

# **Learning to Teach Well in Any Format: Examining the Effects of Online Teachers' Training on University Faculty Teaching**

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*In the 2018/2019 academic year, Michigan Technological University's Faculty Senate voted to require all online instructors to be trained in current best practices of online teaching to be able to teach fully online courses. With the onset of the Spring 2020 pandemic, Michigan Tech informed all faculty that the senate policy requiring online teacher certification would be enforced for Fall 2020. The faculty body responded by completing the required training. This study surveyed the faculty who completed online teaching training from 2019 through 2021 to determine how that training changed their approach to the design of a course, a lesson, and their teaching in general. This work found that the training provided essential pedagogical and instructional design education absent in most Ph.D. programs, resulting in self-reported improvements in both online and in-person instruction. Additionally, the experience of learning online increased faculty empathy for students.*

*Keywords: online teaching, faculty training, backwards lesson design, COVID-19*

## **BACKGROUND**

The widespread use and availability of robust instructional and communications technologies (ICTs), such as enhanced learning management systems, have enabled institutions to offer online learning as an option for students in their education experience (Allen & Seaman, 2017; Redmond, 2011). Recent statistics show that almost one-third of higher education students in the United States enrolled in at least one online class (Allen & Seaman, 2017). This number significantly rose during the COVID-19 pandemic. Due to

COVID-19, 84% of undergraduates in the U.S had all or some of their classes moved to online-only instruction in the spring of 2020 (Cameron et al., 2021). Before the pandemic, various factors attributed to the increase in online course enrollment, including access, convenience, and flexibility (Harris & Martin, 2012; Jarvie-Eggart, 2019). However, since the spring 2020 onset of the pandemic, online instruction has become a tool of safety and a means to support the continuity of instruction considering public health recommendations and policies. Thus, where online instruction had previously been an option for institutions, it became a necessity for survival during the pandemic.

As faculty are being asked to utilize online delivery modalities, support must be provided to promote their acceptance of new technology tools and their understanding of appropriate online pedagogies to effectively adopt and integrate into courses. For this endeavor, professional development is key to supporting faculty in their efforts to provide an optimal online student learning experience (Cameron et al., 2021). Due to the emergency nature of online instruction during the COVID-19 pandemic, most faculty within higher education shifted to online instruction with no formal training in appropriate methods. Michigan Tech also allowed faculty new to online instruction to transition to emergency online teaching with no formal training for the spring semester of 2020 but required faculty to be trained in online course design and instruction before the fall 2020 semester. This paper examines the self-reported effects of online faculty training on those faculty's teaching, both online and in-person.

### **Online Teaching Professional Development: A Broad Overview**

The work of Baran, Correia, & Thompson (2011) shows that, before the COVID-19 pandemic, little progress had been made in incorporating new pedagogies into professional development for online teaching. To begin preparing instructors and schools for online teaching, collaboration is vital. Building courses through collaboration with instructional designers, instructional technologists, and a professional development support team offers a more novel and effective approach to course design. Instructors feel uncomfortable when teaching in an online environment without the resources needed to understand how online teaching is different from in-person and the tools to support the proper course design (Baran, et al., 2011).

To prepare instructors for online teaching, Garrison, and Cleveland-Innes (2005) suggest that they must understand that students' cognitive presence alone is not enough for learning. Rather, interaction and engagement need to be part of the design of a course to successfully deliver content. Even more, instructors should strive to structure more effective interactions with students. Garrison and Cleveland-Innes (2005) note that interaction is not equivalent to learning. The planning, design, and structure of online courses, along with the cognitive element, can support deep learning, understanding, and synthesis of content. Learner-centered classrooms can also support a better online class experience.

While the teaching methods for online professional development can range from informal to formal, the roles of planning, designing, integrating technology, and communication is paramount for online classrooms (Gurley, 2018). Borup and Evmenova (2019) explain that it is not just what faculty learn, but how they learn, in addition to several other elements, that play into the success of a professional development program. In tandem, Borup and Evmenova (2019) share that the best professional development is one where the faculty engage as students, thus modeling the best practices for faculty and allowing them to experience these practices from the student perspective. In planning a professional development program, it is important to highly engage instructors and use modeling to reinforce best practices. Considering this, the professional development program for online teaching in this study includes online courses where the facilitators model how instructors might approach their courses.

The understanding of how professional development influences teaching is limited in scope. Many of the studies focus on discipline areas and statistical approaches to several courses being taught online. Richardson (2020) notes that professional development can include various formats, including on-demand, face-to-face training, workshops, and coaching sessions. Professional development is more often reported internally, and thus few studies are available on how professional development impacts the perception, use, and acceptance of online teaching. The exigence of inquiry into how faculty view online teaching and what training they are given to support that transition is apparent in a pandemic-aware world.

While it is widely acknowledged that universities are turning to online delivery models, there is less focus on how faculty are prepared to thoughtfully plan, design, execute, and evaluate an online course. With pandemic-responsive institutions needing to quickly pivot to online delivery, faculty must be given the training for a successful course. Examination of academic responses to COVID-19 exposes a lack of faculty training for online teaching during the pandemic. Rutherford et al. (2021) observe that emergency online learning challenged instructors with its suddenness and gave them little time to prepare. They argue that instructors' widespread lack of confidence in making this pivot indicates the need to provide professional development to instructors at all levels. In light of this, pandemic-aware institutions should reconsider how they support faculty.

