blevins, 2020; Baran, 2016).

Overall, faculty satisfaction with professional development programs remains high (Steinert et al., 2016) and specifically, faculty who teach online, regardless of skill or experience level report that they value ongoing professional development (Tabata & Johnsrud, 2008; Zhen et al., 2008).

The purpose of this survey research was to understand the perceptions of college of education faculty members about their confidence using technology tools for their professional careers and teaching with students, and how to best support online teaching faculty.

Methodology

This study took place in a college of education comprised of 10 departments, 225 faculty and 1,947 undergraduate and graduate students. This COE is the primary preparer of teachers going into the state's public school system. The college is a distance education leader at its campus, with the highest number of distance programs of any college at its campus. This emphasis on distance education has been primarily driven by its need to prepare teachers living on islands spread throughout the Pacific. This need also prompted the COE to establish an Office of Technology and Distance Programs with the goal of promoting and supporting technology integration and distance education. This office currently employs two full-time faculty who serve as director and instructional designer as well as six full-time staff and two student workers.

Data was collected via an online anonymous survey which included demographic, open-ended, and Likert scale or multiple choice questions. Questions asked about technology tools the faculty personally used, used in professional work and teaching, and with students in their courses. Questions also asked about beliefs and opinions on online teaching, online students and support. In order to refine and validate the survey prior to dissemination, it was reviewed by a senior learning design and technology faculty member and three cognitive interviews were conducted with faculty from varying disciplines and campuses, all of whom teach online. The survey was revised after feedback was received.

Results

Fifty-five of the college's 225 faculty responded to the survey for a 24% response rate. Participants were 64% female and 73% reported to be 40 or older. Twenty-eight percent were tenured faculty, 22% were tenure-track, with the remaining in other types of faculty or instructor positions. This paper focuses on data pertaining to COE faculty's confidence using technology tools in their professional career and teaching with students. In addition, the study seeks to determine their satisfaction with the support services they received and their preferences on how to learn about new technology.

Confidence with using technology tools for professional needs

About 62% of respondents either agreed or strongly agreed that they were confident in using technology and digital media to meet the needs of their professional career. An even higher percentage of faculty (83.4%) reported feeling confident in using technology and digital media to communicate with their students and colleagues. An equally high number of respondents (82.7%) felt confident in using technology tools to find literature to use for their research. Approximately 87% of COE faculty felt confident in using technology tools to locate content materials to use for teaching. Finally, almost half of the respondents (46.3%) reported being confident in using technology and digital media to design a course or module for online learning.

Confidence with using technology tools for teaching and with students

Next, COE faculty were asked to rate their level of agreement (1-strongly agree to 5-strongly disagree) about their confidence in using technology and digital resources in their teaching and with students. More than half of the respondents (57.4%) either strongly agreed or agreed with the statement "I am confident in choosing technologies to use in my teaching" (see Figure 1)..
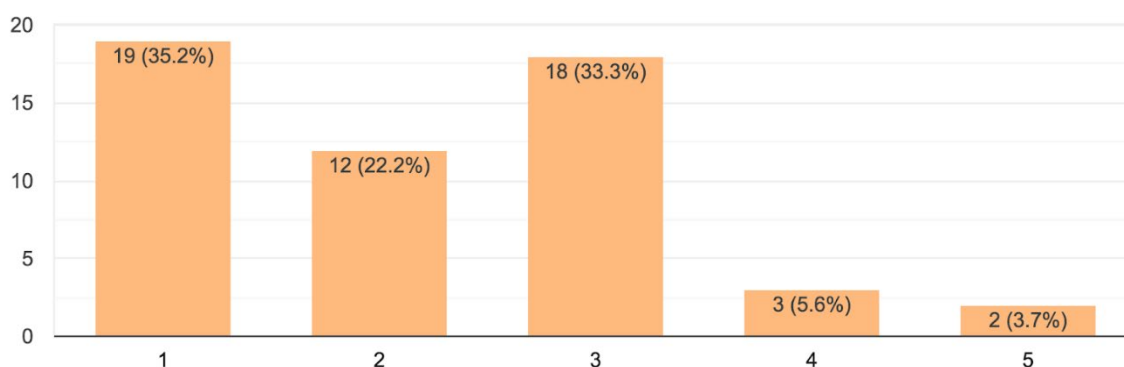

