VOLUME 37, NUMBER 2

April-June 2021

Article
Page 2

References
Page 13

Authors

Dr. Roya Azimzadeh

Assistant Professor and Program Coordinator of Design & Drafting Technology, School of Technology, University of Central Missouri

Dr. Suhansa Rodchua

Professor and Program Coordinator of the Graduate Programs, School of Technology, University of Central Missouri

Mr. Paul Brown

Instructor of Design & Drafting Technology, School of Technology, University of Central Missouri

ATMAE
701 Exposition Place
Suite 206
Raleigh, NC 27615

www. atmae.org

JTMAE
The Journal of Technology, Management, and Applied Engineering

Faculty Members' Experiences with Teaching Multimodal Courses in Higher Education

Keywords:
Multi-modal teaching, faculty workload, multi-modal instruction, Online students, higher education

The Journal of Technology, Management, and Applied Engineering (JTMAE) for Peer-Refereed

Faculty Members' Experiences with Teaching Multi-modal Courses in Higher Education

Roya Azimzadeh, Ph.D. is an assistant professor and program coordinator of the Design & Drafting Technology at the University of Central Missouri (UCM). She is specialized in Architectural Engineering, Urban Design, CADD Technology, and Career and Technical Education, and her scholarly activities include applied engineering design, educational technologies, and eLearning. Dr. Azimzadeh has worked in the architecture industry for several years and then joined the UCM faculty in 2007. Regarding her professional affiliations, Azimzadeh is a member of The American Institute of Building Design (AIBD) and The Association of Technology Management and Applied Engineering (ATMAE).

She can be reached at azimzadeh@ucmo.edu

ABSTRACT

Higher education faculty members often devote significant time to update and redesign their courses in addition to their service and scholarly activities. While some faculty members teach only face-to-face (f2f) or online courses, others teach both courses combined in one course to not only meet students' needs but also help to increase enrollment and graduation rates. The problem addressed in this study was the inconsistent faculty load and compensation in higher education, resulting in faculty members' voluntary teaching of multimodal courses without proper compensation. The purpose of this qualitative single-case study was to explore faculty members' perceptions of their teaching experiences with dual-mode courses in higher education and identify themes that indicate what has been successful and what can be enhanced to improve faculty members' multimodal teaching experiences. Data were collected using an online questionnaire with semi-structured questions shared with the faculty members teaching at the higher education institutions across the United States through the Association of Technology, Management, and Applied Engineering (ATMAE) and LinkedIn professional network communication systems. Seventeen responses were received and then analyzed using structural and axial coding before identifying meaningful themes. The results of this study revealed innovative educational approaches conducive to diverse learners participating in courses with various modes of instruction. Most of the participants conveyed that faculty members should be compensated for the extra work either one and half times of a single-mode course or as equally as full f2f and fully online instruction. In contrast, a few participants felt that they would not need any additional pay for teaching courses in various modes. Ultimately, one of the participants felt that, given how well online classes work now, separating the program into different degree tracks, one hybrid for full-time, traditional learners, and one fully online for part-time, non-traditional learners would be a practical approach to accommodate different student demographics. Future research might encompass a broader population internationally to discover additional information regarding faculty members' teaching experiences.

INTRODUCTION

As the multimodal classroom approach has become attractive to higher education institutions in the United States, exploring faculty members' multimodal teaching experiences can help to provide a positive and rewarding educational environment for both students and instructors (Li, 2020; Malczyk, 2018; Poulin & Straut, 2016). Since the start of the fall 2020 semester, many schools and universities have been offering multimodal instruction, both face-to-face (f2f) and online, during the coronavirus pandemic with the same number of students, but dividing student groups into two or three different educational environments. More time has been spent on teaching, converting course materials, utilizing multimedia for virtual learning, and solving technical issues, which could be overwhelming for some instructors. With the current and continued advancement of online education, multimodal instruction is an approach to instruction that allows students to choose whether to participate in a traditional classroom, synchronously via video conference or asynchronously online (Malczyk, 2018; Poulin & Straut, 2016).

While some faculty members teach only traditional classrooms (f2f), some teach solely online, and some teach a combination of f2f and online courses. Recently, a new instructional method, the multimodal class format (MCF), has been developed to enhance students' learning experiences, stimulate students' motivation, and accommodate students' lifestyles (Bull, 2013; Li, 2020; Philippe et al., 2020). This method includes teaching a combination of a f2f section and an online section of the same course simultaneously as a single course in the same semester using a variety of instructional technologies.

Suhansa Rodchua, PhD is a professor and graduate program coordinator at University of Central Missouri. Dr. Rodchua teaches classes in M.S. in Industrial Management and M.S. in Technology programs. She also published books and articles in quality management, lean six sigma, academic integrity and learning effectiveness in distance learning. Dr. Rodchua also holds different professional certifications, ASQ-CMQ/OE, PMI-PMP, and ATMAE-CTM.

She can be reached at rodchua@ucmo.edu.

