

Proceedings of the Annual Meeting of the Georgia Association of Mathematics Teacher Educators

Volume 14
Issue 1 *14th Annual Proceedings*

Article 3

2023

An Autoethnography of Transitioning Mathematics Content Courses for K-8 Preservice Teachers to Online Learning during COVID-19

Ha Nguyen
California State University, hnnguyen@csudh.edu

Tuyin An
Georgia Southern University, tan@georgiasouthern.edu

Heidi Eisenreich
Georgia Southern University, heisenreich@georgiasouthern.edu

Eryn Michelle Maher
Georgia Southern University, estehr@georgiasouthern.edu

DOI
[10.20429/gamte.2022.140103](https://doi.org/10.20429/gamte.2022.140103)

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/gamte-proceedings>

Recommended Citation

Nguyen, Ha; An, Tuyin; Eisenreich, Heidi; and Maher, Eryn Michelle (2023) "An Autoethnography of Transitioning Mathematics Content Courses for K-8 Preservice Teachers to Online Learning during COVID-19," *Proceedings of the Annual Meeting of the Georgia Association of Mathematics Teacher Educators*: Vol. 14: Iss. 1, Article 3.

DOI: [10.20429/gamte.2022.140103](https://doi.org/10.20429/gamte.2022.140103)

Available at: <https://digitalcommons.georgiasouthern.edu/gamte-proceedings/vol14/iss1/3>

This article is brought to you for free and open access by the Journals at Digital Commons@Georgia Southern. It has been accepted for inclusion in Proceedings of the Annual Meeting of the Georgia Association of Mathematics Teacher Educators by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.

**An Autoethnography of Transitioning Mathematics Content Courses for K-8 Preservice
Teachers to Online Learning during COVID-19**

Ha Nguyen¹, Tuyin An², Heidi Eisenreich², and Eryn M. Maher²

¹ Mathematics Department, California State University at Dominguez Hills

² Department of Mathematical Sciences, Georgia Southern University

Abstract

The following autoethnography is completed by a group of mathematics teacher educators (MTEs) after transitioning their mathematics content courses for K-8 Preservice Teachers (PSTs) from face-to-face to online due to COVID-19 in Spring 2020. The MTEs present their perceptions of the shift to online teaching and learning by describing (a) how they typically teach their classes, (b) how they redesigned classes to support student learning when the pandemic started, (c) their PSTs' perceptions of which course components were effective (or not) in helping them adjust to the new online learning environment, and (d) next steps in teaching and research.

Keywords: mathematics education, online learning, equity

INTRODUCTION

In Spring 2020, all courses at our university transitioned with little warning to online courses due to the spread of COVID-19. Faculty were given one week after spring break to convert our courses to the online format, which was unfamiliar to us. Our students, K-8 preservice teachers (PSTs), also faced incredible challenges. We, as a group of mathematics teacher educators (MTEs) and the authors of this article, designed a survey to understand what PSTs found helpful or challenging during the switch to online learning in mathematics content courses during the COVID-19 Pandemic (Spring 2020). We also reflected on the changes in our courses and teaching during this abrupt shift. In this article, we share results of a survey question about PSTs' perspectives on the changes of course materials and our reflections on our teaching using an autoethnographic approach.

LITERATURE REVIEW

Transitioning to Online Learning

The COVID-19 Pandemic caused disruption as so many classes transitioned from a face-to-face to an online learning environment. Students and teachers had greatly varying experiences with this shift due to home situations and familiarity and accessibility of online resources. Teachers and students with little or no prior experience with online learning were expected to quickly learn how to effectively use online platforms. Teachers attempted to incorporate best teaching practices. Students struggled to adapt strategies for success to a transformed learning environment. Teachers changed their practices for presentation of content, and redesigned assignments and assessments. Collaboration among students was one aspect that needed reimagining. Through interviews and questionnaires for their case study of three mathematics education students, Calder et al. (2021) found students who had experienced this type of transition prior to COVID-19 were frustrated

when instruction transitioned to an online format. They indicated that some frustration stemmed from home situations, lack of collaboration, and their overall well-being. Calder et al. indicated that students missed face-to-face interaction and did not learn as much through video conferencing instruction.