Figure 1. Confidence in choosing technologies for teaching

However, only about 43% of them felt confident that they understood the knowledge their students have about using technology for learning (see Figure 2).
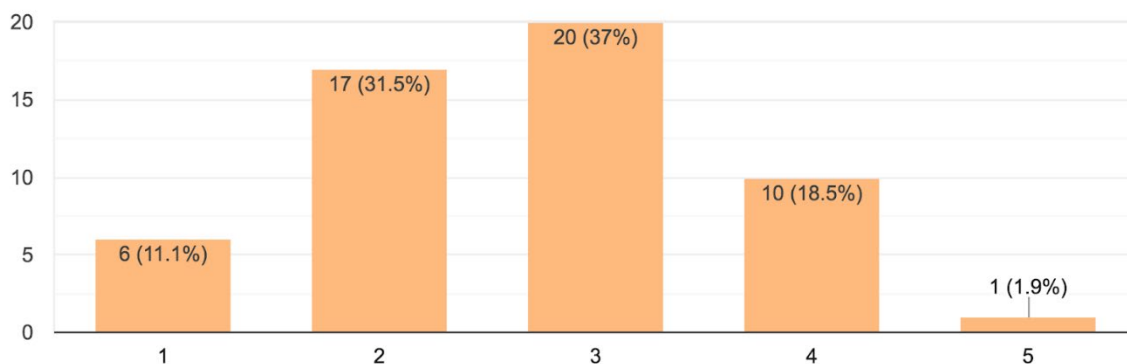
Figure 2. Confidence in understanding students' knowledge of using technology for learning

Interestingly, the majority of COE faculty (74.1%) reported regularly finding materials online for use in planning their courses (see Figure 3).
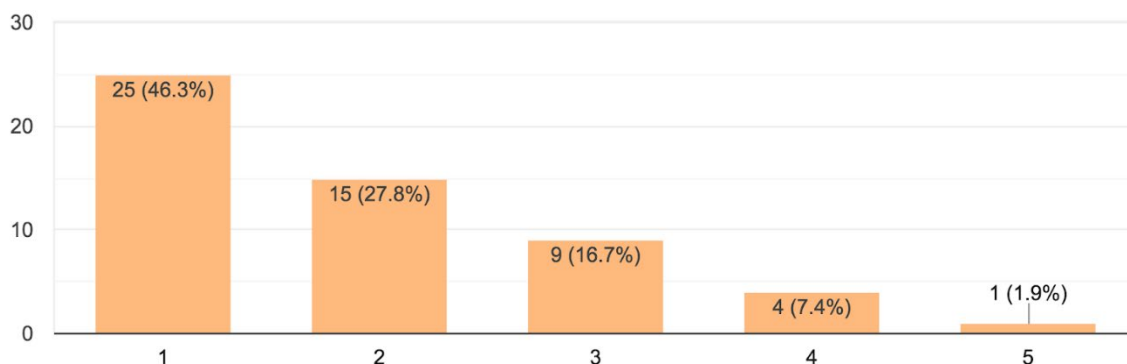

