

# **INSTRUCTOR PERSPECTIVES: TRANSITIONING FROM FACE-TO-FACE TO AN ONLINE OR HYBRID GRADUATE LEVEL MATHEMATICS EDUCATION COURSE**

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## **ABSTRACT**

In this paper, the authors reflect on their transitions from teaching a face-to-face mathematics education course for teachers to teaching using an online or hybrid model. As three veteran educators at two different universities, we share lessons learned in constructing and implementing an online or hybrid learning environment. For us, learning to be flexible in how students completed assignments was important. Although we faced many challenges, we looked at the experience through a novice learner's lens, and recognized that each of us grew from teaching these classes. We found that the instructors' experiences in working with mathematics specialist candidates in graduate courses are similar to the experiences of instructors teaching undergraduate level courses. Instructors' perceptions are important as universities seek to provide more online and hybrid programs.

## **KEYWORDS**

online learning, hybrid course, online course, mathematics education, mathematics teacher education

Transitioning from a face-to-face course to an online or hybrid course is challenging for instructors especially when they only have face-to-face teaching experiences to draw upon for course development and instruction. For the purposes of this paper, an online course will refer to a learning environment where the candidate and the instructor interact completely online. A hybrid course will refer to an environment where the candidate and instructor interact through a combination of online and face-to-face environments. It is important for online and hybrid courses to be comparable to their traditional counterparts in quality and content. The authors will share their personal learning experiences as they each designed and implemented a graduate course with the goal of maintaining the integrity of original face-to-face course designed prepare candidates to serve as mathematics specialists.

## Literature Review

Due to their flexibility and accessibility, online programs have become common for in-service teachers. As they become more common, instructors need guidance on how to design and implement courses online. Bailey and Card (2006) draw upon Chickering and Gamerson's (1987) seven principles for high-quality post-secondary instruction and apply them to online learning. The principles are communicating high expectations, incorporating active learning, providing cooperative learning opportunities, emphasizing time on task, ensuring prompt feedback, maintaining frequent faculty and student interaction, and differentiating for diverse learning styles. Based on the personal experiences and perceptions of 15 online instructors, Bailey and Card (2006) identified eight high-quality online teaching principles. They are fostering relationships with students and between students, creating opportunities for student engagement, providing timely feedback and communication, being attentive to communication style and tone, creating a structured course organization, advocating for the use of technology, being flexible with students, and promoting high expectations. These principles are foundational for educators who are developing and implementing online courses.

Experienced online instructors have found that providing prompt feedback supports high levels of student motivation (Adelstein & Barbour, 2016; Grant & Thornton, 2007, Martin et al., 2019) and encourages student engagement both individually and in small groups (Grant & Thornton, 2007; Palloff & Pratt, 2005). Online learning instructors should provide “students the opportunity to work together to create knowledge and meaning, rather than providing facts and information that they memorize and retain in some fashion” (Palloff & Pratt, 2005, p. 126). Anderson (2004) states that motivation and engagement of students supports deep learning.

Developing a high quality online course that implements the best principles described by Bailey and Card (2006) can affect teacher motivation and perseverance. The time it takes to communicate and provide feedback can lead to instructor dissatisfaction with online environments (Bollinger & Wasilik, 2009; Cavanaugh, 2005). Bollinger and Wasilik (2009) connected many issues like these to the use of technology in an online class. Online instructors felt overwhelmed with getting all of the necessary work accomplished (Hogan & McKnight, 2007). The work of instructors outside of an online class can become overwhelming due to the pressure to be available to provide feedback and to answer student questions promptly. We provide insights to help future online graduate level instructors to persevere and find the ideal balance when teaching an online class.