While the MCF enables instructors to accommodate different students' learning styles and contribute to students' success positively, the reality is that the revenues in teaching MCF courses remain the same due to having the same numbers of students but dividing them into two or three sections with different instructional modes. This class format may be suitable if one or two sections of a course have low enrollment and combining them is needed to raise the numbers above a threshold. Additionally, participating in a multimodal course may be important for students to progress towards completion and to take courses in the medium they prefer or require. There are some natural efficiencies in such a setup. For example, the same assessments, course materials and readings, syllabi, curriculum mapping, and even office hours may be used towards both sections as they are combined. However, the mediums are pedagogically quite different, requiring the faculty to teach the course in two different ways to two groups of students every week, interact with students separately via both the f2f classroom and then in online discussions, and set up and utilize different classroom spaces and electronic tools. Teaching a multimodal course may not be as much work as two distinctly different courses, but it is not merely as little as one course alone. Therefore, an increased workload for faculty is somewhere between the work of one or two courses. The outline of this study is organized into the following sections: (a) problem statement and purpose of study, (b) review of literature, (c) methodology, (d) data collection and analysis, and (e) discussion and conclusion.

Problem Statement and Purpose of Study

The problem addressed in this study was the inconsistent faculty load and compensation in higher education, resulting in faculty members' voluntary teaching of multimodal courses without proper compensation. The specific problem was that multimodal courses allow students to take courses in the format they want or need, which can increase enrollment and improve completion rates (Dang et al., 2020; Malczyk, 2018; Prescott, PharmD, & Nobel, 2019; Smith & Gordon, 2019). However, the challenge is to find the right balance of cost efficiencies to make it a win-win situation whereby the university generates additional revenue that they otherwise would not have made. The faculty member generates enough credit hours, and the workload should be reflected appropriately.

The purpose of this qualitative single-case study was to explore faculty members' perceptions of their dual-mode teaching experiences in higher education. The study identified the themes that indicate what has been successful and what can be enhanced to improve faculty members' multimodal teaching experiences considering their workload and compensation. The study gathered data from the faculty members who teach at higher education institutions across the United States and have diverse teaching backgrounds at the graduate and undergraduate academic levels.

One research question informs this study as follows: How do faculty members perceive their experiences with teaching courses in multimodalities? This paper expands the existing literature by exploring how faculty members perceive their experiences with teaching courses in multimodalities.

Literature Review

The word 'Multimodal' is not a new term, but it has gained popularity in education for the past decades since the rapid growth of distance learning and interactive educational practices. To obtain literature relevant to the multimodal classroom approach, electronic search strategies were used. These resources were mostly obtained from academic publications of a variety of databases such as EBSCOhost, Eric, ProQuest, and SAGE. Additionally, some academic publications were found on the World Wide Web. Terms used for the literature search were multimodal courses, adult learners, multimedia learning, and flipped classroom. To review the existing literature, this section will include a theoretical/conceptual framework, the definition of multimodal education, the Importance of multimodal instruction, and the positive and negative implications of multi modalities for students, instructors, and institutions.

Paul Brown is an instructor at the University of Central Missouri. He has a B. S. degree in Mechanical Engineering from Missouri University of Science and Technology-Rolla and a M. S. degree in Mechanical Engineering from Purdue University. He has worked in various design, quality and project management roles: General Electric (Appliances, Lighting, and Aircraft Engines); Swisher Mower & Machine (lawn mower, pull behind mower & log splitter manufacturing); Gardner Denver (air compressors); Duke Manufacturing (restaurant and cafeteria refrigeration equipment); Stahl Specialty (aluminum castings); IBM (automated manufacturing of computers); and United Brands (software engineering). Brown's research interest is in Mechanical Engineering and Educational Technology.

He can be reached at pkbrown@ucmo.edu

Theoretical/Conceptual Framework

The theory used to frame this study is the Adult Learning Theory (Andragogy), which can be an appropriate educational technique to meet the in-person as well as online students' learning needs (Knowles et al., 2014). The assumption of andragogy includes adults (a) need to know why, what, and how they learn, (b) are independent and self-directed learners, (c) learn based on their previous experiences, (d) are ready to learn when they see the relevancy to their lives or jobs, (e) are task-oriented and life-centered, and (f) are naturally motivated to learn for improving the quality of their lives (Arghode et al., 2017; Knowles et al., 2014). Learning how adults learn can help to facilitate adult education and advance educational practices such as flipped classrooms that include learning before class using a variety of instructional materials that are accessible online and working on assignments in class with the instructor's presence (Void et al., 2016). The flipped educational method can be suitable for f2f as well as hybrid courses. This method may also be appropriate for online courses that include live virtual sessions.

Incorporating the andragogy concepts into adults' educational activities may help to improve and accelerate students' learning and success (Allen & Zhong, 2016; Barr, 2016; Knowles et al., 2014). The flipped classroom that is similar to the multimodal classroom model contains adult learning theories, enables learners to participate actively in their learning process, and helps them relate to their life experiences (Void et al., 2016). For instance, planning learning activities for independent learning or team projects enables learners to explore, practice, and determine which information is useful to learn (Conrad & Donaldson, 2012). The aforementioned activities will also stimulate creativity and critical thinking, which can likewise have a positive impact on fellow learners during group projects while resulting in social and cooperative learning (Conrad & Donaldson, 2012). The instructor's task will then be guiding the self-directed learners during their learning stages, providing opportunities for practice in class, checking performance, providing constructive feedback, and making sure that students learn and can apply the new knowledge in new situations (Knowles et al., 2014; Conrad & Donaldson, 2012).