On the other hand, benefits were also identified. Calder et al. (2021) indicated that students appreciated not having to travel or deal with parking and also appreciated the depth to which they reflected on their learning because it was more independent. Calder et al. realized that even after transitioning back to face-to-face instruction, they could implement many aspects that were created after transitioning online. They also found that participants preferred to interact with peers using both in-class collaboration tools (e.g., Zoom breakout rooms) and out-of-class collaboration tools (e.g., discussion forums).

Nasr (2020) reflected on her experience teaching secondary science classes during this transition by incorporating self-paced modules that were scaffolded and included automatically graded assessments. She indicated that her students enjoyed this type of instruction and assessment. However, she acknowledged that students could share responses while working online, so academic integrity was an important consideration. To overcome this obstacle of academic integrity, Nasr suggested incorporating assignments where students record a video describing a process or demonstrating knowledge of a specific concept.

Gilles and Britton (2020) shared how they revised an assignment with their preservice teachers regarding field placement after the shift to online learning. One part of this assignment was for PSTs to interview their cooperating teacher. All PSTs were given seven questions to ask their cooperating teacher, which focused on equity, pedagogical choices and community. Then PSTs created three additional questions. After interviewing their cooperating teacher, the PST

reflected on their experience and identified themes among responses from the cooperating teacher. Gilles and Britton found the following themes to be most common among PSTs' reflections and analysis of cooperating teachers' responses: "missing the physical presence of students, lacking equity in access to resources, and feeling overwhelmed" (p. 21).

The researchers ground this current study in previous Scholarship of Teaching and Learning (SoTL) research. According to Bishop-Clark and Dietz-Uhler (2012), to ground research in SoTL, research needs to be evidence-based and focused on student learning, and findings need to be shared with the community. According to Hutchings and Shulman (1999), SoTL research "is the ongoing and cumulative intellectual inquiry, through systematic observations and ongoing investigations by faculty, into the nature of learning and the impact of teaching on it." In this study, researchers used results from a survey where students self-reported what was most or least helpful when the course transitioned online due to the COVID-19 pandemic. Similar to previous research (Bishop-Clark & Dietz-Uhler, 2012; Boyer, 1990; Cross, 1986), researchers used data from this survey to make pedagogical changes to future classes.

Online Learning Questionnaires

Self-regulated learners actively participate in their learning process (Zimmerman, 1986). They define their own tasks at hand, set clear goals, and construct a plan on how to achieve their goals (Puustinen & Pulkkinen, 2001). Effective online learning requires self-regulated learners (e.g., Bruso et al., 2020). Unfortunately, Bruso et al. noted that research has consistently shown that "distance learners are often found to be less self-regulated than learners in traditional settings" (p. 2666). In an unexpected shift from a traditional face-to-face delivery to online instruction, especially in a time of deep uncertainty and distress, PSTs' self-regulation likely varied widely.

To understand PSTs' perceptions on the effectiveness of the redesigned course materials in easing their adjustment to the online learning environment, it is important to consider PSTs' perceptions on their participation in this process, including their interactions with the modified learning materials and tools. Jansen et al.'s (2016) self-regulated learning based questionnaire provided us with a powerful tool to measure PSTs' learning behaviors in an online environment. The questionnaire included five categories of 7-point Likert scale questions: metacognitive skills, time management, environmental structuring, persistence, and help seeking. We adapted a subset of questions from this questionnaire as appropriate for our online survey study. When developing the survey questions, attempting to comprehensively understand PSTs' challenges and gains during their adaptation to the online learning environment, we considered the following factors: student privacy, diversity of experiences, equitable access to learning resources, and mental health (Benjamin et al., 2020; Chirikov et al., 2020; Means & Neisler, 2020; Wang et al., 2020).

