Construction Educators' Challenges during COVID-19 Transition from F2F to Online Setting: A Case Study in the Southeastern United States

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Abstract

The study aimed to determine the concerns with the imparting of education in the era of COVID-19. The construction educators in the southeastern states were purposely selected for a case study through a list of ASEE sections (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, and Virginia). Most of the institutions moved to online education during the spring and summer of 2020, resulting in educators imparting education from a home setting. The study utilized a survey method during the summer of 2020 (May-August) to collect the data from the educators. The researchers first identified that when the majority of the institutions started to move to an online setting, the majority of the responding faculty indicated that they either didn't visit the university or once a month or every other month during the pandemic of COVID-19. Since most of the faculty were working from home, the researchers aimed to identify the challenges associated with the new working environment and resulting paradigm. The researchers identified functions/concerns that could impact faculty while working from home. The respondents were allowed to select more than one function/concern that would impact them in the new work paradigm. The goal was to determine the most important functions/concerns that were impacting the educators in the new paradigm.

Keywords

Construction Educators, COVID-19, Southeastern States, ASEE sections

Introduction and Background

In this study, the impact due to COVID-19 on university education was analyzed from the faculty perspective. The purpose is to determine the concerns from the traditional setting face-to-face (F2F) to online education in the era of COVID-19. Historically, although not all countries had previous experience, many countries had already developed responses that could easily be implemented worldwide. Looking back, during the swine flu of 2009, Japan utilized school closures, and information on infected persons was collected by the university. Mask wearing and handwashing were also strongly encouraged across campuses (Uchida et al., 2011). Other prevention methods included education; hand washing kits; hand sanitizers; and personal protection equipment (PPE) like gloves, thermometers, and sick bays (Olalekan and Adeola 2014). During the impact of the pandemic, various countries implemented various strategies to cope with the impact while ensuring that the students were educated. For example, China initially responded to the situation by sending students home and quarantining them. Similar responses were observed in the United States (US) and the United Kingdom (UK). The UK plans for many universities to return only online in the fall of 2020 (Westbrook 2020).

The US universities have implemented a varied response to the return to school during the semester while COVID was pandemic. Some are continuing an online approach, whereas others have changed the semester format to reduce holidays and are planning for remote final exams (Hadden 2020). Although these changes are needed, the move to the Online Learning Environment (OLE) was already increasing and expected to continue growing (Hosie et al. 2005). Many faculty members are concerned with moving to an all-online delivery method (Allen et al., 2012), citing inferior learning outcomes. Students agree that online courses may be easier and require less student interaction, which may be less effective (Kinney et al., 2012). Online teaching is also considered to take more time than face-to-face teaching (Schmidt et al., 2013). As online education grows, academicians, as well as students, need to adapt and develop new approaches and skills if the technological potential is to be harnessed effectively (Sher et al., 2015).

Kinney et al. (2012) depicted that the key concern of online education is effective communication and mentioned that the engineering labs are a hurdle to effectively delivering engineering and technical education online. Further, a lack of clarity or differences in perception for an online course can create additional barriers (Osborne et al., 2009). Tabas et al. (2012) discuss concerns with online education and propose a solution to address those concerns of integrity. Tabas et al. (2012) argued that Students simply access previously recorded lectures and course material at will.

Methodology

The study utilized an online survey method and surveyed the different levels of construction-focused educators (i.e., tenured, tenure-track teaching-focused, tenure-track research-focused, tenure-track balanced [research and teaching equal-weighted], and full-time non-tenure-track) affiliated with the university in the southeastern region of the United States to identify the challenges during the COVID-19 transition from Face to Face (F2F) to an online setting. Construction-focused educators were purposively selected due to there are challenges in delivering online construction courses having components of project-based learning, experimental laboratory course, and computer lab studio. Educator institutional affiliations (at the time of the study) were purposely selected from a list of ASEE southeastern state sections (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, and Virginia). Qualtrics was used as the platform for the data collection. The study had multiple sections and the article presents some of the findings through this study. Questions relevant to the study consisted of questions that were mostly multiple choice with some open-ended questions. The most relevant questions are shown below.

1. What is the institution's name?
2. What is your position in the institution?
3. What is your teaching experience?
4. Please list different delivery types and formats that you have taught in spring 2020
5. During this time of COVID-19 impact, what is the primary mode of communication with the students?
6. Which of the following statements can be attributed to the impact on productivity?

7. During this time of COVID-19 impact, what are the primary concerns you have while working from home?

Results and Discussion

The survey instrument was distributed to faculty members affiliated with construction programs across the southeastern region of the US at the time of the study. A total of 45 faculty member responses were received. Figure 1 depicts 45 respondents across the southeastern region. Georgia was the highest respondent state with 11 faculty members participating in the study.

