Exploring How COVID-19 Impacted Selected School-based Agricultural Education Teachers in the United States

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Abstract

The COVID-19 pandemic of 2020 disrupted education all over the world. Teachers and students were forced to adapt to online learning. In the United States (U.S.), school-based agricultural education (SBAE) teachers faced challenges in delivering what is traditionally a hands-on curriculum. This study used a Pedagogical Design Capacity framework to understand the experiences of four SBAE teachers at different career stages and different geographic regions of the U.S. Our results showed dissatisfaction over initial changes, frustrations over changes to program outcomes, and impacts to teacher well-being. Recommendations for research, practice, and policy are provided.

Keywords

Pedagogical design capacity; School-based agricultural education, United States, well-being, professional growth

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Introduction and Problem Statement

The COVID-19 pandemic of 2020 has had direct implications on schools in the U.S. and the students they served (Ghebreyesus, 2020). Schools moved from meeting in-person to delivering instruction online. Some subjects faced greater challenges than others. School-based agricultural education (SBAE) programs, which include classroom/lab teaching, Future Farmers of America (FFA), and Supervised Agricultural Experiences (SAE), have long relied on in-person delivery (Phipps et al., 2008). Like their peers, SBAE teachers had to choose new approaches to teach remotely.

Remote instruction was a new concept introduced to many K-12 teachers during the COVID-19 school closures. The central attribute of "remote instruction" is the separation by space during instruction (Lindner et al., 2020) In the case of COVID-19, K-12 students were forced into remoted instruction with no regard for their competence or motivation to be taught or learn remotely (Lindner et al., 2020). This came with its own challenges of limited internet access, individual school-mandated instruction rules, and lack of resources. This study explored how COVID-19 impacted SBAE teachers.

Theoretical and Conceptual Framework

The Framework for Pedagogical Design Capacity (PDC) served as the theoretical framework for this study (Brown, 2009; Knight-Bardsley & McNewill, 2016; see Figure 1). According to Brown (2009) PDC is "a teacher's capacity to perceive and mobilize existing resources in order to craft instructional episodes" (p. 29). These resources can be either instructional resources or resources internal to the teacher. Teachers can be introduced to new instructional resources, provided with professional development, and given other tools to improve their teaching. Teachers can also improve their subject knowledge, develop new forms of pedagogical content knowledge, and adapt their beliefs about teaching (Brown, 2009).

Figure 1

Framework for Pedagogical Design Capacity
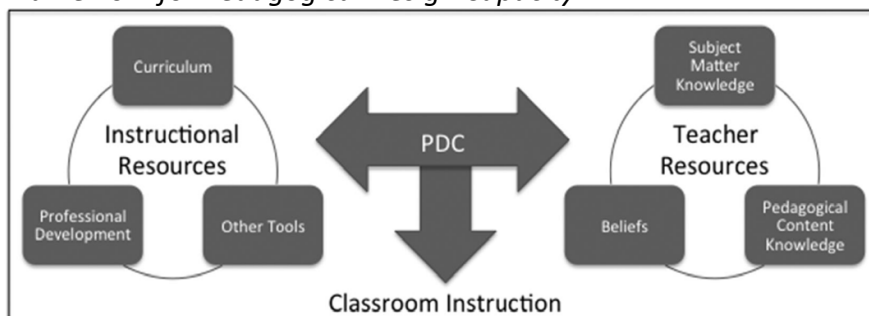
Note. From Knight-Bardsley and McNeill (2016). Used with permission.

Knight-Bardlsey and McNewill (2016) recommended professional development to support teachers implementing reform-oriented curricular initiatives. Other researchers have examined the value of layering professional development to help teachers implement curricular reform initiatives (e. g. Maskit, 2011; Selmer et al., 2015). During the school closures caused by the COVID-19 pandemic, the resources teachers had at their disposal remained fairly static, however the context of instructional delivery shifted immediately. This study used the PDC framework to examine the changes that occurred immediately after the shutdown and as the teachers coped with the realities of teaching in an online environment.