## **Program Descriptions**

### **Virginia Commonwealth University: Transitioning to an Online Synchronous Program**

In 2017, Virginia Commonwealth University (VCU) transitioned from a three year, face-to-face mathematics specialist preparation program to a two-year, online program. Each course in the revised program consisted of pre-class work that was completed individually and in small groups prior to the bi-weekly, synchronous class meetings. Three courses in a sequence of mathematics teacher leadership courses were each taught and developed by a team of three instructors. Each instructional team consisted of faculty from the School of Education, the mathematics department, and a Virginia school division. The team developed the course syllabi, all course assignments, and weekly pre-class and in-class content. The leadership course sequence addressed mathematics content pedagogy, learning progressions, instructional design, student learning, and effective school-based mathematics leadership. The semester-long courses ran concurrently with the K-8 school year to allow for the implementation of course activities and assignments in the candidates' classrooms or schools. The experiences described by Instructor A and Instructor B below took place in the first and last courses in the leadership course sequence, Leadership I and Leadership III.

### **Longwood University: Transitioning to a Hybrid Course**

In the spring of 2019, Longwood transitioned their mathematics teacher leadership program from a face-to-face format to a hybrid model of learning. The experiences described by Instructor C below took place during an eight-week Instructional Design course which included asynchronous, synchronous, and face-to-face instruction. The first four weeks consisted of weekly face-to-face meetings with participants meeting in two different locations. The instructor simultaneously taught 14 candidates in a face-to-face setting and seven candidates via teleconference. A practicing mathematics specialist supported the remote location. During the last four weeks, the candidates met twice synchronously. Coursework focused on problem solving and mathematics pedagogical content knowledge. Prior to each class meeting, candidates prepared for the meeting by completing reading assignments and participating in online discussions.

## **Instructor Reflections**

### **Virginia Commonwealth University: Online Synchronous Reflections**

#### ***Instructor A***

As a twenty-plus year mathematics educator, I had taught several mathematics content courses in the mathematics specialist program before teaching Leadership I online. The objectives, goals, and assignments for Leadership I were developed as part of VCU's original face-to-face program, but the instructional team worked over the summer to modify the course to meet the online structure. A learning management system course shell had been created for the program to help standardize the class formats. Although everything appeared to be ready before the first class meeting, there were still many things that I felt I needed to learn about online teaching.

I believe learners should be actively engaged both individually and in collaboration with others by listening, observing, and talking with others, and by using manipulatives. I had a level of doubt in my ability to actively engage the candidates in an online class. By developing the pre-course and course work activities, I learned the importance of implementing different activities using online learning tools. These tools permitted active learning in a manner similar to a face-to-face course. The instructional team integrated voice recordings, virtual bulletin boards, discussion posts, virtual manipulatives, breakout groups, and videos into the pre-course and in-course activities. For example, a mathematics education theorist's project in Leadership I required groups of three candidates to research the learning theories associated with a given theorist and create a five-minute, narrated presentation to share with the other candidates. Participants posted a reflection on a course blog as to which theorists closely aligned with their mathematical teaching and learning beliefs. Previously this project culminated in a class-led presentation. The implementation of these different technology tools into the online classroom gave me access to new teaching modalities for active student engagement.

The necessity of regular communication with candidates and frequent feedback to candidates were components of the course that I reflected upon many times. The development of mathematical content and pedagogical skills was a set of building blocks that required frequent feedback for candidate growth. Several course assignments were embedded components of major course projects. A regular cycle of feedback allowed me to engage and monitor candidates as they grew in their pedagogical knowledge. Many times my feedback would receive a comment or a question from the candidate prompting a deeper conversation about their knowledge base.

For me, there never seemed to be enough time to plan, teach, reflect, and provide feedback in an online course. A statement in an email that I wrote to program coordinators expressing my concern for the time candidates would spend on course work stated, "I think the hardest thing for me to wrap my brain around is the amount [of work] they will need to do outside of meeting with us." If only I had known that the "they" in the email should have been a "we." Classroom discussions and activities that we had anticipated would take twenty minutes often took forty minutes. Questioning whether to end a rich discussion was a problem when considering all of the content that needed to be covered during a class session. Our instructional team developed a detailed structure for course meetings, but very rarely did we cover all content we intended to cover. Outside of class, I felt obligated to respond to emails promptly at all times even outside of work hours. With the candidates completing most of their studies in the evenings after the end of the school day, this meant many interactions were late at night or on weekends. Finding work, life, and family balance was difficult.