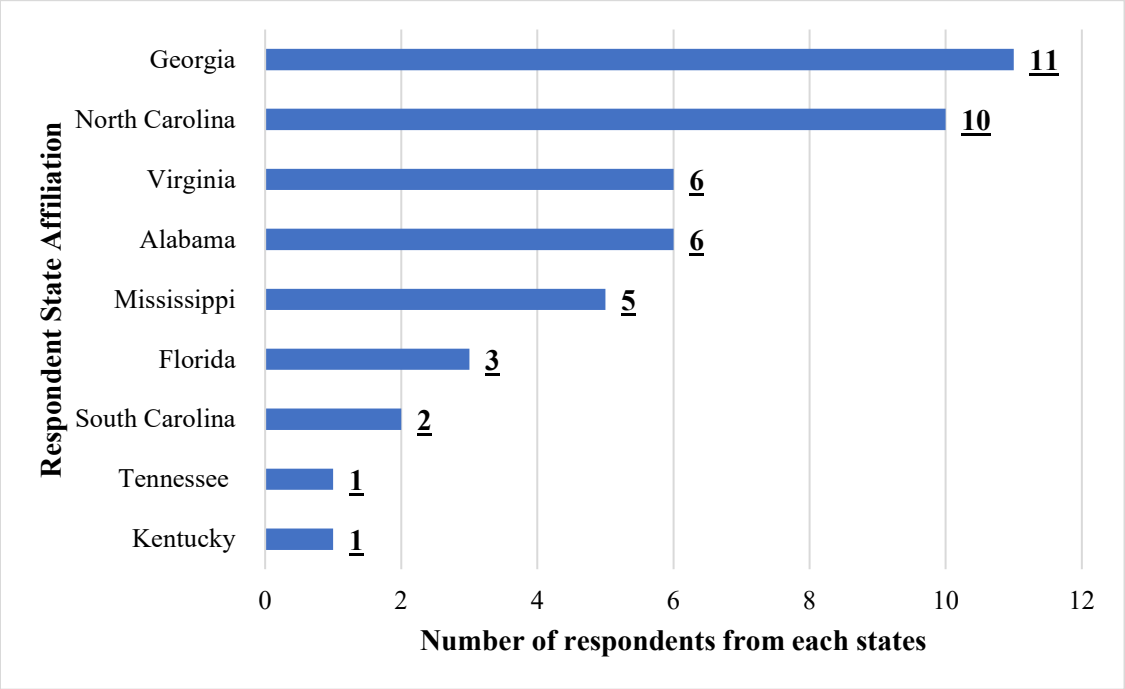

Figure 1: Respondents from the southeastern region of the United States

To identify respondents' faculty positions, Figure 2 shows position type in the institution. There are a total of 21 tenured faculty and a total of 17 tenure-track faculty on the survey sample. Out of the 17 tenure-track faculty, tenure-track teaching-focused faculty was 7, tenure-track research-focused faculty was 4, and balanced tenure-track faculty (research and teaching equal-weighted) was 6. To identify respondent teaching experience, Figure 3 shows the faculty teaching experience based on years. The majority of the responding educators (28.57%) identified themselves possessing (1-4 years) of teaching experience, followed by (26.53%) indicated to possess more than 20 years of teaching experience. No responding educators identified "less than one year of teaching experience."