Molr (2017) suggests that to support the increased use of online delivery, faculty need to have the appropriate preparation to ensure sufficient outcomes. Along with sufficient ability and acceptance, competencies are also key to supporting successful online course delivery. Martin, Budhrani, and Wang (2019) purport six core competencies (readiness to teach, course design, time management, technical skills, and course communication) that help instructors to feel confident and perceive they have the tools to plan, design, and execute a robust online course. Other frameworks include Sullivan, New, and Yang (2018) and the use of the Tools of Engagement framework (TOEP) to support faculty acceptance. This type of framework can encourage faculty to continue to expand their knowledge of technology and thus increase their confidence in delivering online courses. Wynants and Dennis (2018) build on the model of the Community of Inquiry (Garrison, 2011) by stressing social, cognitive, and teaching dynamic elements. Faculty skill development is essential for the creation and delivery of successful online courses. Baran, Correia, and Thompson (2011) suggest that transforming online teaching is part of a larger change model that supports faculty agency to engage in novel ways of approaching teaching and learning.

This present literature review reflects the scope and depth of how institutions approach professional development. Based on the literature it is fair to conclude that faculty professional development does exist to support faculty to transition to online teaching. However, there has been little investigation into the changes in teaching practices at institutions that required professional development training to teach online during the pandemic. Held as an exemplary response to the pandemic, the California community college system did provide some training for online faculty, mostly at institutions that already had established distance education resources pre-pandemic; however, the focus of that training was primarily on the technological tools for delivering online instruction (Hart et al, 2021). In an emergency context, like the COVID-19 pandemic, providing such professional development can be a daunting task. This study examines the impact of faculty professional development to teach online (which included training in the technology and the pedagogy of online instruction) and the impact the additional support had on faculty approaches to class and lesson design and teaching. Efforts to address quality within online instruction, including essential online instructor competencies, provide a context for viewing the results of this work.

### **Ensuring Quality in Online Courses and Instructors**

Since receiving their initial grant from the Department of Education's Fund for the Improvement of Postsecondary Education, MarylandOnline (MOL), an association of 19 community colleges and universities within the state of Maryland, U.S., created the non-profit Quality Matters (QM) that develops and revises the rubrics for online course design and a peer-review process for faculty certification of course quality (Quality Matters, 2022; Sener, 2019). The QM Rubrics, which are in their 6th revision (Quality Matters, 2018), are based on best practices and undergo review for consistency with educational research literature regarding student retention, learning, and engagement. Faculty implementing the QM Rubric find their learning activities and assessment to be better aligned with objectives, increased accessibility for disabled students, improved course navigation by students, and better learning outcomes (Finley, 2012; Wang, 2019).

There are other efforts to address online course quality, including rubrics and standards for course evaluation (CSU Chico, 2009; Michigan Community College Virtual Collaborative, 2020; Monterey Institute for Technology and Education, 2005). However, the QM Rubric remains the most widely used and accepted across the widest variety of institutions. As evidence of this, two-thirds of the top ranking online

bachelor's programs in the U.S. in 2021 implemented QM. (Quality Matters, 2021). It is used well beyond the U.S. including 20 countries, and over 52,000 staff and faculty at more than 1,300 member institutions (Zimmerman et al., 2020). QM has become the organization, both within the U.S. and globally, that sets the standards for online education. Their efforts to ensure a quality online learning experience extends into efforts to address the essential skills needed for online instruction.

Grounded in peer-reviewed literature, the Online Instructor Skillset (OISS) is based on approximately 200 papers (Quality Matters, 2022b) examined in a review of existing literature regarding online teaching competencies (Diehl, 2016). The OISS identifies six key areas of competency for online instructors, reflecting the standards to which online instructors should be held. The OISS is utilized as a theoretical framework for analyzing the results of this work to determine if changes in faculty teaching after receiving training in online instruction align with the most essential skills agreed upon by the literature in this area.

## **THEORETICAL FRAMEWORK**

The key areas in which the OISS recommends that online instructors should display competence are as follows: understanding the institutional context of their online teaching with regards to institutional policies and procedures; the use of online teaching technologies, such as learning management systems; the instructional design considerations for online learning; online teaching pedagogy; assessment of online learners; and social presence and communication in online classrooms (Quality Matters, 2022b). The OISS was implemented as a theoretical framework for the analysis of study results, applied after initial codes were developed as a lens for viewing the results.