Autoethnography

Autoethnography has been described as a critical self-reflective process in which educators gather data and deconstruct their teaching strategies (e.g., Christensen et al., 2021). Bochner and Ellis (2006) described autoethnography as researchers describing how they “make choices in difficult, ambiguous, and uncertain circumstances... Autoethnographies show people in the process of figuring out what to do, how to live, and what their struggles mean” (p. 1). Autoethnography as a method of research and intense self-reflection is appropriate to this study as we, MTEs, frantically made decisions, using our understanding of current PSTs and past teaching experiences to best support our PSTs' needs in the moment, and use these ideas to better support students in the future. That is, we wondered: “How do we support our PSTs to be successful right now, as

they grapple with issues of access and distress, and also in future courses or teaching where their success will rely on what they learn in this course?”

This autoethnography aims to describe the experiences and reflections of four MTEs as we redesigned our classes to support student learning during the start of COVID-19 in Spring 2021. As with an autoethnography, we share how we typically teach our courses before the pandemic and how we converted our courses to the online format during the pandemic while using these journeys to analyze and interpret their experiences and practices (Adams et al., 2017). We used autoethnography to assist us in better understanding the challenges and difficulties students and faculty faced when converting in-person classes to an online format during COVID-19 and share our self-reflections with a larger audience.

This autoethnographic report was completed following the autoethnographic research protocols suggested by Ellis et al. (2011) after the Spring 2021 semester. The report builds on the four MTEs’ experiences, self-reflections, and their PSTs’ survey results to draw insights on teaching and learning during the pandemic.

METHODS

PST Participants

In our combined course sections, we had 211 PSTs enrolled in one of three required mathematics content courses for PSTs. Our PSTs faced similar challenges to what others identified, such as learning how to use a new platform, navigate changes in living situations, and balance home and school life (e.g., Calder et al, 2021). With content uploaded online PSTs had to navigate the university learning management system (LMS) with little or no training. Another source of frustration for some PSTs came from the unexpected eviction from campus housing after spring break. PSTs scrambled to find a new space or make arrangements with parents or guardians

to move back home. For PSTs who lost campus employment or whose parents' lost work hours, some returned to work full time. For PSTs who moved back home, some found they needed to watch younger siblings, run errands, or manage other items while parents went to work. Their adaptation to the new situation, with new demands on their time and energy, meant that university coursework took a less important role for some PSTs.

Instructor Participants

We are four MTEs and researchers who study our own mathematics content courses. We were all early career faculty members at the time, holding tenure-track positions and pre-tenure. All four of us have taught all three required mathematics content courses during our years teaching at the university. So even if we were not currently teaching the course, we were aware of concepts and course components of others. As colleagues in the same department, we had worked collaboratively on other projects, so our sense of community and lines of communication had already been established. This foundation made it easy to share noticings and wonderings about which teaching strategies did or did not work and why.

Courses

The mathematics content courses involved in this study are: *The Foundations in Numbers and Operation*, *Foundations of Data Analysis and Geometry*, and *Algebraic Connections for K-8 Teachers*. When we quickly transitioned to an online format, the university required instructors to revise their syllabi and share with students as quickly as possible. Our revisions depended on the course format, but we each relied on videos, online homework or tasks, and weekly module instructions / guided notes.

Survey of PSTs' Learning

A survey created on SurveyMonkey was emailed to PSTs near the end of Spring 2021. The

survey was anonymous; no identifying information was collected. We chose to use SurveyMonkey (2020) to distribute the survey and organize the data because it was approved by the Institutional Review Board at our university as one of the online survey platforms that offer an anonymous option that does not collect IP addresses. Participation in the survey was voluntary, but instructors/authors used various methods to help boost the response rate, such as issuing participants a small amount of extra points when they uploaded a screenshot of the confirmation page of survey completion or including the survey as part of a course assignment (e.g., weekly reflections).