There are two identified categories of teacher coping behaviors: emotion-focused (palliative) and problem-focused (direct action) (Admiraal, et al., 2000; Kyriacou, 2001; Leiter, 1991). Problem-focused coping behaviors are the most effective for teachers as they include strategies of action, such as defining the problem, developing alternative solutions, evaluating the alternatives, selection of a solution, and finally taking action (Thieman et al., 2012). By contrast, emotion-focused coping behaviors consist of defensive or escapist strategies including avoidance, minimization, and distancing (Thieman et al., 2012). Emotion-focused strategies focus more on dealing with the emotions associated with the stress, rather than handling the source of the stress (Kyriacou, 2001). The Coronavirus (COVID-19) was that extra level of stress given to the teachers, and how they identified that stress helped dictate how their instruction changed during the brick-and-mortar school closures.

According to the Organisation for Economic Co-operation and Development (Reimers et al., 2020), educators are required to develop responses with specific contexts in mind to adapt to the realities faced by the COVID-19 pandemic (Reimers et al., 2020). These responses for teachers include improving curricular resources, creating professional development resources, and improving access to tools that help manage teaching and learning (Reimers et al., 2020). Lindner et al. (2020) found SBAE teachers were not prepared to shift instruction to alternative modes in the spring of 2020 and recommended professional development to improve their teaching going forward. This investigation seeks to illuminate how nuanced efforts can be implemented to meet the needs of SBAE teachers going forward by developing a more thorough understanding of how teacher PDC was impacted by the COVID-19 pandemic. This investigation will help square the recommendations of Lindner et al. (2020) with the response outlined by the Organisation for Economic Co-operation and Development (Reimers et al., 2020) by using PDC to outline the response of SBAE teachers to the pandemic.

Purpose

The purpose of this study was to use a PDC lens to explore how COVID-19 impacted four school-based agriculture education (SBAE) teachers, from various regions in the U.S. and with varying amounts of teaching experience.

Methods

This study used a basic interpretative qualitative approach to examine how SBAE teachers PDC changed because of the COVID-19 shutdown (Merriam, 2002). Because teaching at a distance was an abrupt shift for SBAE teachers, this method was employed to provide a rich description of how teachers reacted (Ary et al., 2014). This study sought to explore how selected SBAE teachers in the United States responded to the COVID-19 pandemic.

The University of Florida provided a website that housed resources for SBAE teachers to teach at a distance. The website had an optional questionnaire to collect information on how teachers were teaching the students. The final question of the instrument asked if teachers would allow us to contact them to ask some further questions about their teaching. The participants from this study were selected from that list. An effort was made to select teachers with a range of years, experience, and geographic diversity. Four teachers were interviewed for this study. The results included thick, rich descriptions of the participants and used representative quotes to allow the reader to determine transferability to other teachers in various settings (Creswell & Miller, 2000). Teachers are also described by their career stages as defined by Fessler and Christensen (1992) to give additional insight into their professional identity. Pseudonyms were assigned to the participants to ensure confidentiality.

Carl had just finished his third year as an agriculture teacher in Arkansas when the schools closed. He began teaching in the middle of the school year after being laid off from a job in the agriculture industry. His teaches at a small school in a rural community. Because he was still learning his role in the school and developing his skill as a teacher, he was determined to be in the *competency building phase* (Fessler & Christensen, 1992).

Jan was in her seventh year of teaching in Oklahoma when schools closed due to the COVID-19 pandemic. She serves as a leader in the professional teachers' association. She had planned to leave her current school in at the end of the school year and take another job in the same state. She was in the *enthusiastic and growing career stage* having developed a high level of competence in her teaching, continuing to seek ways to grow as a professional, and serving in leadership roles in her school and professional organization (Fessler & Christensen, 1992).