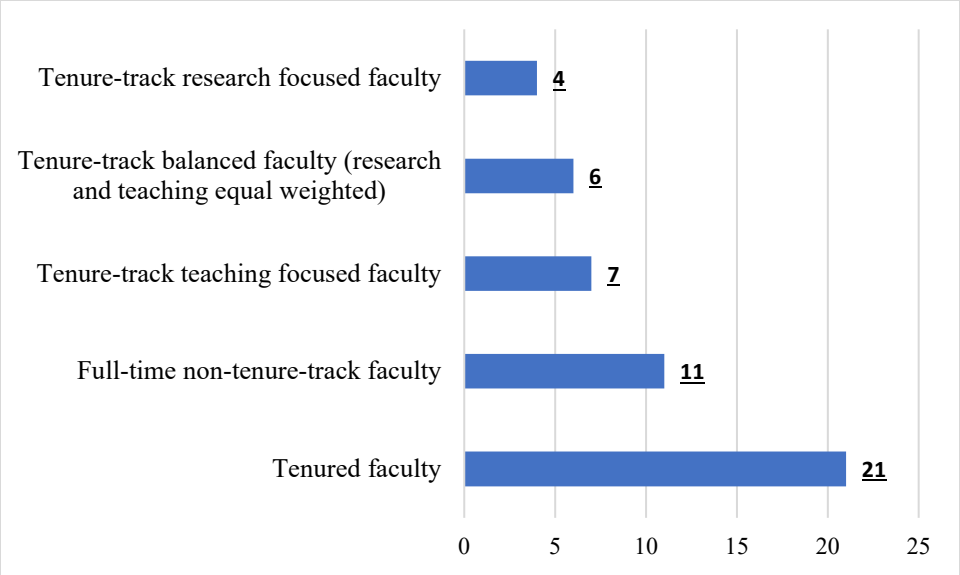

Figure 2: Position in the Institution

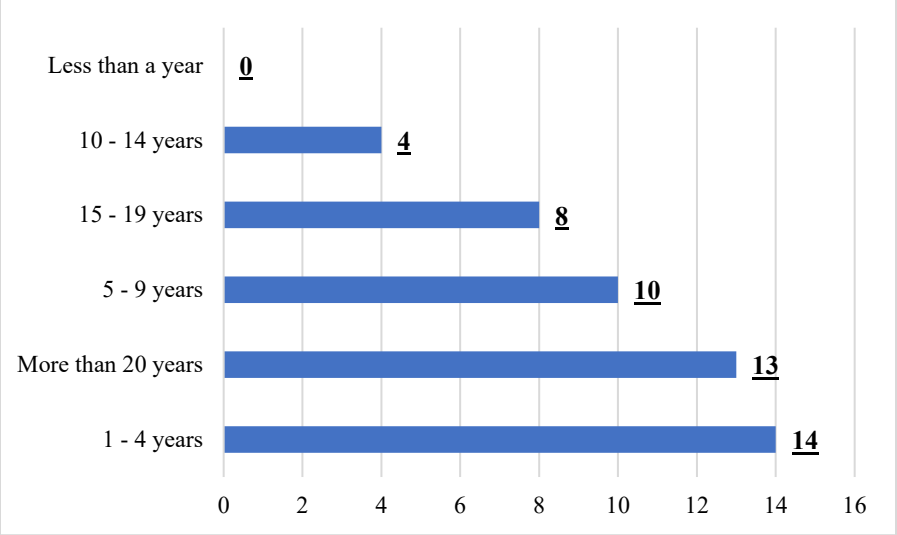

Figure 3: Teaching experience

To determine the delivery format for the courses taught in spring 2020, the semester in which transition to online learning environment was experienced, a question was asked with the options of the "*lecture, experimental laboratory course, project-based learning, computer lab studio* and *other*" (Figure 4). The majority of the responding faculty (37.03%) indicated "lecture" delivery was used on the content delivery, 32.5% of the responding faculty indicated "project-based learning" as the content delivery, 15.05% of the responding faculty indicated "experimental laboratory course" as the content delivery, and 8.5% of the responding faculty indicated "computer lab studio" as the content delivery. Therefore, a substantial majority of the responding faculty represented courses associated with the lecture and project-based learning methods.

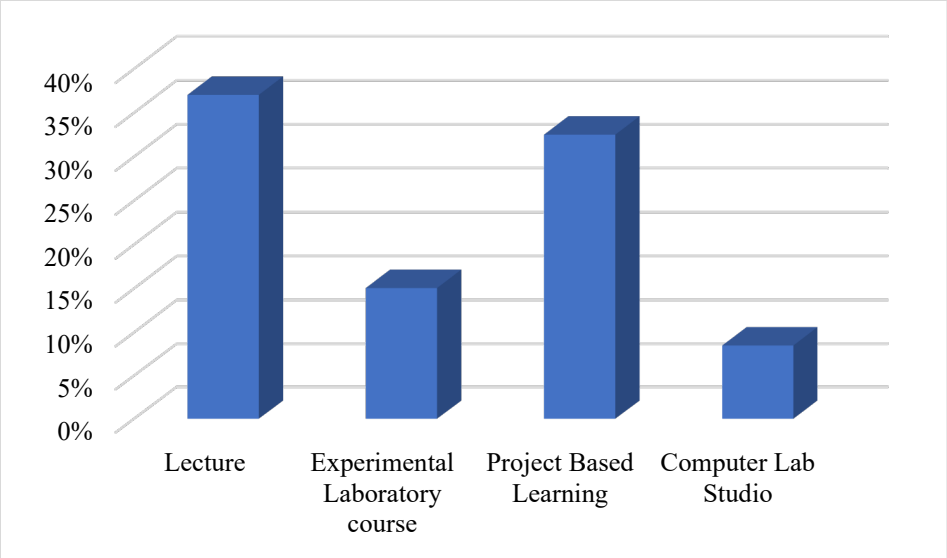

Figure 4: Please list the delivery type and format that you have taught in spring 2020