Since the goal of the survey was to understand PSTs' perceptions of the shift to online learning during spring 2020, we designed our study as a *Cross-Sectional Survey* that focused on a sample of a population at a single point in time (Ary et al., 2010). We designed an online questionnaire consisting of ten questions that covered PSTs' current course information, self-regulated learning strategies, communication strategies, course materials, obstacles in learning and solutions, as well as reflection and advice for the institution and self (see Appendix A). Some of the questions (Q2 - Q6) contain a group of sub-questions to help gather every aspect of information covered in the question. We balanced the number of closed-ended and open-ended questions based on the goal of the study and the cost of data analysis. For closed-ended questions, we used *Scaled Items* (Ary et al., 2010, p. 393) to rate PSTs' responses to the effectiveness of the course materials. The scale includes three options: "very effective", "somewhat effective", and "not effective at all", plus an open-ended option "Other" to capture the information possibly missed in the closed-ended questions.

In this article, we focus on our reflection about the data collected by the fourth question (Q4) of the survey (see below). We chose to analyze this question first because Q4 data is about

changes of course materials which we think are the most urgent areas to address to transition more quickly in future semesters.

Q4: How effective were learning materials (work others did) and homework, reflection, or assessments (work you did) in helping you learn concepts during these 5 weeks of online learning?

Survey Data Analysis

The researchers (also MTEs) first deleted PSTs who chose two courses that could not be taken concurrently. For example, passing the Foundations in Number and Operations with at least a “C” was a prerequisite for enrolling in the Data Analysis and Geometry course. Therefore, PSTs who chose both were only counted in the Data Analysis and Geometry course. Then, we combined the frequencies of students who responded with “very effective” and “somewhat effective” and considered this combined percentage as an overall effectiveness of the course component when looking at each of the 19 course components within one course. Please note that not all items were implemented in each course. These percentages for Q4 are reported below, in Table 1.

FINDINGS of the SURVEY QUESTION Q4

In this section, survey results on all the combined courses and individual instructors will be shared. All positive ratings include “Very” and “Somewhat” effective. Table 1 displays the positive ratings by PSTs of all combined courses on the effectiveness of learning materials (e.g., updated course syllabi, guided/annotated lecture notes, videos) and homework, reflection, or assessments in helping the PSTs learn concepts during the five weeks of online learning. The table is sorted from the highest ratings to the lowest. The highest five are updated course syllabi, Folio (Design2Learn) weekly learning content modules and learning descriptions, MLM assignments, knowledge quiz/Perusall on updated syllabus, and hand-written homework and tests. The lowest

five are Desmos tasks, weekly reflections, DeltaMath tasks, IXL tasks, and reading assignments (e.g., Perusall). Items marked with asterisks were implemented by all instructors.

Table 1

Summary Data of All Combined Courses, n = 211

Course Components	Rating
* Updated course syllabus	97.7
Folio weekly learning content modules and learning descriptions	95.5
MyLabs Math (MLM) assignments (e.g., homework, quizzes, tests, practice, e-book readings, lecture videos)	94.5
Knowledge quiz / perusall on updated syllabus	93.7
Hand-written homework and tests	92.9
Content covered during online lessons/meetings held by the professor	91.4
Homework presentation slides (e.g., PowerPoint slides)	90.5
* Instructor videos (created by the instructor)	90.3
Guided / annotated lecture notes	90.3
Midterm-test mistake corrections	90.0
Content covered during post midterm-test meetings	89.3
* Non-instructor videos (e.g., YouTube, Teaching Channel, Khan Academy, Learn Zillion)	89.2
Critical Area Project Video	85.0
Content covered during online tutoring sessions held by the teaching assistant	83.8
Desmos tasks	79.0
Weekly reflections (e.g., GoogleForm)	76.2
DeltaMath tasks	73.9
IXL tasks	71.4
Reading assignments (e.g., Perusall)	70.8

* these three items were in all four METs' classes

Table 2 below shows the top two and the lowest survey items that were considered by PSTs as “very or somewhat effective”. Updated Course Syllabi were rated highly for all instructors, so to make the table concise, it was not included. Folio Weekly Learning Modules and Guided / Annotated Notes were each rated highly for two instructors; Reading Assignments is rated as the lowest for two instructors as well.