The Adult Learning Theory could be effective if all adult learners were the same. Some adult learners are independent learners whereas some may be dependent learners. When designing learning units, adult educators should not rely excessively on individual independence and consider providing opportunities for social involvement (McLean, 2015). This option can create a sense of community and a positive learning environment for observational and collaborative learning. Another part of the adult learning theory indicates that adults are intrinsically motivated to learn when they see that new knowledge can improve the quality of their lives (Allen & Zhong, 2016). This statement might be true for many cases, and research shows that using interactive learning resources that include multisensory educational activities improves students' motivation as well (Bull, 2013). Being cognizant about adult learners' characteristics and their diverse learning needs helps create a positive and productive learning environment (Conrad & Donaldson, 2012; Knowles et al. 2014). The results of this study could potentially contribute to Adult Learning Theory by exploring faculty members' experiences of the multimodal educational model.

Definition of Multimodal Education

The terms 'multimodal learning' and multimodal teaching' have similar meanings that emphasize sensory modalities. Kennedy (2019) stated, "Multimodal learning in education means teaching concepts using multiple modes. Modes are channels of information or anything that communicates meaning in some way" (para. 6). Examples of these modes could be pictures, illustrations, audio, speech, music, gestures, facial expressions, and others. According to Maier (2020), "Multimodal teaching is a style in which students learn the material through several different sensory modalities. For example, a teacher will create a lesson in which students learn through auditory and visual methods or visual and tactile methods…." (para. 1). Kennedy and Maier agreed that teachers should utilize or combine two or more multimodal learning modes to ensure students understand and retain information, and have a well-rounded educational experience (Kennedy, 2019; Maier 2020). However, in this paper, the authors focus on the term 'multimodal instruction' or 'multimodalities' that present different ways of instructional delivery, for example, face-to-face (f2f) or traditional classroom, online, and hybrid (or blended) between these two delivery modes.

The course online delivery can have a portion of synchronous and asynchronous communication such as discussion board, email, virtual chat meeting, and group file exchanges, which are effective online tools. Malczyk (2018) pointed out that multimodal instruction provides students with the autonomy to self-direct their terms of a blended course. With the constant progression of online education and the Internet connection expansion, especially during this coronavirus pandemic, the trend of multimodal instruction is increasing in all levels of schools and universities. Compared to traditional face-to-face courses, several studies have confirmed the validity of online and blended learning options related to student learning outcomes (Bernard et al., 2014; Means et al., 2013; Means et al., 2009).

With the convenience and flexibility of distance learning, many students are often taking a combination of online and f2f courses. Poulin and Straut (2016) presented that "It is estimated that more than one in every four college students enrolls in at least one online course every semester" (Malczyk, 2018, p.17). Each modality, traditional f2f classroom, online, and hybrid (or blended) has its strengths and weaknesses containing major topics on modern technology and technical support, personal interaction with course instructors, meaningful connection with classmates, convenience and flexibility, high demand on instructor's workload, engagement and motivation. There are some key reasons that blended courses are preferred including:

• Equal learning outcomes with increased flexibility (Bower et al., 2015);

• Improved autonomy, reflection, and research skills; reduced student withdrawal rate; ability to foster a professional learning environment; and potential cost and resource savings (Poon, 2013).

• Personal concerns about taking fully online classes (Sherrill & Truong, 2010).

• Synchronous or asynchronous interactions with professors and classmates while having the flexibility of preferred place and time (Malczyk, 2018).

Implications of Multi-modal Instructions

The multimodal instruction represents a new innovative approach in course delivery and expands student choices in learning. Establishing multimodal instruction will require a significant amount of time and work. Multiple articles shown in Malczyk's research explain the implication of multimodal instruction for students, instructors, and institutions, which can be summarized and adapted into Table 1.

Table 1
Positive and Negative Implications of Multimodal Instructions for Students, Instructors, and Institutions

Table 1

Positive and Negative Implications of Multimodal Instructions for Students, Instructors, and Institutions

	Positive implication	Negative implication
Students	• Convenience and flexibility with work schedule and familial situation • Having options and adequate information to make a more informed decision that best meets their current needs and fits their learning preference. • More safety and privacy at home • With more multimedia and various types of course materials, and study at own pace, high engagement, and motivation.	• Uncertain on meeting student learning outcomes • May fail to develop a relationship with classmates and the instructor, lack of motivation • May miss out on the chance to interact with the instructor during break time. • Challenge of learning new technologies • Technological complications (e.g. unable to connect, delay, low-speed Internet)
Instructors	• More on course facilitator, not a teacher/lecturer • Could be more compensation for teaching multimodal instruction • Better serving and accommodating students • Increased diversity in the course, a wide array of students	• Increased demand and more workload, specifically on course preparation • The high complexity of teaching different modalities • Increased collaboration with instructional designers and technology support • Discouraged to teach due to not providing with additional compensation or technological support
Institutions	• Serve a small number of students in different modes (live, online, hybrid). • Hold students accountable to achieve learning outcomes. Students can still interact with content and do makeup work if students had to miss f2f class or miss a live virtual meeting. • Advantages of attracting more students • Provide innovative and customized learning opportunities	• Provide a variety of resources to instructors (technological hardware and software, compensation) • Develop new systems and approaches to monitoring, tracking, and supporting students • More costs and expensive investments infrequently updating infrastructure and technology. • Need cooperation from faculty, staff, and technology support members

Note. Adapted from the article Multimodal Instruction, "The New Hybrid: A Student-Centered Approach to Blended Learning," by Malczyk (2018). *The Journal of Nonprofit Education and Leadership*; Urbana Vol. 8, Iss. 1.
*Additional data adapted from Boyd (2004), Comelius and Gordon (2008), Jeffrey, Milne, Suddaby, and Higgins (2014), Maza, Lozano, Alarcón, Zuluaga, and Fadul (2016), and Wang, Shannon, and Ross (2013).