Along with the course delivery, communication with the students is integral for the course success. To determine the mode of communication during COVID-19, this survey question was asked: "During this time of COVID-19 impact, what is the primary mode of communication with the students?" Majority of the respondents indicating emails (29.27%), synchronous video conferencing (19.51%), and announcements on course management system (such as Blackboard) (15.45%), as the top three modes (Figure 5). The educators also identified, phone calls (6.5%) as communication mode. The respondents also indicated a higher use of synchronous methods than asynchronous methods. The research did not identify the reason for the same and needs to be investigated in the future.

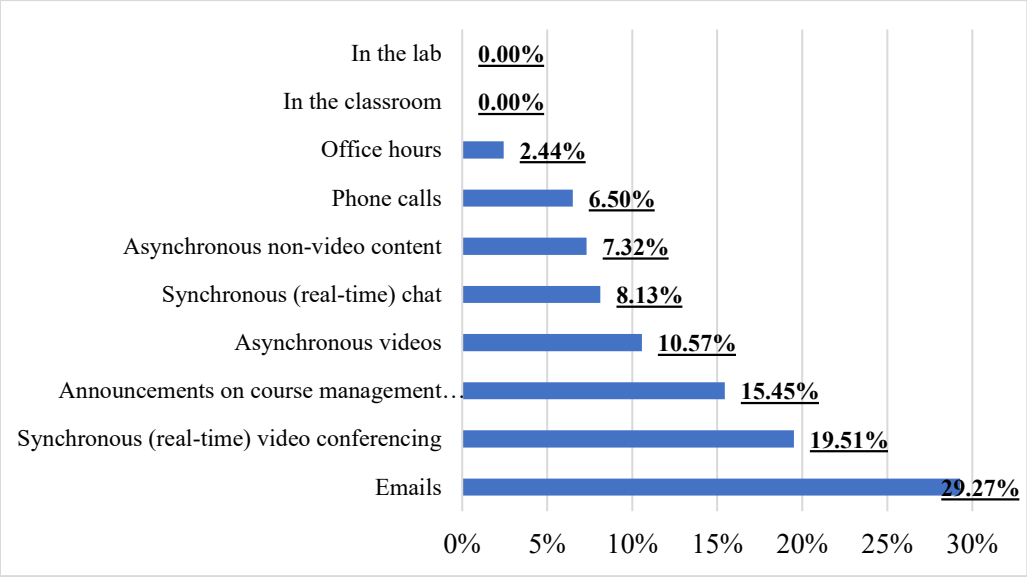

Figure 5: During this time of COVID-19 impact, what is the primary mode of

communication with the students?

With the transition to the online learning environment during the spring of 2020, the researchers aimed to determine attributes that impacted productivity during COVID-19. For this query a multiple-choice question was designed and the respondent possessing the ability to select multiple responses from a given pool, more than one attribute could impact the educator. As per the respondents' statements, following five attributes were most impacting (Figure 6):

1. I spend more time developing content for the classes (17.19%)
2. I spend more time communicating with students enrolled in the classes (15.63%)
3. I spend less time on research (14.06%),
4. I spend more time delivering the class content (11.72%)
5. My interactions with students conducting research with me are reduced (10.94%)

As depicted by the top five attributes, the transition to an online learning environment had considerably impacted the educators and productivity, with more time spent in development, communication, and delivery of the content. In addition, research productivity loss was identified along with faculty unable to interact with students conducting research with the educators.