Figure 3. Regularly finding materials online for course planning

About 80% of COE faculty also reported regularly finding materials online that they share with their students (see Figure 4).
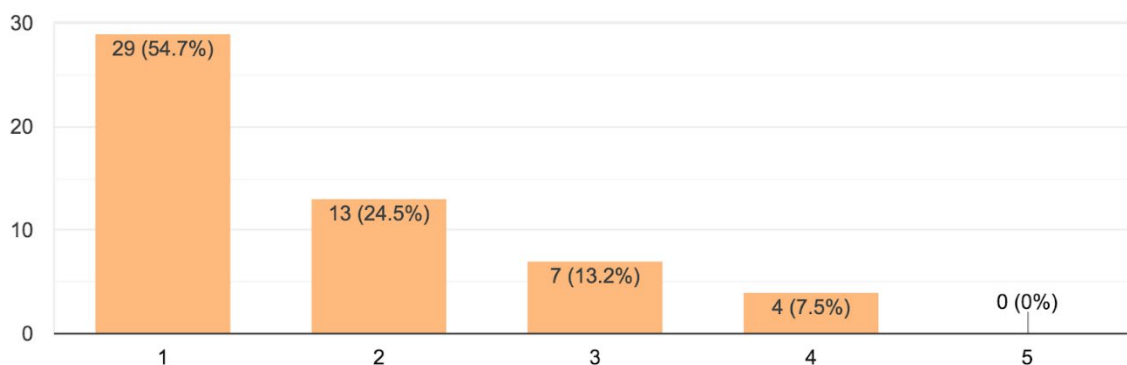

Figure 4. Regularly finding materials online to share with their students

Technology tools for teaching

The COE faculty were also asked to rate their confidence on a scale of   1=strongly confident to 4=not confident or 5 (don't use) in using commonly used tools in the COE in their teaching.

Laulima is the Sakai-based online course management tool supported at the University of Hawaii (https://laulima.hawaii.edu/portal). The majority of COE faculty (90.5%) reported being confident in using the Laulima online course management tool (see Figure 5).
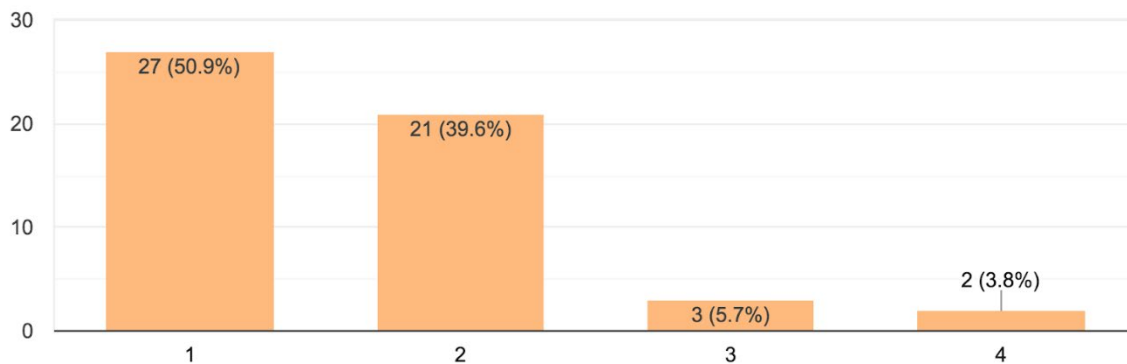
Figure 5. Confidence in using the Laulima online course management tool

Additionally, faculty were asked about the usefulness of Laulima for their students. It was evident that COE faculty found Laulima to be a useful online repository and integral to the organization of their courses as reflected in the following open-ended responses:

> "One place for everything - having things for students and students leaving items for instructor. Easy to email whole class, particular student(s)."

> "It allows me to provide most all course information and materials in an organized fashion. Students are generally familiar with Laulima and seem to learn my organization quickly and easily. Submitting assignments through Laulima is a great accountability tool because I can see exactly when the assignment was completed and I don't have to worry about misplacing assignments."

> "I often use the resources, discussion tool and drop box. These can facilitate a sense of community and dialogue. It invites students to consider the perspective of others and to have this inform their reflection on course content."

> "As with any course management system (CMS), it is helpful to have all course resources in a central place. Most students are familiar with it since we use it campus-wide. If instructors set up their sites well, it can be a good one-stop shop for all resources related to a course (either online, hybrid or face-to-face)."