To conclude, multimodal instruction allows course materials to be delivered in more than one approach (traditional classroom). Students have more opportunities to learn from different types of multimedia, select classes based on their current needs, and be accountable for their study pace. Instructors can accommodate and serve different students' educational needs; however, instructors also need more time for course preparation and familiarizing themselves with different course modalities. By offering multi-modal courses, higher education institutions have the advantage of attracting more students and provide individualized learning opportunities for students.

Research Methodology and Design

After reviewing different types of qualitative and quantitative research methods and designs, a qualitative method with a case study design was chosen to explore faculty members' experiences with teaching multimodal courses in higher education. A qualitative research method was chosen for this study since qualitative studies are suitable for exploring individuals' experiences and feelings, they can be conducted with a small sample size, and qualitative data include textual data that can thematically be analyzed (Yates & Leggett, 2016; Yin, 2014). Quantitative research, however, includes a large sample size and quantitative data includes numerical data that can statistically be analyzed (Leedy & Omrad, 2014; Quick & Hall, 2015). Therefore, a qualitative research method was suitable for this study to explore a small sample size of faculty members' insights into multimodal teaching experiences and discover how to improve their teaching experiences considering their workload and compensation. To respond to the purpose of this study, a case study research design was chosen since the focus of this study was exploring participants' multimodal teaching experiences, and the population of this study included faculty members who had taught courses in various modes. Besides, this study included studying a "how" question, and qualitative case studies are suitable for answering "how" and "what" questions (Leedy & Omrod, 2014; Yates & Leggett, 2016; Yin, 2014).

The population of this study included graduate and undergraduate faculty members who teach at higher education institutions across the United States and are members of the Association of Technology, Management, and Applied Engineering (ATMAE) and LinkedIn. The reason for choosing this population was that they were a group of educators involved in college courses taught in multimodalities. Exploring faculty members' feedback on teaching multiple modes of instruction simultaneously could help to discover how to improve their teaching experiences, workload, and compensation.

Before conducting this study, the authors created an online questionnaire via Google Forms, which was validated by a group of college professors and instructional designers at the research site, and then submitted it to the Institutional Review Board (IRB) for approval. After obtaining approval from the IRB, the authors launched the survey link to the target population. After eight weeks of data collection, seventeen responses were received, and the saturation point was achieved. The saturation point is reached when adequate information is obtained to repeat the study, when no additional information can be collected, and when additional coding is no longer possible (Fush & Ness, 2015). For triangulation, the authors collaboratively reviewed the responses multiple times for an accurate interpretation. Additionally, to organize the participants' responses and automatically find the themes in addition to manually-discovered themes, a qualitative data analysis software, NVivo 12 Plus was utilized (Min, Anderson, & Chen, 2017). The authors then gathered and analyzed the data using an Excel Spreadsheet, created data tables and graphs for the result presentation. Note that a sample of faculty that are members of ATMAE and LinkedIn may not be a representative sample of all graduate and undergraduate faculty in the United States who have had experience in f2f and online teaching. This sample was an appropriate segment of faculty that qualified for this study.

Data Analysis and Findings

This study aimed to discover the true personal insights of the faculty members' experiences with multiple modes of teaching and how they perceive their workload and compensations. The problem addressed in this study was the inconsistent faculty load and compensation in higher education, resulting in faculty members' voluntary teaching of multimodal courses without proper compensation. The findings of this study may help to identify innovative multimodal instructional approaches and a suitable remuneration for faculty members that teach courses delivered in various modes.

Participants of this study included 17 graduate and undergraduate faculty members that have taught multimodal courses in the United States. The participants were recruited through invitation emails sent through ATMAE and LinkedIn. Data were collected using an online questionnaire that included the purpose of the study, statements about the participants' rights and privacy protection measures, and 12 questions including semi-structured questions to allow for in-depth responses (Rosenthal, 2016).

During the data analysis phase, the authors of this study reviewed participants' responses multiple times personally, used a two-cycle coding strategy, and condensed the data into categories to identify meaningful themes (Table 2). During the first cycle, the authors used an elemental method, a structural coding strategy that included labeling lines or text segments with conceptual terms related to the research question (Belotto, 2018; Saldana, 2009). According to the Coding Manual for Qualitative Researchers, "Structural Coding applies a content-based or conceptual phrase representing a topic of inquiry to a segment of data that relates to a specific research question used to frame the interview" (MacQueen et al., 2008, p. 124, as cited by Saldana, 2009). During the second cycle, the authors used an axial coding method, recoded the initial codes, and condensed them into categories to identify meaningful themes (Saldana, 2009). Additionally, the qualitative software, NVivo Plus 12 was used to manage data, create nodes, and categorize themes. Finally, the authors evaluated the results of the study based on the research question about the faculty members' multimodal teaching experiences.

Table 2: Two-Cycle Qualitative Data Analysis Strategy Used for This Study

Table 2

Two-Cycle Qualitative Data Analysis Strategy Used for This Study

Cycles	Coding Styles	Methods
Cycle 1	Structural Coding	Codes assigned to the participants' responses associated with the semi-structured questions related to the research question
Cycle 2	Axial Coding	Recoded the initial codes and condensed them into categories to identify meaningful themes

Note. The qualitative data analysis framework adapted from The Coding Manual for Qualitative Researchers by Saldana (2009).