## **PURPOSE**

Before the COVID-19 pandemic, Michigan Tech was experiencing growth in online programs. The university faculty wanted to ensure that quality instruction would occur in online environments. As a result, in the 2018/2019 academic year, the Michigan Tech Faculty Senate voted to require all online instructors to be trained in the current best practices of online teaching. Faculty could meet this requirement through one of three main training options. All the approved training options were vetted to ensure they covered comparable curriculum and the desired set of learning objectives which included: introducing faculty to essential elements of good online teaching; creating measurable and observable learning objectives and aligning course content, activities, and assessments to them; designing well-organized courses; regular and timely feedback; instructor presence; frequent and substantial faculty to student and student to student interactions; good course navigability and usability; and making your online classroom active and engaging. All three were delivered in Canvas, Michigan Tech's LMS, and supported students in developing a lesson of their choosing in Canvas. The three options were as follows:

- 1) **ED5101, Foundations of Online Teaching, offered at Michigan Tech (ED5101):** ED5101 is a fully online, asynchronous course. Students take the course in seven-week cohorts. Cohorts are kept together in a weekly rhythm to support active engagement. The course is based on the Quality Matters (QM, 2018) rubric and best practices in online education.
- 2) **Fundamentals of Online Teaching (FoOT) at the University of Wisconsin Madison:** Fundamentals of Online Teaching (FoOT) is a blended six-week cohort model, consisting of asynchronous elements, synchronous sessions, and robust discussion prompts. Cohorts are kept together in a weekly rhythm to support active engagement. This course is based on the Quality Matters (QM, 2018) rubric and best practices in online education.
- 3) **Educational Technology Organization of Michigan's (ETOM) Online Teaching Certification Course:** This is a six-week online course. Course instruction is based on the quality principles/standards identified in the Online Course Development Rubric by Michigan Colleges Online which was originally developed by the Michigan Community College Virtual Collaborative (MCO, 2020). This rubric is well aligned with the QM rubric, as it served as a

guide during rubric development, and members from MCO sit on the QM advisory board (Sener, 2019).

ED5101 had been offered as a voluntary option for faculty to improve their online teaching skills with a \$500 stipend as an incentive since 2017. Several other courses or training through organizations such as Quality Matters and the Online Learning Consortium could also allow faculty to meet the requirement, but they were both more expensive and more time-consuming than ED5101, FoOT, and ETOM. Only a very small number of faculty members pursued meeting their online teaching training requirements through those avenues.

Beginning in the Fall of 2019, faculty began completing the training as needed to become certified to teach online for Michigan Tech. In the spring of 2020, all faculty shifted to emergency online teaching during the global COVID-19 pandemic. During that semester, the faculty who had not completed the training (the overwhelming majority of the faculty) were given special dispensation to teach online but informed that the University's Senate Policy would be enforced the following academic year. By the fall 2020 semester, all faculty teaching either fully online or via emergency remote instruction (live synchronous class sessions via Zoom) were required to be certified. Faculty were still incentivized with a \$500 stipend for completing ED5101 and were offered a reduced \$200 stipend for completing ETOM's course (reduced by the \$300 course fee). The University covered the cost of taking ETOM and UW Madison's FoOT courses. Stipends and incentives for the training were discontinued after the Fall 2020 semester. As a result, the majority of Michigan Tech's 406 faculty were trained over a few short months to be certified to either teach online or via remote instruction. In total, 443 faculty, graduate students, and staff of the University completed online teaching training through one of the three main options from the summer 2019 through the Spring of 2021: 153 completed ED5101, 206 completed ETOM, and 88 completed FoOT. Before the senate policy being enforced, 34 faculty, graduate students, and staff of the University completed online teaching training through ED5101, representing only 7.7% of all those trained.

Previous studies into the effects that ED5101 had on faculty participants' perceptions of online teaching found no statistically significant effect of the training on their perception of online teaching (Freeman and Jarvie-Eggart, 2020). However, this work was performed before the pandemic, when faculty were teaching online by choice. Thus, it was suspected that the study population may have been biased toward online education. The surveys on faculty perceptions of online learning were again administered to those who completed ED5101 during the pandemic, and the class still provided no statistically significant change in faculty perceptions of online learning. Yet, course review comments indicated that faculty participants in the online training may be learning about effective instructional design. Many of them commented on the value of learning about backward lesson design and aligning activities and assessments with learning objectives. It was suspected that the online training may be impacting their ability and approach to teaching in-person courses in addition to those online. Thus, this study focused on answering the question of how the training faculty completed to be certified to teach online changed their approach to course design, lesson design, and teaching.

## **METHODS**

In the Summer of 2021, a survey was sent to all faculty members who had completed certification to teach online through either ED5101, UW-Madison, or ETOM, from the Summer of 2019 through the Spring of 2021. Survey data was gathered anonymously with the informed consent of all participants. The survey instrument included one Likert scale question about faculty comfort with the LMS before their training; as well as open-ended questions about the main subject areas in which faculty taught, faculty impressions of online teaching before their training, and how the training changed their approach to course design, lesson design, and teaching. Faculty were emailed the survey, with two follow-up email requests to complete. In total, 441 faculty were invited via email to complete the survey, with 172 faculty responding (39% response rate). Of the 172 respondents, 79 faculty respondents (45.9%) completed the ETOM course, 31 completed FoOT (18%), and 62 completed ED5101 (36%). Respondents reflected the STEM focus of the university and included 58 engineering faculty (33.7%), 39 from the biophysical sciences (22.7%), 19 from humanities

faculty (11%), 16 from computer science (9.3%), 13 from social sciences (7.6%), 11 business and economics (6.4%), 10 math (5.8%), and 6 faculty who chose not to disclose their departmental affiliation (3.5%)