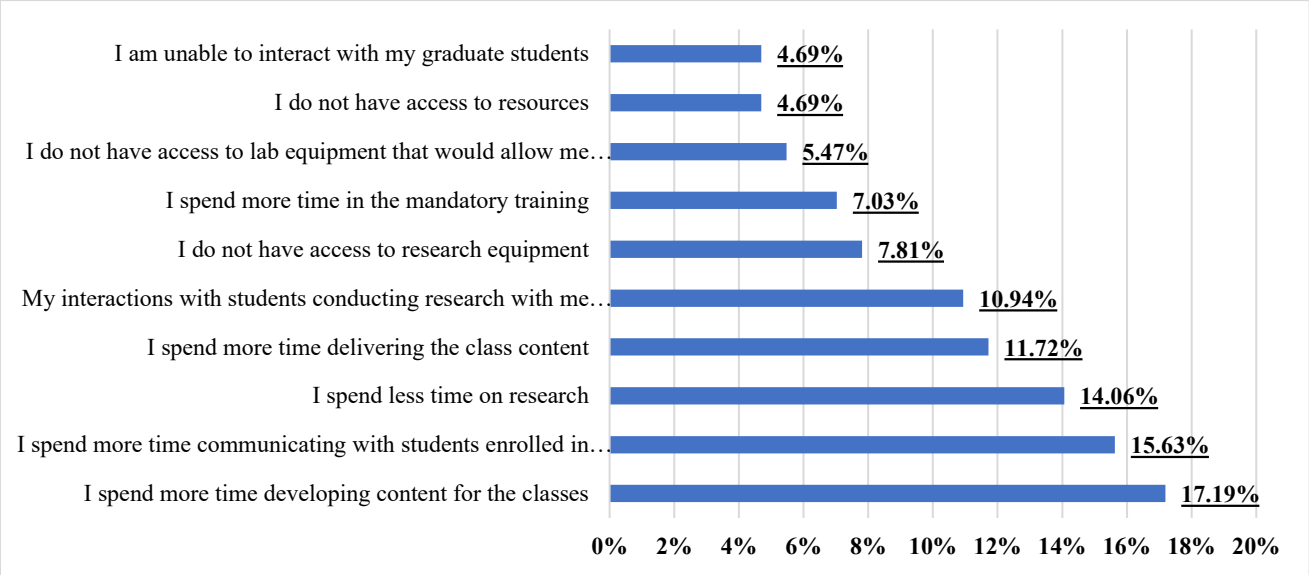

Figure 6: Which of the following statements can be attributed to the impact on productivity?

As the educators were working from home during the transition (March to the time of the survey) the researchers aimed to determine the primary concerns the educators had with working from home. The respondents were provided a multiple-choice question with the ability to select multiple responses as more than one statement could be a concern while working from home. The question had twenty option including an option where the respondent could input a specific factor that was not identified by the researchers. As per the respondents the top-five concerning factors were:

i. Limited interactions with students (11.15%),
ii. Limited work/life separation (10.07%),

iii. Too many conference calls/virtual meetings (10.07%),
iv. Limited interactions with my peers (8.63%), and
v. Difficulty in finding a healthy work-life balance (7.19%),

The research also aimed to determine the concerns with the reopening of campus. The researchers asked open-ended to the participants about their concerns with the option of offering education in the times of COVID using the traditional/face-to-face setting. The top three concerns identified were:

i. The amount of space available in classrooms or buildings on campus,
ii. Personal protection equipment including masks and gloves, and
iii. Health.

Health was defined separately from COVID or infection spreading. Health points to existing or long-term health concerns. Here is one response: "I am concerned about the health and safety of myself and the students." PPE concerns included many types of concerns. Other responses included: "Don't want to wear a mask to work/while teaching" and "I trust everyone will wear masks." Classroom size was identified from social distancing as social distancing happens at the individual level where classroom reorganization happens at the university level. Some responses included the need to "Reorganize classroom layouts", "Classroom size and required social distancing", and "Classroom space. Classroom space. Classroom space."

Summary and Conclusion

Even with the pandemic impacts, the majority of the respondents indicated that their respective programs would continue to offer summer programs. Future research should investigate how courses were offered and how they were taught as educators gained more experience in dealing with the times of COVID. As per the respondents, COVID enhanced proficiency with the delivery of online content. The participating faculty also indicated that the new educational paradigm in response to COVID-19 not only impacted them in terms of limited student and peer interaction but also impacted them personally with limited work-life balance and difficulty in finding a balanced life and reduced productivity.

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Dr. Sanjeev Adhikari is faculty from Kennesaw State University. Previously he was faculty at Morehead State University from 2009 to 2016 and faculty at Purdue University – Indianapolis from 2016 to 2019. He has completed Ph.D. degree in civil engineering, focusing on construction management from Michigan Technological University in 2008. He has an extensive teaching background with a total of 18 years academic experience at five different universities. He has always been praised by students and department for his outstanding teaching and research excellence. To supplement his teaching and research, he has been involved in numerous professional societies, including ASCE, ACI, ASEE, ASC, ATMAE and TRB. His research output has been well disseminated as he has published thirty journal papers and thirty-nine conference papers. His research interests are 1) Creating Innovative Sustainable Materials, 2) Structural BIM Integration, 3) 4D/5D BIM, 4) Virtual Testing Lab, 5) Innovative Construction Demolition, and 6) Carbon Footprint Analysis on Roadways.

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