> "Although Laulima has its quirks, it is a good (and low cost) platform for organizing and managing an on-line course. Students and new instructors do have to go through a steep learning curve initially. Technology or on-line course novices may struggle without support. However, once learned, most manage to navigate the site, post assignments, and receive feedback on learning (including grades). Instructors can post and receive responses on surveys or other course evaluation tools. Being able to post links to web content outside the site are very handy."

The COE also provided faculty with access to the Blackboard Collaborate (https://www.blackboard.com/teaching-learning/collaboration-web-conferencing/blackboard-collaborate) synchronous web conferencing tool. More than half (55%) of the COE faculty were confident about using the Blackboard Collaborate web conferencing tool (see Figure 6).
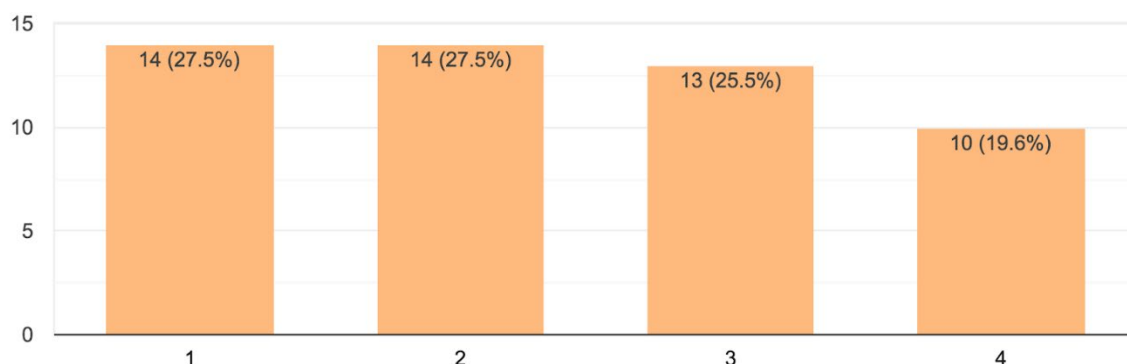

Figure 6. Confidence in using the Blackboard Collaborate web conferencing tool

When asked about the usefulness of Blackboard Collaborate for their students, the COE faculty were very impressed with the ability to connect synchronously with their students. Blackboard Collaborate also provided them with various ways of interacting with their students using features such as media sharing, breakout rooms, and recording:

"The ability to connect synchronously with online learners is very useful. It provides a very convenient way to have periodic meetings with our students who are located remotely."

"Connection. I think students are disconnected from each other and from the instructor when the course is online only. At least that is the case for me. I think just having contact lets students know they are not alone. Students feel more comfortable contacting each other after class if they have used the text feature during Collaborate to say - hey call me - or let's work together on that."

"BBC (Blackboard Collaborate) puts a face and a voice to online learning. This is extremely powerful. Not only can students see and hear me, then can see and hear each other. This helps to mediate the "social vacuum" of online learning.
1. Everyone can get online to the same site fairly easily (with a few tech issues).
2. It can handle multiple types of media (ppt, video, web, etc.)
3. A recording of the session can be produced easily and quickly."

"Collaborate allows personal contact through live discussions and group sharing activities such as "Jigsaws" - students give feedback that they like the synchronous Collaborate sessions that I regularly include as part of my online courses."

"I love the breakout rooms. The rooms help build the community that I feel is necessary for learning. Application sharing is also worth of mention."

"I like the presence of multiple modes of engagement. While one student presents, others can simultaneously offer feedback, send links, and send supportive messages."

"I like that I can easily record a session and upload it to Laulima right after the class."

"Good tool for meeting with students in "real-time" (e.g. an introductory training or for office hours). It allows students to ask questions and receive immediate responses. I like the Whiteboard, emoticons, and survey tools. Being able to upload a Power Point and record the session for students who could not attend are great features. As we always struggle with bandwidth issues, we do not use the "video" feature and concentrate instead on providing good sound quality. I've learned to make and save a whiteboard file so that uploading on the day of training is quicker and easier."

Support services

Lastly, the COE faculty were asked to rate their satisfaction (1=strongly agree to 5=strongly disagree) with the support services they received and their preferences on how to learn about new technology.