In a face-to-face class, I use a person's body language to inform pedagogical decisions. A student's gestures, posture, and facial expressions support me in knowing when to spend more time on a topic or move on. The lack of these visual cues in an online learning environment was a struggle for me. The inability to read body language meant many times I was not aware of a misconception until it was voiced in class or shared in an email. I provided time for questions during each class, but I felt that I missed other concerns or questions that may have been more evident in a face-to-face environment.

### ***Instructor B***

While I had taught many courses for in-service teachers in the past, I had never taught an online course. Team teaching and using technology were not difficult for me, but interacting with the candidates who I had only met once, briefly, was an adjustment for me as an instructor. My

first experience with the candidates was as an instructor for Leadership III. While I took cues from a co-instructor who had taught the candidates in the prior courses, I had to figure out how to lead activities and encourage online discussions. I found it challenging to adapt the aspects of face-to-face assignments that required candidates to be in close proximity to an online environment.

Transferring a face-to-face course to an online format has its challenges. It can be difficult to decide whether assignments and projects will be effective in an online environment. For two assignments, a school-based data project and a lesson study project, I believe our instructional team had achieved success through the revisions we made to these projects as we developed the course. By integrating the appropriate technology, providing clear expectations, and utilizing collaborative learning, the projects were incredibly worthwhile and successful learning experiences for the candidates.

The school-based data project required students to simulate engagement with data to identify and investigate a learning problem in their school. The project consisted of four clearly described steps completed over four weeks. Each week we checked in with the candidates as they progressed through the project. For many candidates this was their first time of looking carefully at testing data and it was overwhelming. The online environment made this project easier to facilitate since we were able to use online tools explore the data together. The candidates were comfortable using technology to gather and present data because of their previous online course experiences. After the course was over, the candidates identified the school-based data project as being beneficial in empowering them to collect, present, and discuss testing data with their administration.

The lesson study project required a small group of candidates to complete a Lesson Study Cycle (Wang-Iverson & Yoshida, 2005) including planning, delivering, and reflecting to achieve the goal of perfecting a single mathematics lesson. The logistics of implementation were challenging since the candidates lived in diverse geographical locations. This made it difficult for a group to travel to different schools to observe a lesson. To make this project a success, flexibility on my part, as the course instructor, was essential. I facilitated candidates in creating lesson study groups that were either cohort-based or school-based. In the latter case, groups included teachers in a candidate's school or district who were not taking Leadership III.

Everyone was successful in completing the lesson study project in a way that worked best for their particular circumstances. Interestingly, groups formed exclusively from cohort members were the most successful. I believe this was because they were all aware of every aspect of the project and clearly understood their roles in the Lesson Study Cycle. Those that chose to do the project in school-based groups had to do more organizational work than those that worked in cohort-based groups. In school-based groups, the candidates had to find teachers willing to participate, explain the Lesson Study Cycle, and make sure that everyone provided feedback to synthesize and analyze the success of the lesson. While the school-based lesson study groups reflected more on logistical issues, the cohort-based groups reflected more on the lesson study process. Though the two different types of groups had varying degrees of success in the lesson study process, providing flexibility in implementation of the project and recognizing the differences in group structures was a successful learning experience for me.

At VCU, one instructor led each instructional team for all three courses in the mathematics teacher leadership course sequence. Through their prior work in mathematics and leadership courses, a community of learners had been created in the online learning environment. Being the new instructor during the last leadership course in the sequence meant I had to figure

out my role within the cohort. I struggled with learning the class “climate” quickly enough to not have to be dependent on another instructor’s opinion of how to maximize everyone’s strengths. I struggled to find my niche within the learning community. In a face-to-face class, I could have walked around during class to gauge how students worked and interacted with each other. This was not possible in the online class.

## **Longwood University: Hybrid Course Reflection**

### ***Instructor C***

Though I have taught for almost 30 years with 15 of those teaching pre-service and practicing teachers, this was my first experience teaching a hybrid course. The course I taught was developed using a face-to-face design, but there were issues for me with transitioning to the hybrid format. My struggles and successes focused on the implementation of the course.

I knew that switching to a hybrid learning environment would be a challenge for me. To help with this transition I implemented the ideas shared with me in a university program for switching to online course modalities. Due to the flexibility of course delivery with a hybrid model, I had three times the number of candidates when compared to prior face-to-face cohorts. As the only instructor for the course, I was concerned with how I could provide the necessary feedback for candidates in a condensed eight-week semester.