When asked about faculty members' perceptions of their experiences with multimodal teaching, the participants of this study provided valuable information. Based on the textual data occurrences, participants' responses were categorized and coded, which revealed meaningful themes as follows: (a) equal education; (b) synergies and challenges; (c) multimodal teaching experiences; and (d) dual-mode teaching compensation (see Figures 1-4 and Table 3).

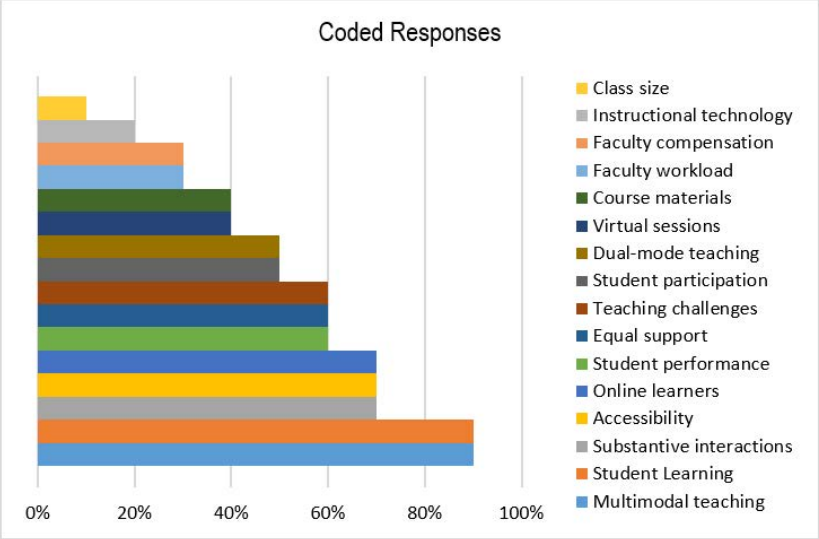

Figure 1. Coded participants' responses

Table 3: Qualitative Data Categorized into Relevant Themes

Table 3

Qualitative Data Categorized into Relevant Themes

Themes	Equal Education	Synergies & Challenges	Multimodal Teaching Experiences	Teaching Compensation
Codes	Same Course materials	Substantive interactions	Dual-mode teaching	Multimodal teaching
	Equal support	Instructional technologies	Student learning experiences	Class size
	Student learning	Teaching challenges	Instructional technologies	Administrative tasks
	Accessibility	Student participation	Online learners	Faculty workload
	Instructor's availability	Virtual sessions	In-person lab experience	Faculty compensation

Equal education. When participants were asked how they would manage to provide equal education to both groups of students (f2f and online) in a dual-mode course, the majority of participants stated that they would use the same course materials (e.g., assignments, exams, handouts, syllabi, course calendars, etc.) and standard of evaluation for both groups of students while allowing both groups to remotely access the course resources and labs. Another participant stated, "I do not attempt to provide equal education. Students in both groups have to take charge of their education." (Participant 4). The seventh participant felt it would be difficult to provide equal education to both groups of students (f2f and online); however, it could be managed by spending time on the presentation slides and writing clear assignments. Availability for responding to email and conference over the phone also makes it easier to provide equal education to both groups of students. Another participant shared an innovative idea of creating professionalism activities where online students answer questions on a Word document, and then create a voice-narrated video to discuss the content while also encouraging f2f students to discuss the issues in class as well. Finally, the last participant suggested recording all class meetings and responding to students' emails promptly. When faculty members were asked regarding the overall difficulty of teaching dual-mode courses compared to single-mode courses (f2f or online), only one participant felt that teaching in various modes was easier, 11 participants felt it was somewhat harder, and five participants felt, it was harder.

Regarding students' performance, 47% of participants felt that students perform the same regardless of the instructional delivery mode, 23% of participants neither agreed nor disagreed, 24% of participants disagreed, and 6% of participants strongly disagreed (see Figure 2).

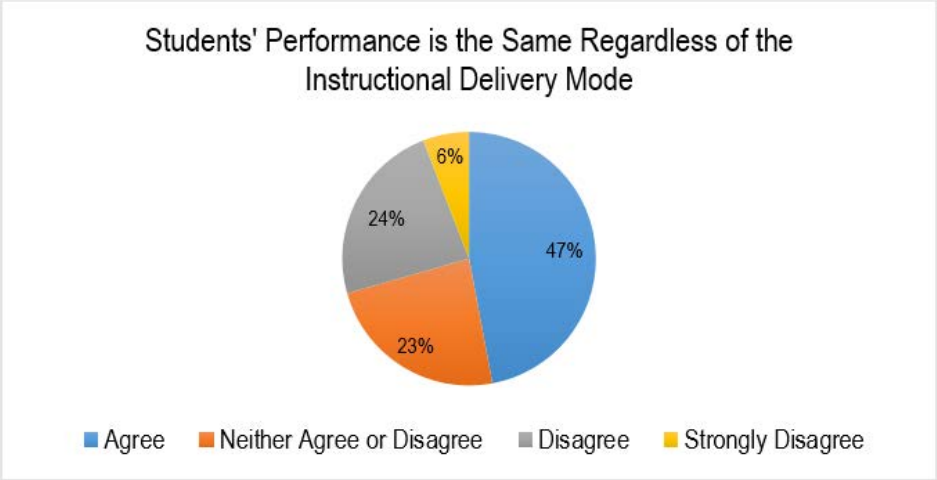

Figure 2. Students' performance based on the instructional mode

Synergies and challenges. When asked if regular and substantive interactions between instructors and both f2f and online students would equally be practiced in multimodal courses for both groups of students (f2f and online), the majority of participants felt that instructors and students in both types of courses would communicate regularly and substantially. However, 17% of participants neither agreed nor disagreed, 12% of participants disagreed, and 6% of participants felt that regular and substantive interactions could not be practiced the same way as in a single-mode class (see Figure 3).