Table 2
Individual Instructor Data

Instructors	Top 2 Highest Ratings (%)	1 Lowest Ratings (%)
Instructor 1	Folio weekly learning modules, (100%), guided / annotated lecture notes (100%)	Reading assignments (50%)
Instructor 2	Folio weekly learning content (94.4%), non-instructor videos (94.3%)	Reading assignments (68.6%)
Instructor 3	MyLab Math (100%), guided / annotated notes (95.5%)	IXL tasks (60%)
Instructor 4	Instructor videos (94%), Hand-written homework and tests (92.3%)	Weekly reflections (70%)

MTEs’ Reflections on the Changes in Their Courses and Teaching

Instructor 1:

I taught two courses in Spring 2020, Number and Operations (one class section) and Algebraic Connections (two class sections). Before transitioning due to the pandemic, I taught both courses as regular lectures in which I essentially followed the launch-explore-summary teaching sequence. My PSTs became familiar with my organization of the Learning Management System (LMS) because I already had posted course materials, quizzes, their grades, and class announcements. While transitioning to online teaching, I chose to teach asynchronously. I felt more comfortable building asynchronous learning modules on the LMS given the time constraints to learn and practice new technologies and teaching strategies.

Instructor 1’s Reflection on Future Teaching. The most noticeable trend that emerged from the survey data is that 100% of my PSTs believed the following course materials are “very or somewhat effective”: Updated Course Syllabus, Knowledge Quiz On Updated Syllabus, Folio Weekly Learning Modules, and Guided/Annotated Lecture Notes. Therefore, I continued to complete, refine, and use the same materials in the following semesters. I added daily lesson

recordings (with links to tools used in class) to the Folio modules to help PSTs who were not able to attend the class in person succeed in self-regulated learning. The Instructor Videos I created showed one of the lowest ratings for my courses possibly because uploading videos to a Google Drive folder shared with PSTs took me hours, so it probably also took a long time for PSTs to download and watch it. After the university adopted Zoom in Fall 2020, I have used that service to more easily create, store, and share videos.

Instructor 2:

At the time of the transition, I taught two sections of Algebraic Connections for K-8 teachers. I taught one section of a course that is outside the scope of this study. Before transitioning, learning materials included weekly notes packets that included a detailed to-do list, copies of Perusall readings, and in-class guided notes. I asked PSTs to take notes on out-of-class work and in-class work. PSTs uploaded images of their notes weekly. Before class homework included reading Perusalls or the textbook and answering reflection questions.

Instructor 2's Reflection on Future Teaching. PSTs indicated in the survey that they appreciated seeing the updated syllabus and requirements. I tried to include as much transparency as I could to explain how the course was changing and why. One strong area that PSTs appreciated was that I created or linked to videos showing examples of our work. One PST mentioned that she wished there had been videos throughout the whole semester, not just after the transition. In the following semesters, I required my PSTs to watch Georgia Department of Education videos, on Perusall, that show K-12 students and their teachers completing tasks to help my PSTs. One weak area that I could improve is that throughout the entire semester, PSTs interacted with each other in Perusall readings (i.e., they were required to make comments and responses as they read). Because I felt overwhelmed at the time, I did not provide any feedback on the Perusall readings and survey

results indicated that PSTs did not connect the readings with our classwork after the transition. In the following semesters, which remained at a distance, I gave PSTs opportunities to respond to reflection questions about connections between readings and other class tasks. I skimmed their responses and shared a selected few each week. Feedback from PSTs indicated more of them saw the connections and appreciated the tasks.