Inductive coding was selected to allow codes and themes to be identified from the data. An initial team of four researchers reviewed the data for preliminary emergent concepts and independently determined suggested coding categories, which were discussed as a group. Anonymous responses were coded for emergent themes using descriptive (or topic) coding, in which codes were composed of short phrases or a single word describing the topic of the data (Saldaña, 2016). Simultaneous coding techniques were applied, in which multiple codes could be applied to the same text passage (Saldaña, 2016). After each coding cycle, coding differences were resolved between the researchers. Coding cycles were repeated, with codebook updates and codes redefined as necessary, until theoretical saturation was reached and codes became stable (Corbin & Strauss, 2015). Individual codes were then grouped into larger themes for reporting (Simmons, 2017). The theoretical framework was applied as a lens to view the results and determine if the codes and themes which emerged aligned with recommended instructor skills for online teaching. Common themes emerged among the responses to questions about the impact of the training on course design, lesson design, and teaching. Each of these themes included several component codes, as described in Table 1.

**TABLE 1  
MAJOR CODES AND THEMES**

<b>Code Abbreviation</b>	<b>Code Name</b>	<b>Description</b>
<b>Faculty work response</b>		
FW:	Faculty Work More	Lots of time or work is involved to prepare the materials for online learning, continual improvement of class materials even after initial development
FW-:	Faculty Work Less	Online learning is less work than F2F, faculty develop the class once and then go
FW/:	Faculty Work Neutral	Faculty Work is about the same as in-person
DF	Difficult	Difficult to implement, hard
NO	No Changes	No changes made to course design, lesson design, or teaching
NOPK	Prior Knowledge	No changes made because of prior knowledge - nothing new was learned. Already knew a better way to do things than presented in class
IMP	Improve	Examples of improvements made to courses, lessons, or teaching
IMP-	Improve Negative	Attempted improvements but they did not work in class
PF	Pit Falls	What not to do

<b>Instructional design</b>		
ST	Structure	Organization - general comments about increasing class organization or improving the structure of the class (not saying they are using modules)
MD	Modules	Importance of module use, organizing lessons by modules, segmenting information, chunking lessons
MD-	Dislike of Modules	Not liking module use or preferring to use another structure
BD	Backwards Design	Figure out what they learn first - start with the end in mind
NI	Navigability/interface	Methods for increasing the ability to easily navigate or have students find their way through online class, providing time estimates for activities
RS	Resources	Videos, purposeful content (this is the content itself), open resources
<b>Social presence</b>		
CM	Communication	Communication of expectations/deadlines
IP	Instructor Presence	Importance of presence, how to establish it, daily presence in the classroom (can be pre-course, during the course, or end of the course)
EM	Empathy	Empathy for students, their schedules
ISI	Instructure-Student Interactions	Asking questions, interacting with them, maintaining relationships with them (interactions between learners and instructors on the content)
SSI	Student-student Interactions	Promoting students interacting with each other and discussions

<b>Pedagogy</b>		
OB	Objectives	Lesson/learning objectives
SL	Student Centered Learning	Focus on the students' experience or their learning results
EN:	Engagement	Online format allows for student engagement, or positive efforts for engagement
EN-:	Less engagement	Online format results in reduced student engagement, concerns about adequate engagement
<b>Technology</b>		
CN	Canvas (LMS)	How to use Canvas, increased familiarity
TC+	More tech use	Increasing the use of technology, or using it more easily, pulling in additional technologies besides CANVAS
TC-	Tech Issues	Comments about Tech issues, problems using technology
TL	Tool	Useful tool/modality for online learning, for remote learning, for the future
<b>Assessment</b>		
LE	Learning activities	Homework, in class activities, actions that result in learning.
AS	Assessment	Both formative and summative
<b>Institutional context</b>		
AC	Accessibility	Accessibility of the class for the visually or hearing impaired

The *Faculty Work Response* theme addressed faculty concerns about how teaching online might affect their workload, including codes for faculty working more when teaching online (FW+); faculty working less (FW-); no changes in faculty workload (FW/); and online teaching being difficult (DF). This theme also included codes for changes to the quality of the online course, including no changes being made to the course, lessons, or teaching (NO); no changes being made because of prior knowledge (NOPK), improvements made to the course, lessons, or teaching (IMP+); attempted improvements that did not work (IMP-), and pitfalls of teaching online (PF). This theme is the only theme that did not align with the OISS. The majority of improvements made by instructors fell under the theme of *Instructional Design*, which encompassed codes for organizing the structure of the class (ST); module use or chunking (MD+); disliking module use or chunking (MD-); backward lesson design (BD); navigability of the online course (NI); and

resources (RS) such as videos and additional learning content. Good online instructional design must be supported by an instructor that is perceived as a present for the students. The *Social Presence* theme was composed of codes for communication (CM); instructor presence (IP); empathy and understanding of the student experience (EM); instructor-student interactions (ISI); and student-student interactions (SSI). In addition to being present, online faculty must also apply relevant pedagogy for the online environment. The *Pedagogy* theme incorporated codes for establishing learning objectives (OB); student-centered learning (SL); efforts to engage students (EN); and reduction in or concerns about adequate student engagement online (EN-). To be able to apply appropriate pedagogy for the online learning environment, faculty must be proficient in the technologies required for online instruction. The *Technology* theme contained the codes for the LMS, Canvas, (CN); increasing the use of technology (TC+); technical issues or problems learning technology (TC-); and belief in online learning as a useful tool or modality for learning (TL). Faculty should use these online technologies to deliver well-designed instruction. Proficient online instructors must utilize appropriate assessment techniques for the online environment. The *Assessment* theme comprised codes for homework and in-class learning activities (LE); and formative and summative assessment (AS). The only code that aligned with the OISS theme of *Institutional Context* was for accessibility (AC) of the visually or hearing impaired in online courses.