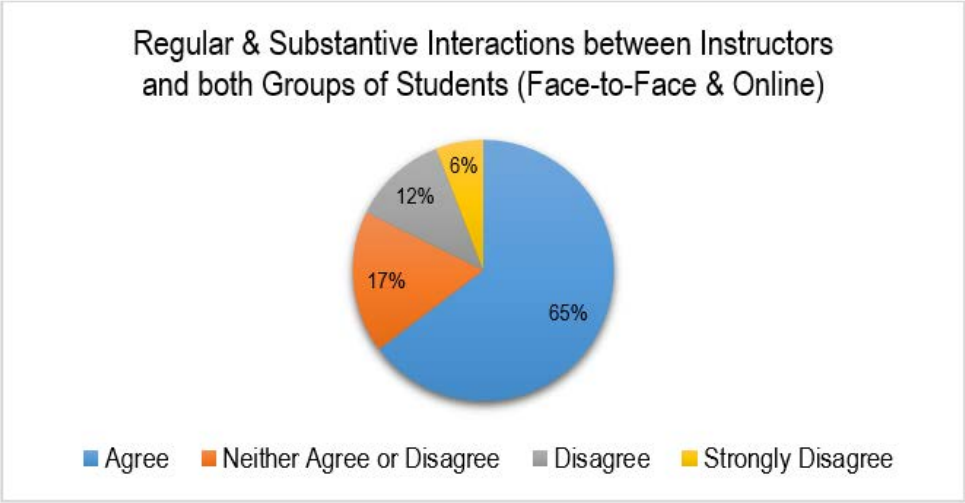

Figure 3. Faculty perceptions of the interactions between instructors and students

Other comments regarding the synergies in courses taught in various modes included asynchronous communication among the students, ability to monitor all transactions online, students' participation in a virtual world to facilitate communication and task completion, and good use of newer classroom technologies. Additionally, one of the participants stated, "online education does appeal to a certain type of student who enjoys reading and learning independently." (Faculty 8)

Regarding the challenges of multimodal teaching, one of the participants pointed out, "The primary challenge emerges when one tries to hold synchronous meetings or activities." (Faculty 2). Other participants' responses included online students sometimes not reading attentively and missing key points, engaging students in a virtual classroom and connecting them with each other, lack of contact with many online students since many of them do not read emails from the instructor, academic dishonesty in online assessments, increased faculty load, and teaching twice the load similar to teaching two sections of the same course.

Ultimately, the class size seemed to be another challenge of teaching a course in various modes. Most of the participants indicated that the number of dual-mode students was more than six beyond the participants' single-mode classes. Only two participants indicated that they had one to two online students participating remotely in their on-campus classes, and two other participants had up to six extra distance learners enrolled in their f2f classes (see Figure 4).

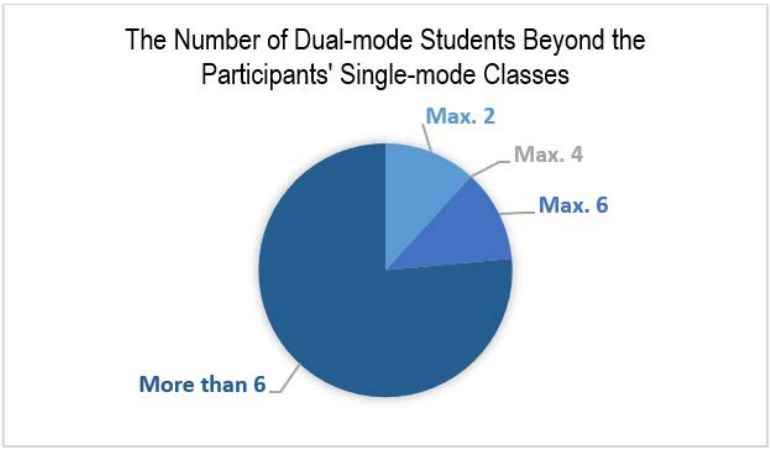

Figure 4. Additional students in the dual-mode courses

Multimodal teaching experiences. When asked what lessons have been learned from teaching dual-mode courses, participants of this study provided valuable insights about their experiences. One of the participants stated they could be very valuable, especially if the online students are working professionals who can provide additional insights for face-to-face students. Sometimes, online students have access to unique resources at their workplaces that they can share with the class and enrich the learning experiences for everyone. (Faculty 2)

Other participants felt that each educational mode has its rewards; students who perform well continue to do so regardless of the instructional model, the organization is key. Moreover, the "Learning Management System setup is critical. Each module needs to be carefully thought out. You can't just show up and start talking as in a face-to-face course. Preparation of material is the key." (Faculty 17)

Compared to f2f or online-only courses, participant four felt that students perform better in hybrid courses that include the structure of the online platform and the sense of community with the f2f component. Another participant felt that "time spent to create a high-quality course is worth it as it facilitates a better experience for students" (Faculty 6). Further, participant 14 strongly disagreed to offer online classes that require lab experiments or mathematical calculations such as Quality Control and Computer Numerical Control (CNC). Compared to other participants' perspectives, the twelfth participant stated that it is no longer worth the effort, given how well fully online classes work now. If the point of a dual-mode class is to accommodate different student demographics (traditional vs nontraditional), then it is probably time to consider separating the program into different degree tracks instead: one hybrid for full-time, traditional students and one fully online for part-time, nontraditional students. "While dual-mode may seem like a jack of all trades, I've found it to be master of none," the twelfth faculty added. Other participants felt that teaching a course in various modes and grading would be time-consuming and equally to two classes and that one should plan for extra time with controlling potential cheating for assignments completed outside of class.