Being able to balance the amount of feedback I wanted to provide the candidates with the number of hours it took to read and grade assignments was very difficult. I wanted to assign frequent activities for candidates to assimilate their learning but this would create an increase in the number of hours I would spend grading. I recognized that feedback and assessment could take on many different forms in an online learning environment. For me this meant that I did not need to grade every activity; instead, I needed to use the online tools that were available to me. Feedback could come from more than just me. Feedback would also come from the candidates themselves.

Discussion boards were an important component of weekly feedback from the instructor and candidate peers. The integration of discussion posts and feedback from peers can empower candidates to realize that their thoughts are valuable as leaders in mathematics education. Initially, candidates were limited to 300 words per post, but after reflection, I began to require candidates to post a two-minute video discussion. I found that candidates were more organized and concise in their video posts. I believe the videos played to the candidates’ strengths as versatile presenters due to their teaching backgrounds. Video discussion posts were easy for me to view to assess a candidate’s content knowledge each week. They were also easily accessible so discussions could occur either in or out of class. The video discussion posts were a successful way to balance the time needed to assess student understanding with the number of assignments candidates completed. Even with incorporating the changes to the discussion post, finding balance in the number and type of assignments was important to being able to provide useful feedback on every assignment.

Being a hybrid course, creating an online community with candidates in two different locations was difficult due to connectivity issues with technology. The frustration felt by everyone in the class, including me, made it hard for us all to develop relationships with each other. While teaching, I was often unaware that the remote location technology was not working since I only had one computer screen and I was unable to see the remote site when I was presenting. Overcoming these issues required switching online meeting platforms from WebEx

to Zoom and incorporating a remote site facilitator to increase student engagement and to address technical issues. Our re-envisioned program did not initially include the remote facilitator, but this role was deemed necessary for future courses. I added a second screen at my teaching location so everyone could see the slides and I could observe the remote location. A willingness to adapt and try new things was important for me when transitioning to a hybrid course.

### **Conclusion**

Our experiences varied as we each transitioned to an online learning platform. We were each given a course template and goals from a prior face-to-face program, but making everything work within the confines of our different online situations was tough. Maintaining the integrity of the courses was important when transferring them online. Finding the perfect balance for each instructor was difficult.

As instructors transitioning to an online learning environment, our lessons learned were tied to the effective practices for implementing and teaching online courses as described by Bailey and Card (2006). We each recognize the importance of setting clear goals and building a community of learners, but these things can be difficult when time is a factor. Managing our time and the time of the candidates meant that we had to be deliberate and flexible in the opportunities provided for candidate engagement. Learning how to fit the assignments into the new online format required careful planning. We each had success with using technology in course design and the implementation of online modalities. Incorporating these modalities did not change our instructional beliefs or practices, but allowed us to consider different ways to modify our teaching and the candidates' learning experiences.

There are things, such as the number or format of assignments, which can be issues when transitioning a course to an online format. Successful online instruction requires flexibility or the implementation of new technologies. Finding the time to plan, provide feedback, and engage candidates in their learning is imperative for student success. Careful consideration of best practices for online instruction is essential as one develops and implements an online course. In each of our reflections, we recognize that what works can also be what challenges us. Our experiences as instructors at the graduate level parallel the literature research at the undergraduate level in how best practices can affect instructor effectiveness and motivation (Anderson, 2004; Bailey & Card, 2006; Hogan & McKnight, 2007).

Learning to adapt to an online learning environment and finding ways to integrate the technology can greatly influence the development and implementation of any course. Comparing and contrasting our situations, one thing that stands out to us is that having more than one instructor for a course and having the support of fellow online instructors is valuable. Talking to others provides a sounding board for personal growth and reflection. Teaching online is a cycle of planning, teaching, reflecting, and revising. This process is about growing as an educator and recognizing that not all online situations are the same. For us, teaching online did not mean that we had to change our pedagogical beliefs but instead demonstrated that perseverance was important in each of our situations and will be important as we continue to revise how we teach online.

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