Instructor 3:

Before we switched to online in Spring 2020, I had the following setup for my three class sections of the Foundations in Numbers and Operations course. In class, PSTs were put into groups of four or five during each class meeting (twice a week, 75 minutes each). They were given manipulatives and tasks to work with each other. I walked around the classroom, listened to their conversations, offered feedback, confirmed their strategies or facilitated them to a different path. Then I either let the groups volunteer their solutions or had them take turns to present their solutions.

Instructor 3's Reflection on Future Teaching. As I reflected on the course after switching online in Spring 2020, I realized that *guided notes* were not effective, even though they were one of the highly rated items. There was too much information in each weekly guided note packet, which made it overwhelming for the PSTs. I thought I gave the PSTs flexibility by letting them learn the materials at their own pace through the guided notes; however, constructing the learning process through the guided notes alone lacked student-to-student interaction. The discussion board on MLM was also not as effective, since only one PST used it.

Using the survey results and knowledge gained from the Teaching Online Courses Program offered at our university, my next steps after Spring 2020 were to build weekly learning modules (instead of the weekly guided notes) in our LMS and incorporated discussion boards as one of the

graded learning activities to increase student-to-student and student-to-instructor interaction. Each weekly module included learning objectives, a task list, short videos (mostly about five minutes long) of each topic, assignments and hyperlinks to submit them, along with other learning activities all in one LMS to make it easier for PSTs to navigate through. This way, learning goals are more transparent, and learning is broken up into smaller chunks instead of seeing all the topics of the entire week in one document, which makes absorbing information easier.

Instructor 4:

I taught three sections of the Foundations of Data Analysis and Geometry course that consists of geometry, probability and statistics content. Before we moved online, the class was set up in the following way: When PSTs would arrive, they moved desks to sit with their group members. PSTs were in groups of three or four. Once class started, a problem was written on the board and PSTs were given a few minutes to solve it, without hearing me or one of their peers explain how to do the problem.

Instructor 4's Reflection on Future Teaching. From the data, PSTs said they did not find weekly reflections helpful. These are required so PSTs reflect on their study habits in order to make changes, and to identify what content they still had questions about so I could provide additional resources. Based on results from this survey and participation in a Teaching Online Course (TOC) through our Center for Teaching Excellence (CTE), I made changes to my classes. For Summer and Fall 2020, I created online modules for PSTs to participate in at their own pace using a premade module template from CTE. I also had two “live” zoom sessions each week that PSTs were encouraged to attend so they could engage in some live Q and A sessions. Because PSTs found the instructor and non-instructor videos helpful, I used those to help “teach” the content initially.

Synthesis: Implications for Future Teaching

Since PSTs all rated the updated syllabi highly, this implies that they appreciated clear communication. Because we all taught face-to-face classes and had to move online after COVID-19, we needed to clearly explain these changes. Updating and posting our syllabus was one way we were able to do this. Furthermore, data from Table 1 indicates instructor videos (90.3%) and non-instructor videos (89.2%) were closely related. This indicated that PSTs found both valuable. Our takeaway from this finding is that instructors should keep their syllabi updated and clearly communicate any changes through email or LMS. Additionally, videos chosen by the instructor, whether they are instructor – created or not, help to support students’ understanding of the content.

Additionally, by asking PSTs to complete this survey and reflect on the transition, we were able to reflect on our teaching practices. We identified that PSTs might identify lower rated items as more beneficial if there was a clear connection to the learning objectives of the course. Implications for this finding are that when instructors clearly connect class activities to learning objectives, students find those activities beneficial, even if they previously did not see the relevance of different activities. If instructors are intentional with making these connections, students find relevance in course activities.