Dual-mode teaching compensation. When asked what suggestions faculty members had regarding the compensation for the dual-mode teaching considering the financial challenges higher education institutions are currently facing, some of the participants stated that compensation should be equitable among the faculty in the unit and should be based on the class size. Another participant stated,

"I don't need extra money to develop courses for dual-mode presentations to students. I'm doing it anyway." (Faculty 7). Similarly, another faculty member teaches 120 traditional students in a hybrid class and more than 40 nontraditional students in a fully online class for no additional pay, and this participant felt, "there is no reason why someone else couldn't, either. Teaching is teaching. As faculty, we need to stop whining every time additional students enroll in our classes or every time we're asked to try something new." (Faculty 12). However, the majority of participants conveyed that faculty members should be paid for the extra work either one and a half times of a single-mode course or equally as full f2f instruction and fully online instruction because they "require the same amount of effort to carry out duties." (Faculty 14). One of the participants felt, "This is teaching two courses without additional load pay." (Participant 11). The fifteenth participant also suggested reducing administrative tasks.

Discussion and Conclusion

The problem addressed in this qualitative study was the inconsistent faculty load and compensation in higher education, resulting in faculty members' voluntary teaching of multimodal courses without proper compensation. The study aimed to explore how faculty members perceive their multimodal teaching experiences. The population of this study included graduate and undergraduate faculty members who teach at higher education institutions across the United States and are members of the Association of Technology, Management, and Applied Engineering (ATMAE) and LinkedIn. 17 responses were received using an online questionnaire that included semi-structural questions to allow for in-depth responses (Rosenthal, 2016; Yates & Leggett, 2016).

In this study, the multimodal courses effectively led to more classroom engagement, effective educational approaches, and useful collaboration among instructors and students. Faculty members provided feedback on how multimodal teaching is different from a regular classroom and the impact technology had on their courses. Additionally, faculty members mentioned that they require more preparation for a dual-mode classroom.

The result of this study revealed that most participants felt that teaching courses in various modes would be somewhat harder compared to a single-mode course; however, they use a variety of educational approaches to accommodate both groups of students equally. Additionally, participants mostly agreed that regular and substantive interactions take place between the instructors and both groups of students. Some of the challenges of multimodal teaching discussed were engaging students in a virtual classroom and fostering interactions among them, flexibility with scheduling, lack of contact with many online students since many of them do not read emails from the instructor, academic dishonesty in online assessments, increased faculty load, and teaching twice the load similar to teaching two sections of the same course. In all, most of the participants have had positive multimodal teaching experiences; however, a few participants disagreed that courses with a lab component such as Quality Control or CNC should be taught online. Regarding dual-mode teaching compensation, many of the participants stated that faculty members should be compensated for the extra work either one and half times of a single-mode course or equally as full f2f and fully online instruction. In contrast, a few participants felt that they do not need any additional pay for teaching courses in various modes.

This study included a small sample size, which was an appropriate segment of faculty that qualified for this study. As Yin (2015) suggested, qualitative studies are appropriate for small sample sizes. The faculty members who participated in this study have provided valuable insights about their multimodal teaching experiences, and the authors of this study appreciate the faculty members' feedback! Future research might encompass a broader population internationally to discover additional information regarding faculty members' teaching experiences.

Acknowledgments

The authors of this study would like to express their deepest gratitude to their ATMAE colleagues and LinkedIn connections for their help with the data collection procedures. The authors would also like to express their sincere appreciation to the ATMAE and IAJC 2020 Joint Conference for allowing them to present their research virtually. Special thanks to Dr. Odin Jurkowski at the University of Central Missouri as well for his help with preliminary data collection.

References

Allen, T. O., & Zhang, Y. (2016). Dedicated to their degrees. Community College Review, 44(1), 70-86. https://doi.org/10.1177/0091552115617018

Arghode, V., Brieger, E. W., & McLean, G. N. (2017). Adult learning theories: Implications for online instruction. *European Journal of Training and Development, 41*(7), 593-609. doi:http://dx.doi.org.cyrano.ucmo.edu:2048/10.1108/EJTD-02-2017-0014

Belotto, M. J. (2018). Data analysis methods for qualitative research: Managing the challenges of coding, interrater reliability, and thematic analysis. *The Qualitative Report, 23*(11), 2622-2633. Retrieved from https://www-proquest-com.cyrano.ucmo.edu/scholarly-journals/data-analysis-methods-qualitative-research/docview/2133763005/se-2?accountid=6143

Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2014). A meta-analysis of blended learning and technology use in higher education: From the general to the applied. Journal of Computing in Higher Education, 26(1), 87–122. https://doi.org/10.1007/s12528-013-9077-3.

Bower, M., Dalgarno, B., Kennedy, G. E., Lee, M. J., & Kenney, J. (2015). Design and implementation factors in blended synchronous learning environments: Outcomes from a cross-case analysis. Computers & Education, 86, 1–17. https:// doi.org/10.1016/j.compedu.2015.03.006.