## **TRUSTWORTHINESS**

Several strategies were utilized to increase the trustworthiness of the findings. Individual bias was reduced through the application of investigator triangulation, where at least two researchers separately coded all data before convening to compare and discuss their results, mutually agreeing upon the final codes applied and updating the codebook as necessary (Flick, 2018). Expert peer review was also used to increase the trustworthiness of the findings (Corbin & Strauss, 2015). The final coding results were shared with two centers for teaching and learning employees at other universities, who provided feedback and guidance on results interpretation. Although three of the researchers were instructors in the training options within the study, participants in the survey had already completed their training and were no longer officially students of the researchers, reducing any concerns of power differentials between researchers and participants influencing their responses.

## **POSITIONALITY STATEMENT**

Discussions of researchers' positionality can strengthen education research by acknowledging the interpretational context for knowledge production (Hampton, *et al.*, 2021). Thus, it is important to acknowledge the backgrounds and current roles which contribute to the perspectives which may influence the researchers' study design and interpretation of data. We believe that the diversity of perspectives strengthens our teams' interpretation of the results of this study. This study was performed as part of the MiCUP Scholars Program at Michigan Tech, which is a collaboration between Michigan Tech and three community colleges: Delta College, Grand Rapids Community College, and Wayne County Community College District. Our team includes the perspective of two members whose daily work includes educating faculty about distance teaching education methods. We include the representation of three members who have taught online extensively, including teaching the online faculty training in this study (either FoOT or ED5101), and all profess beliefs in the efficacy of well-designed online instruction. We also include the perspective of two students who learned online during the pandemic. Drawing on this diversity of perspectives, all authors were involved in the coding of qualitative data, interpreting findings, and the implication of the study. To resolve differences of opinions between coders, researchers coded independently and met to resolve coding differences.

## RESULTS AND DISCUSSION

Results are presented below by theme. Overall, the majority of the codes found within this work aligned with the major themes of the OISS, indicating that the training was reinforcing recognized essential skills for online instructors. The only new theme not encompassed by the OISS was that of *faculty work response*, the most common theme in the responses by far, with a majority indicating that the training improved their online course design, lesson design, and teaching. The most often mentioned improvement was that of the *instructional design* of their courses and lessons. Faculty restructured their courses and lessons with a focus on backward design. After the instructional design, the next most commonly mentioned theme was that of *social presence*. Faculty expressed a greater understanding of the importance of social presence, indicating an increased focus on communication with students, empathy for students, and a greater focus on interacting with students. Faculty also indicated an increased understanding of the *pedagogy* of learning, which especially influenced their lesson design. When it came to their use of *technology*, faculty indicated leveraging the LMS better in their course design as a result of the training. The training also caused faculty to focus more on *assessment*, especially formative assessment, within their lesson design. Finally, the training had impacts on the *institutional context* for students, as some faculty considered accessibility more within their course design.

### Faculty Work Response

When it came to the effects of the training on faculty work, the overwhelming majority of respondents indicated that the training improved their course design, lesson design, and teaching. Faculty gave more thought to instructional design, *“I have invested much more time in my teaching as a result of being online. Time is spent planning, video recording & editing, and building more assessment opportunities.”* Faculty respondents cited improved navigation, communication, and interaction with students, as well as spending more time planning their courses and lessons. A few faculty also indicated that the training helped them by pointing out the pitfalls of what not to do in online environments.

Overall, less than ten percent of the total respondents indicated prior knowledge of good teaching practices, indicating the need for university faculty training in teaching in general. This is not surprising, as most Ph.D. programs, outside of education spheres, do not include courses in pedagogy or learning theory, but focus on the core curriculum for the subject of research (Brightman, 2009; Cassuto, March 2022). The majority of PhDs in the US are earned from R1 institutions, which focus on preparing their graduates for research careers and do not include teaching courses in their programs; neglecting the fact that the majority of their graduates do not find employment in R1 institutions themselves, and are more likely to enter teaching-focused careers in academics (Buswell, 2021). Thus, it is a reasonable assumption that the average novice faculty member has had no training in how to teach. The results presented here, especially with regards to instructional design, pedagogy, and assessment, indicate that a major benefit of the online teaching training was in teaching faculty good teaching practices in any format.