After this survey was distributed, all four of us participated in a university TOC workshop offered by the CTE to help make online courses more accessible. Along with the results from the survey, and our participation in the workshop, we gained more structured knowledge of how to design online or hybrid courses and were able to apply our knowledge in the following semesters. Implications from this take away is that instructors have access to different resources, even if they are not currently aware of them. Contacting the Faculty Center, or Teaching Center might help instructors be mindful of these opportunities.

Limitations

As with all qualitative studies, we could have researcher bias as we reflected on our course; however, we collected quantitative data to inform how we reflected on our course. Additionally, we reported frequencies rather than quantitative statistics. When looking at responses from our PSTs, we realized they did not have a good understanding of the structure of the course; many items they said were very or somewhat effective were not a part of our class. This could be due to the overwhelm of the sudden online switch and pandemic. One way to eliminate this limitation is to have one general survey for all instructors, but each instructor makes a copy of that survey and deletes items that were not part of their course. For example, if Desmos was not part of the course, delete that option so PSTs were able to only respond to current course components. Once data was collected, instructors could find common items to make connections but would not have extra items that PSTs were expected to sift through. We could also have more descriptive items with examples of each course component, so PSTs knew exactly what they were rating.

Conclusion

The goals of this paper were to share how MTEs redesigned classes to support student learning when the pandemic started in Spring 2020, and our PSTs' perceptions on which components of course materials they found effective (or not) in helping them adjust to the new online learning environment. MTEs identified clear communication through an updated syllabus as one common component, which could also be utilized in any course. Furthermore, transparency in why different course components were assigned was also something MTEs reflected on. Both clear communication in course expectations and justifying why different components were assigned are important to students, whether they are online or face-to-face.

Based on the lessons we learned from this project, if other researchers plan to implement a

similar survey, we recommend that they give a separate survey that only includes items in their respective courses, instead of displaying all the items implemented by all instructors on one common survey.

This research project gave us an opportunity to share what we found effective in student learning, which allowed us to reflect on our own teaching practices (Boyer, 1990; Cross, 1986; Bishop-Clark & Dietz-Uhler, 2012). We hope these insights help others as they begin teaching or transition to a different learning platform.

By taking an autoethnographic approach when analyzing data, we were able to reflect on how we taught the course and identify ways to change the design of our courses, which helped us plan for and teach during the 2020-2021 school year, and beyond. Some changes we made to our course continued to be revised and shared with PSTs as the year went on, such as weekly quizzes, Desmos, GeoGebra, or other activities that incorporated using technology to engage in the content, and the final project. We hope this paper not only gave you some ideas of ways in which to make changes to your course, but also encouraged you to reflect on the aspects of communication and transparency within your course.

REFERENCES

- Adams, T. E., Ellis, C. & Jones, S. H. (2017). Autoethnography. In Jörg Matthes (Ed.), *The international encyclopedia of communication research methods*. Hoboken, NJ: Wiley.
10.1002/9781118901731.iecrm0011
- Ary, D., Jacobs, L. C., & Sorensen, C. (2010). *Introduction to research in education* (8th ed.). Wadsworth, Cengage Learning.
- Benjamin, D., Jishnu, D., Hamza, A., & Leydier, B. (2020, March 24). Covid-19 Diaries: Early Impressions from an Online Questionnaire. *Guide COVID-19 Student Impact Survey*.
<https://osf.io/b8xtk/>
- Bishop-Clark, C., & Dietz-Uhler, B. (2012) *Engaging in the Scholarship of Teaching and learning. A Guide to the process, and how to develop a project from start to finish*. Virginia: Stylus.
- Boyer, E.L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. San Francisco, CA: Jossey-Bass.
- Bruso, J., Stefaniak, J., & Bol, L. (2020). An examination of personality traits as a predictor of the use of self-regulated learning strategies and considerations for online instruction. *Educational Technology Research and Development*, 68, 2659-2683.
- Calder, N., Jafri, M., & Guo, L. (2021). Mathematics Education Students' Experiences during Lockdown: Managing Collaboration in eLearning. *Education Sciences*, 11(4), 191.
- Chirikov, I., Soria, K. M., Horgos, B., & Jones-White, D. (2020). *Undergraduate and graduate students' mental health during the COVID-19 pandemic*. UC Berkeley: Center for Studies in Higher Education. Retrieved from
<https://escholarship.org/uc/item/80k5d5hw>
- Cross, K.P. (1986). A proposal to improve teaching: Or, what taking "teaching seriously" should