Almost ninety percent of COE faculty either strongly agreed or agreed with the statement "I generally am able to find the support I need for using technology in my teaching" (see Figure 7).
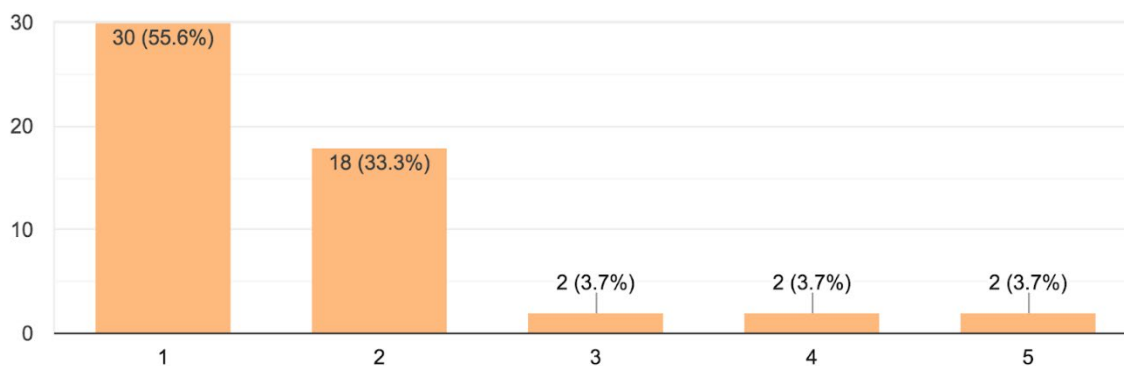

Figure 7. Finding support for using technology for teaching

An equally high percentage (87%) of respondents also found that the COE offers excellent training and support for using digital tools in the classroom (see Figure 8).
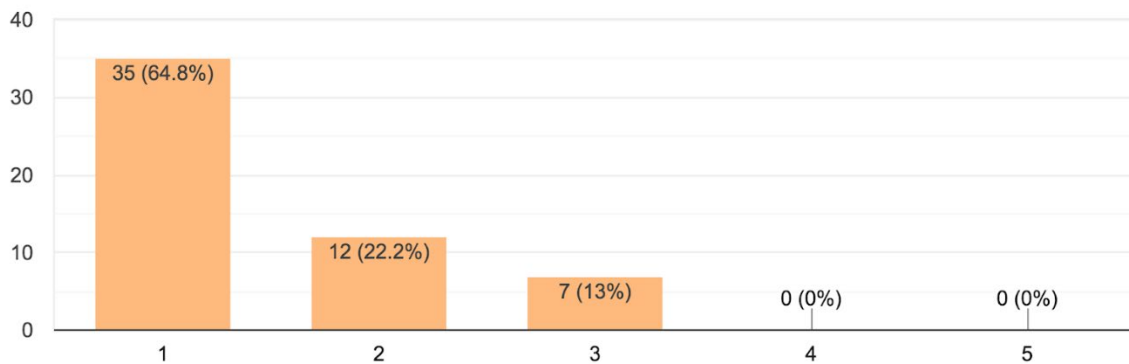

Figure 8. The COE offers excellent training and support for using digital tools

Additionally, an overwhelming percentage (92.4%) of faculty rated the COE technology workshops to be very helpful or helpful (see Figure 9).
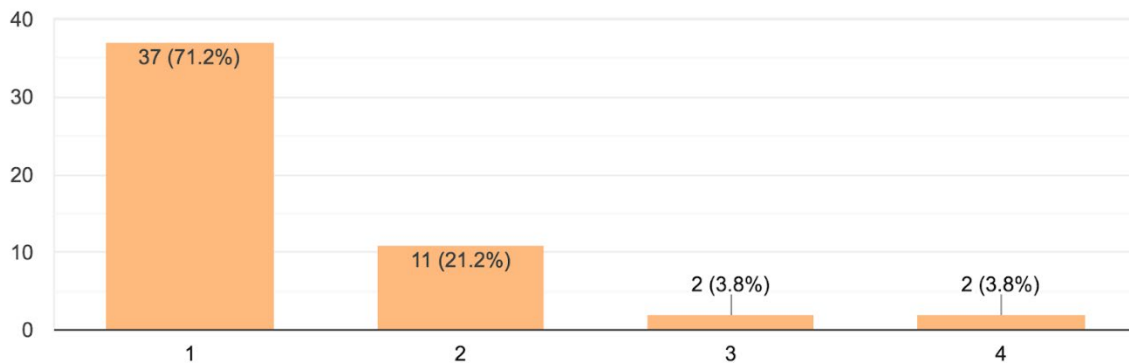