It should be noted that a few faculty participants mentioned attempting improvements in their course design, lesson design, and/or teaching that did not work. However, when faculty did discuss this, they often understood why their attempted improvement didn't work. In the words of one faculty member who added too much discussion to an online class: *“I added some online discussion sessions to maintain student engagement (this backfired/I overdid it/they disengaged and the purported renaissance of interactive discussion never materialized.)”*

Faculty participants also revealed their concerns about the time requirements of online teaching before their training. Faculty are notoriously time-restricted. Time has been well established as affecting faculty adoption of ICT technologies (Moser, 2007, Watty, 2016; Wingo et al., 2017). Faculty have expressed time management concerns with regard to teaching online (Allen and Seaman, 2017; Wingo, et al, 2017). Faculty are often worried that online teaching will be more work for them, which will consume their time. In terms of workload, faculty expectations were worse than their reality. Despite these concerns, after completing the training, a very small number of respondents indicated that designing the course (6 respondents), designing lessons (3), or teaching (5), was more work for faculty. Efforts to increase faculty

acceptance of online teaching might address this disconnect between faculty fears about anticipated increased workload in the online environment and the reality of teaching online. Some faculty respondents indicated they thought teaching online would be difficult before their training. However, no respondents indicated difficulty in course design after completing their training, only one respondent indicated difficulty in lesson design, and 4 indicated teaching to be difficult. These faculty found it difficult to include all students online and engage them outside of the classroom. Overall, the majority of faculty who discussed student engagement explained an increased focus on engagement or increased knowledge of engagement methods as a result of the training, which will be discussed under the theme of Pedagogy.

### **Instructional Design**

The majority of improvements mentioned by faculty as a result of their training pertained to Instructional Design. Improvements to the structure of the course were the most frequently mentioned changes to course design as a result of the faculty training. Mostly, faculty used modules to chunk material into digestible lessons, as well as provide a standardized format for each lesson: *“I had used Canvas before but mostly for uploading the class lecture slides and homework assignments that were not intuitive to navigate around. The ETOM course changed my approach to that as I saw clear benefits of organizing everything in modules that were consistent and laid out.”* Overwhelmingly, the comments about the use of modules were positive.

Although standardizing modules within the LMS can certainly enhance students’ abilities to find course materials and assignments, faculty mentioned that the training specifically increased or made them consider navigability in the course and lesson design. This faculty explains their new approach to considering navigability in course design: *“I thought more about providing content well in advance and in a cohesive way so that a student can look and plan. I have a better idea of how to set up a course in Canvas that is easy to navigate and consistent from week to week, so students know what to expect. I was reminded how important it is to be predictable and to lay out my expectations and deadlines to students for a successful class.”*

As backward design was a component of all forms of training, respondents indicated considering or incorporating backward design into their course and lesson design. Backward design involves starting with learning objectives and designing lessons and assessments targeted toward those objectives (Wiggins and McTighe, 2005). This faculty explains their new approach to lesson design after training: *“I start[ed] to incorporate learning outcomes for each of the modules in the course. This helped to structure the goals and content of assignments and assessments.”* As the faculty considered backward design, they also incorporated more learning resources and intentionally curated them for the learning objectives. Overall, these faculty discussed including a wider variety of learning resources in different formats. They also mentioned the importance of keeping videos short or breaking lectures into several small videos more aligned with student attention spans.

As the majority of Ph.D. graduates do not take courses in instructional design or pedagogy (Buswell, 2021), the online faculty training was many participants’ first exposure to the concept of backward design. Thus, the training was not only teaching faculty how to teach online, but it was also teaching them how to design good lessons, and useful knowledge for teaching in any format. Michigan Tech recognized the benefit of teaching their faculty how to design lessons and made online instructor training mandatory for all new faculty starting in January 2021.

### **Social Presence**

Among the codes within the Social Presence theme, faculty most often discussed an increase in their empathy for students in their teaching as a result of the online training. Faculty explained that the experience of learning online allowed them to see things from the online students’ perspective, which resulted in changes in the way they taught online: *“By putting me in the position of a student, it gave me a better feel for what things will look like from the student side. It made it clear that watching a video lecture for 50 minutes is in no way the same experience as actually being in a 50-minute lecture. As a result, I mainly provided information through written material, with videos no longer than about 10 - 15 minutes to cover*

*material that could not be adequately explained in writing with static pictures.*” Previous work has shown that online students desire faculty understanding (Jarvie-Eggart, et al., 2022; Mishraa et al., 2020). As all forms of the training were administered online, faculty were able to gain an understanding of the online learning experience that might not occur if training were delivered in person. Thus, it is recommended that training to teach online be delivered online to build faculty empathy and understanding. This suggestion is in alignment with the recommended best practice of engaging faculty as students in their professional development (Borup and Evmenova, 2019).

Faculty also gained an understanding of good communication, especially with regard to lesson design. The faculty discussed the importance of communicating course and learning objectives, deadlines, expectations, and clarity in communication. As one faculty replied, *“It made me cognizant of how important communication is in the online environment.”* As a result of this increased understanding, faculty made efforts to reach out more and provide opportunities to engage students in two-way interactions or dialogue with students. In addition to interacting with students, faculty also explained the training resulted in an increased focus on methods to promote interactions among students. As one faculty put it: *“[G]ive students an opportunity to interact with each other as much as possible, in either synchronous or asynchronous ways. [B]e prepared to commit to make this happen even though it might require more time management from you as an online teacher.”* Faculty mentioned using group work, breakout rooms, peer review, assigned discussion topics, and other methods to increase student-student interaction in the online environment. The training was successful in preparing faculty to implement effective techniques within online instruction.