- mean. *AAHE Bulletin*, 39(1), 9-14.
- Ellis, C., Adams, T. E., & Bochner, A. P. (2011). Autoethnography: an overview. *Historical Social Research*, 273-290.
- Gilles, B., & Britton, S. (2020). Moving Online: Creating a Relevant Learning Experience for Preservice Teachers in the Time of COVID-19. *Electronic Journal of Science Education*.
- Hutchings, P., Huber, M. T., & Ciccone, A. (2011). Getting there: An integrative vision of the scholarship of teaching and learning. *International Journal for the Scholarship of Teaching and Learning*, 5(1). Retrieved May 1, 2018 from <https://digitalcommons.georgiasouthern.edu/ij-sotl/vol5/iss1/31/>Hutchings, P., & Shulman, L. S. (1999). Teaching among the scholarships. *Change*, 31(5), 10-15.
- Means, B., and Neisler, J., & Langer Research Associates. (2020). *Suddenly online: A national survey of undergraduates during the COVID-19 pandemic*. San Mateo, CA: Digital Promise. Retrieved from <https://digitalpromise.dspace.org/handle/20.500.12265/98>
- Jansen, R. S., Van Leeuwen, A., Janssen, J., Kester, L., & Kalz, M. (2016). Validation of the self-regulated online learning questionnaire. *Journal of Computing in Higher Education*, 29(1), 6–27.
- Nasr, N. (2020). Teachers as Students. *The Electronic Journal for Research in Science & Mathematics Education*, 24(2), 168-171.
- SurveyMonkey (2020). *SurveyMonkey* [Computer software]. <https://www.surveymonkey.com/mp/take-a-tour/>
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research*, 22(9). Retrieved from

<https://www.jmir.org/2020/9/e22817/>

Puustinen, M., & Pulkkinen, L. (2001). Models of self-regulated learning: A review.

Scandinavian Journal of Educational Research, 45(3), 269–286.

doi:10.1080/00313830120074206.

Zimmerman, B. J. (1986). Becoming a self-regulated learner: Which are the key subprocesses?

Contemporary Educational Psychology, 11(4), 307–313. doi:10.1016/0361-

476X(86)90027-5.

Appendix A Online Questionnaire Questions

Q1 Please tell us the courses you are currently taking and your instructor(s).

Q2 Thinking of your transition to online learning in these courses, how true are each of the following statements?

Q3 COMMUNICATION: How effective was each of the following for you in receiving information and/or interacting with the professor and classmates during these 5 weeks of online learning?

Q4 WORK OTHERS DID / WORK YOU DID: How effective were learning materials (work others did) and homework, reflection, or assessments (work you did) in helping you learn concepts during these 5 weeks of online learning?

Q5 OBSTACLES: How challenging were obstacles that you encountered during this online instruction switch?

Q6 How effective were the following factors in helping you overcome any learning obstacles and maintain good learning progress during these 5 weeks of online learning?

Q7 During this online instruction switch, I wish Georgia Southern and/or my instructor would have done (e.g., communicating changes to students about the course) ...

Q8 During this online instruction switch, I appreciate that my university and/ or instructor did....

Q9 What advice would you give students (or yourself) in a similar situation to help them successfully learn the material online?

Q10 What questions do you wish we had asked? (and how would you answer them?)