Figure 9. Rating of the COE technology workshops (1=very helpful to 4=not helpful)

Interestingly, about 69% of COE faculty had attended three or more COE technology workshops (see Figure 10).
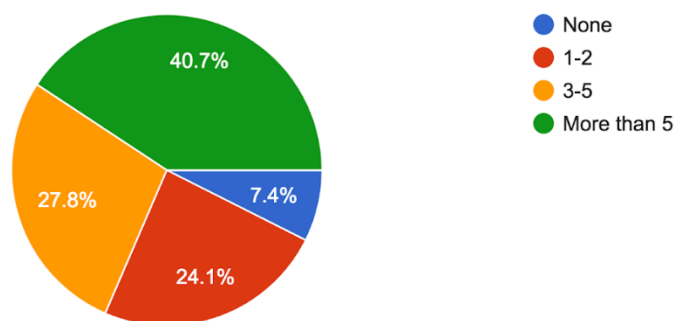

Figure 10. Number of COE technology workshops attended

When asked for the top three ways faculty preferred to learn new features or skills related to technology for teaching, approximately two-thirds (66.7%) indicated asking a support person, followed by attending formal coursework or training sessions (51.9%) and 46.3% preferred working with an individual tutor.

Discussion & Conclusion

In summary, this study found the majority of COE faculty to be confident with using technology tools for their professional career needs and for teaching with students. While the need for professional development focused on integrating technology into teaching and course development is important across fields, faculty members in some fields may also need professional development opportunities to help them use new technologies in their research, e.g. the use of software data analysis packages, or as part of their institutional work, e.g. learning to use new institutional data management systems (Austin & Sorcinelli, 2013).

The COE faculty also reported being confident in using the university-supported Laulima online course management tool (asynchronous) and the Blackboard Collaborate web conferencing tool (synchronous). The COE faculty consider Laulima to be vital for their courses as exemplified by this faculty's comment: "central location for all documents, discussion board, announcements." Another faculty's sentiments seem to summarize how impressed they were with the synchronous web conferencing abilities of Blackboard Collaborate:

> "It allows me to make live connections with students that I may not otherwise connect with and allows me to interact with my students and my students to interact with each other."

Additionally, many faculty acknowledged that the COE provided excellent training and support for using technology for teaching and highly rated the COE technology workshops they attended. The top three ways faculty preferred to learn new features or skills related to technology for teaching were asking a support person, followed by attending formal coursework or training sessions and working with an individual tutor.

According to UNESCO, more than 1.6 billion students worldwide have been impacted by the COVID-19 pandemic (United Nations, 2020). Learning has pivoted mostly to an online delivery format and the need for online courses is more evident now than ever (Marinoni, 2020). This study has implications for those who teach online as well as those who support them. The results of this study seem to suggest that providing excellent training and support for using technology for teaching may contribute to COE faculty's confidence with using technology tools for their professional career needs and for teaching. De Gagne and Walters (2010) contend that faculty who feel confident in their technology skills may be more willing to teach online. Additionally, to encourage more faculty to teach online, the findings of this study suggest that it may be important to provide both asynchronous and synchronous online tools that faculty considers useful. The study also revealed that faculty's preferred forms of technology support included asking a tech support person, attending formal training sessions and working with an individual tutor.

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