Participants also indicated an increased focus on instructor presence as a result of the training. As this faculty explains: *“I learned about the factor of teacher “presence” which I think is relevant online or in-person. The idea is that the teacher’s availability, which doesn’t have to mean 24/7, is important to students.”* It is important to note that the concept of teaching presence carried over to this faculty’s in-person teaching. Teaching presence is a focus of online teaching training, but a concept rarely discussed within training for in-person teaching. The default assumption is that if faculty are in-person they are “present”. However, if presence includes availability to help students outside of rigid classroom hours, then certainly this concept should be extended to in-person teaching as well. Future work could examine the effect that online teaching during the pandemic has had on faculty efforts to maintain their presence within in-person classes outside of traditional class hours. For example, during the pandemic, our primary author began using Discord channels with her students to maintain communication and promote a sense of presence. Since face-to-face classes have resumed, she has continued to use Discord within her in-person courses.

## **Pedagogy**

Further evidence of the lack of knowledge of most higher education faculty about good instructional practices is provided by the pedagogical changes made as a result of the training. The most frequently mentioned pedagogical change by faculty was an altered approach to lesson design through establishing or clarifying learning objectives for their lessons or course. In the words of one faculty respondent, *“I started spelling out the learning objectives and student outcomes more explicitly than before.”* Faculty gained a greater understanding of the importance of the course and lesson objectives, as well as targeting learning activities, resources, and assessments to those objectives.

Faculty may need to alter their approaches to be more student-centric in online environments (Coppola, et al., 2002). Online faculty training can help faculty develop learner-centered approaches. Within this study, faculty indicated focusing more on student learning as a result of the training, especially with regard to lesson design. As one faculty explained, *“[The training] changed my perspective in how students learn, as in students generally have better outcomes when they can easily follow along with information. It also helped me to incorporate more of the classroom community and peer networking designs into the course, which helps students develop the learner community rather than just doing it alone.”* Faculty mentioned considering which type of learning activities would best aid student learning.

When asked about what they thought of teaching online before taking the training, 12 respondents mentioned concerns about it being less engaging for students. However, faculty only commented on more engagement, not less, when discussing the impact of the training. Faculty attempted more methods of engagement and described a greater focus on engagement in their teaching. Thus, despite their concerns, the training made them more engaging as instructors, based on their self-perception. This faculty explains the effect of the training on their teaching: *“Even for face-to-face classes, I’ve used the online interactive tools to engage students more outside of class than I would have before.”* The online teaching training not only improved faculty’s efforts in student engagement online but also within their in-person teaching. It is clear that even topics typically of great concern in online learning, such as student engagement and social presence, are salient for in-person instruction. As a result, in-person teaching can improve through training in online instruction.

## **Technology**

Consistent with our previous work (Freeman & Jarvie-Eggart, 2020), the training did not seem to impact overall perceptions of online modalities as useful tools for learning. Before their training, some of the faculty respondents indicated that online courses were a useful tool or modality for learning, often citing the circumstances under which students might need remote learning. *“I thought the online format could be very useful for students who could not be on campus for various reasons (full-time jobs or co-ops elsewhere). I didn’t have too much comprehension of how much work or planning would go into preparing a fully online asynchronous course.”* The expressed perceptions of faculty did not change substantially after the training. Thus, it may be difficult to change faculty beliefs about the efficacy and usefulness of online education.

Familiarity with the LMS system is the most essential technological competency that online instructors must possess. Among the common concerns, faculty express about teaching online is a lack of familiarity with the LMS of choice (Allen and Seaman, 2017). However, the majority of faculty surveyed in this study expressed a good, very good, or excellent comfort level with the LMS before their training. Our faculty were not extremely concerned about their use of the LMS going into the training. When discussing the LMS use after their training, participants indicated an increased familiarity with the LMS (Canvas) and a better understanding of how to use it within their online teaching. Faculty responses indicated that increased LMS abilities and knowledge were leveraged more for course design than individual lessons or teaching. This faculty is explaining how the training affected their approach to course design: *“Taking the ETOM course made me aware of many readily available technology tools. Although I had used Canvas for several years before taking the course, I was using maybe only 20-30% of its features.”* The faculty leveraged the LMS more within their in-person courses after the training, providing further evidence that the training for online instruction also affected the faculty’s in-person teaching practices,

Only one respondent mentioned problems using technology when asked about their thoughts about online teaching before their training. No respondents indicated problems using technologies when asked about the impact of the training on their course design, lesson design, and teaching. However, some did indicate increased use of technologies after the training. Participants discussed the increased use of technologies within their lesson design more often than in teaching or course design.

As the use of online delivery continues to increase, Allen and Seaman (2017) have observed that faculty have concerns about teaching online due to technology use. In response to such concerns, professional development program designers may look to the Technology Acceptance Model (Davis, 1989), and its revision to the TAM2 (Vankatesh and Davis 2000). The TAM2’s framework provides an understanding of how technology is accepted, focusing on perceived usefulness (PU) and perceived ease of use (PEU). Neither the original TAM nor its revision to the TAM2 model was specifically designed for teaching faculty. The model more generally addresses consumer tendencies to either accept or reject technology. Despite this, the TAM2 is the preferred model to understand how technology is accepted or rejected in educational settings (Scherer, et al., 2019; Wingo, et al., 2017). As PEU and PU are known to increase technology adoption, faculty training efforts should focus on showing faculty the utility of LMSs and other

technologies for their online teaching practices, as well as supporting them through training and learning resources which may make the technologies easier for them to learn and use.