Boyd, D. (2004). The characteristics of successful online students. New Horizons in Adult Education, 18(2), 31–39. https://doi.org/10.1002/nha3.10184.

Bull, P. H. (2013). Cognitive constructivist theory of multimedia: Designing teacher-made interactive digital. *Creative Education, 4*(9), 614-619. https://doi.org/10.4236/ce.2013.49088

Conrad, R., & Donaldson, J. A. (2012). *Continuing to engage the online learner.* (1st ed.). San Francisco, CA: Jossey-Bass.

Cornelius, S., & Gordon, C. (2008). Providing a flexible, learner-centered programme: Challenges for educators. The Internet and Higher Education, 11(1), 33–41. https:// doi.org/10.1016/j.iheduc.2007.11.003

Dang, M. Y., Zhang, G. Y., Amer, B., & Trainor, K. (2020). Understanding students' perception differences on blended learning: An explorative study among college students. *Academy of Educational Leadership Journal, 24*(1), 1-15. Retrieved from https://search-proquest- com.cyrano.ucmo.edu/docview/2423815357?accountid=6143

Jeffrey, L. M., Milne, J., Suddaby, G., & Higgins, A. (2014). Blended learning: How teachers balance the blend of online and classroom components. Journal of Information Technology Education: Research, 13, 121–140. https://doi.org/10.28945/1968

Knowles, M.S., Holton, E.F., III. and Swanson, R.A. (2014). The adult learner: The definitive classic in adult education and human resource development, Routledge, Abingdon.

Li, M. (2020). Multimodal pedagogy in TESOL teacher education: Students' perspectives, *System*, Volume 94,102337, ISSN 0346-251X, https://doi.org/10.1016/j.system.2020.102337.

Maier, C. (2020). Multimodal teaching strategies. Retrieve from https://classroom.synonym.com/multimodal-teaching-strategies-12049345.html

MacQueen, K., McLellan-Lemal, E., Bartholow, K., & Milstein, B. (2008). Team-based codebook development: Structure, process, and agreement. In G. Guest & K. MacQueen (Eds.), Handbook for team-based qualitative research (pp. 119-135). New York, NY: AltaMira Press.

Malczyk, B. R. (2018). Multimodal instruction, the new hybrid: A student-centered approach to blended learning. *Journal of Nonprofit Education and Leadership*; Urbana Vol. 8, No. 1, pp. 16-31. https://doi.org/10.18666/JNEL-2018-V8-I1-8347

Maza, E. M. T., Lozano, M. T. G., Alarcón, A. C. C., Zuluaga, L. M., & Fadul, M. G. (2016). Blended learning supported by digital technology and competency-based medical education: A case study of the social medicine course at the Universidad de Los Andes, Colombia. International Journal of Educational Technology in Higher Education, 13(27). https://doi.org/10.1186/s41239-016-0027-9.

McLean, S. (2015). Individual autonomy or social engagement? Adult learners in neoliberal times. *Adult Education Quarterly*, 65(3), 196-214. https://doi.org/10.1177/0741713615573984

Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of the empirical literature. Teachers College Record, 115(3), 1–47.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies. Washington, DC: U.S. Department of Education.

Philippe, S., Souchet, A. D., Lameras, P., Petridis, P., Caporal, J., Coldeboeuf, G., & Duzan, H. (2020). Multimodal teaching, learning, and training in virtual reality: A review and case study, *Virtual Reality & Intelligent Hardware*, Volume 2, Issue 5, Pages 421-442, ISSN 2096-5796, https://doi.org/10.1016/j.vrih.2020.07.008.

Poulin, R., & Straut, T. (2016). WCET distance education enrollment report 2016. Retrieved from WICHE Cooperative for Educational Technologies website: http://wcet.wiche.edu/initiatives/research/WCET-Distance-Education-EnrollmentReport-2016.

Prescott, G. M., PharmD., & Nobel, A., PharmD. (2019). A multimodal approach to teaching cultural competency in the doctor of pharmacy curriculum. *American Journal of Pharmaceutical Education, 83*(4), 537-543. Retrieved from https://login.cyrano.ucmo.edu/login?url=https://search-proquest-com.cyrano.ucmo.edu/docview/2246691933?accountid=6143

Poon, J. (2013). Blended learning: An institutional approach for enhancing students' learning experiences. Journal of Online Learning and Reaching, 9, 271–289.

Saldaña, J. (2009). The coding manual for qualitative researchers. USA: Sage Publications. Sale, J. E. M., & Thielke, S. (2018). Qualitative research is a fundamental scientific process. Journal of Clinical Epidemiology, 102, 129-133.

Sherrill, W. W., & Truong, K. D. (2010). Traditional teaching vs. hybrid instruction: Course evaluation and student performance in health services management education. Journal of Health Administration Education, 27, 253–268.

Smith, E., & Gordon, S. (2019). How are faculty rewarded and recognized for assessment work outside the classroom? *Research & Practice in Assessment*, *14*(1).

Void, T., Braun, R. & Lundesgaard, D. (2016). Flipped classroom: Students as producers. 2016 15th International Conference on Information Technology Based Higher Education and Training (ITHET), Information Technology Based Higher Education and Training (ITHET), 2016 15th International Conference on, 1. https://doi.org/10.1109/ITHET.2016.7760747

Wang, C. H., Shannon, D. M., & Ross, M. E. (2013). Students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. Distance Education, 34, 302–323. https://doi.org/10.1080/01587919.201 3.835779