### **Assessment**

Respondents discussed considering or revising learning activities in their approach to the lesson and course design as a result of the training. The code for learning activities was often found in conjunction with the codes for backward design and objectives. However, many of the activities were designed to provide formative feedback for students, which was the rationale for including learning activities in the assessment theme rather than the instructional design theme. As one faculty explained their approach to lesson design, which included more opportunities for feedback, *“I found [myself] setting up modules with different types of lessons within the module, such as reflection/discussions, videos, verbal feedback and opportunities to have face time with the students.”*

As a result of the training, faculty respondents gave more consideration to assessment, especially in their lesson design. Summative assessment in the form of quizzes and tests was most often mentioned with regard to formal assessment. Although faculty did also show an increased understanding of the importance of formative assessment as a result of the training. Overall, the faculty also gained an understanding of the importance of assessment targeted toward established learning objectives. One faculty explained they *“worked to design different modes of assessment to meet learning objectives,”* while another explained they wanted to continue their increased focus on evaluation, *“I think I will keep this when we transition back to classroom learning...”* Assessments should be connected to learning objectives regardless of class delivery format. This provides further evidence that the online teaching training was exposing faculty to best practices in the course and lesson design, which will ultimately improve their in-person teaching.

### **Institutional Context**

Institutional context pertains to the policies and practices of an individual institution. Faculty comments within this theme all pertained to accessibility in online courses. Despite content about online course accessibility being included in all of the training options (ETOM, FoOT, and ED5101), only 7 respondents indicated the training altered their approach to course design by improving or considering accessibility. This faculty is explaining the changes in their approach to course design after their training: *“I also was more thoughtful about accessibility issues and the use of multiple modes of instruction and for assignments.”* In general, these faculty discussed greater awareness about accessibility issues in the online environment and ways in which they altered their course materials, such as providing subtitles or a transcript to accompany a video. Accessibility is an essential consideration for course design, as 25.7% of US adults are disabled, including 5.9% hearing disabled and 4.6% with vision disabilities (Okoro, 2018). Due to the prevalence of disabilities and ADA offices within colleges and universities, most faculty are aware of accessibility issues within their in-person courses. Although accessibility was not a major theme in terms of the frequency of coding, it may have been extremely important for the students of the few faculty who did adjust their online course design for increased accessibility.

### **CONCLUSION**

Many faculty were forced by the pandemic to redirect to online teaching without an awareness of the needed components to support an online course. Teaching faculty how to plan and design an online course is important for a successful learner experience. Michigan Tech’s pre-pandemic policy requiring faculty to be trained in online teaching was enforced, resulting in a mass training of the faculty in the spring and summer of 2020. Although the focus of the online faculty training was to prepare faculty for online teaching, the training also resulted in improvements to faculty’s in-person teaching. The training provided essential instructional design and pedagogical knowledge that is missing in most Ph.D. training.

In particular, faculty expressed a greater understanding of chunking materials into discrete lessons for learning and an increased focus on backward design, including establishing learning objectives, selecting learning activities and resources to support those objectives, and targeting formative and summative

assessment to those objectives. After the training, the faculty focused more on backward design in both online and in-person teaching. In addition, components of the training traditionally considered to be of importance for online teachings, such as efforts to establish and maintain faculty's social presence, student engagement, and use of the LMS were reported to also improve faculty's in-person teaching. The training helped develop the essential skills for online instruction identified in the OISS. However, the training to teach online did more than prepare faculty for online environments, it also provided them with essential training in good teaching, *improving their practices in any format*. Online faculty training can be leveraged by universities to provide faculty with this essential teacher training, typically missing within Ph.D. programs, except for education-focused degrees. Future research could investigate whether these self-reported changes in teaching are long-term, and whether or not faculty need refreshers in pedagogical and instructional training over time. Future work might address additional methods to increase the social presence of instructors within in-person courses, a topic typically only included in online instructor training.

The newly released Chloe Report 7 (2022) highlights the shift since COVID-19 in the demand for online courses, which will require an examination of realignment of institutional priorities and strategies; including an increased focus on professional development for faculty. The pandemic has hastened the acceptance of online teaching. Educational institutions must respond with appropriate training to ensure faculty understand online pedagogical principles and are fully equipped to apply them in the classroom.

The experience of learning online itself provided many faculty with a unique understanding and empathy for the online learner. As such, it is recommended that faculty training for online teaching be administered within online environments. Although faculty held unchanging beliefs about the usefulness of online learning, there are some misconceptions about online teaching which could be cleared up to increase faculty's willingness to teach online. Some faculty simply view online teaching as too much work and too time-consuming for them. It is recommended that efforts be made to recruit faculty into online teaching training to address common faculty misconceptions about the time and work involved in teaching online.

## LIMITATIONS

The Michigan Tech senate resolution requiring online faculty training was implemented before the COVID-19 pandemic. The pool of respondents includes a mix of faculty pre and mid-pandemic. We did not gather data as to when faculty training was taken. Although the majority of faculty were trained from March to July of 2020, we cannot conclude as to the impact of the pandemic on themes found in the faculty surveys.

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