Anna taught at a large, urban school district in Idaho as part of a program with 13 agriculture teachers. She was in her sixth year of teaching when schools closed. She had worked for a textbook reviewer and stay-at-home mom before entering the profession as a lateral-entry teacher. Because of the frustration she expressed with the administration and working conditions, Anna could be categorized as the *career frustration stage* (Fessler & Christensen, 1992). However, it seemed as if her entry to the frustration phase was recent and brought on by the change in her role because of COVID-19.

Henry was in his 37th year as an agriculture teacher in Florida when schools were shut down and is in the *career wind-down or career-exit stage* (Fessler & Christensen, 1992). His school

was in a rural area. Despite his longevity in the field, he has worked to learn new things and reinvent his program, changing from the teaching general production agriculture to biotechnology and horticulture.

The qualitative interview guide was developed by the researchers to examine the aspects of teachers' PDC. The one-on-one, semi structured interviews were conducted using a Zoom meeting platform in July and August of 2020. The interviews lasted approximately one hour and were conducted by an assistant professor in agricultural education. The interviews were recorded and transcribed using the automatic transcription feature available from the Zoom software. The transcriptions were cleaned and checked for accuracy by the researchers. Nvivo software was used to assist in the coding process. Open and axial coding procedures were used to analyze the data (Saldaña, 2015).

The qualitative standards of rigor were addressed by using commonly accepted methods to ensure trustworthiness (Lincoln & Guba, 1985). Data were collected and analyzed by one of the researchers. Additionally, peer debriefing occurred regularly between the researcher collecting and analyzing data and a second researcher. An audit trail was conducted through the data collection, analysis, and reporting process and reviewed by the research team to ensure dependability. Member checks were used to ensure credibility (Lincoln & Guba, 1985). A reflexivity statement is also important to establish trustworthiness (Creswell & Miller, 2000). The research team includes two agricultural education faculty who were former SBAE teachers and one graduate student who is a current SBAE teacher. The entire research team faced teaching impacts due to the COVID-19 pandemic. Dealing with our own teaching and personal challenges faced during the pandemic certainly influenced our interpretation of the interviews. Collectively, the researchers believe in the value of SBAE and the importance of teachers to implement the total program.

Findings

Three themes emerged from this study, each with two sub-themes. The first theme was how teachers responded to the initial changes at their school caused by COVID-19. The second theme explored how teachers had to shift program outcomes. The final theme that emerged was the well-being of teachers. A summary is presented in Figure 2.

Figure 2

Themes and Sub-themes
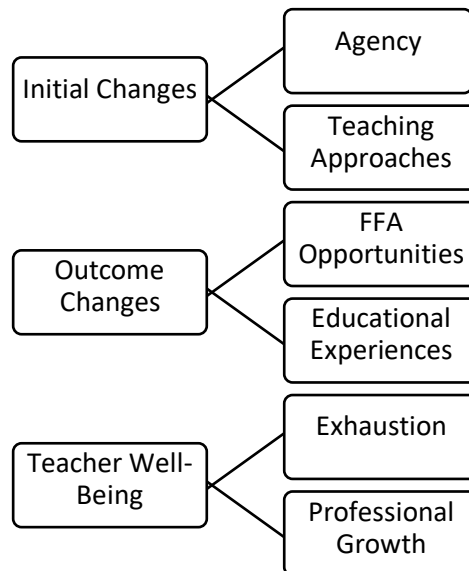
Initial Changes
Teachers reported facing challenges based on the initial changes due to COVID-19. Teachers felt a lack of agency and faced challenges in their instructional approaches.

Agency
When the schools closed because of the outbreak of COVID-19, the teachers did not seem to have any agency over the decision-making process for how things would continue. According to Anna, "we were asked to do nothing for two weeks, we kind of just paused and waited." Jan was at a large livestock show when the decision was made to shut down and some of her students did not get to engage in the culminating experience of their semester-long project. According to Jan, "[the decision] was out of my control, but the kids were really disappointed." Carl noted the directive from his school was to "to do a review. So, don't really try to introduce new concepts, because you're not there to explain it, or go over it."

Teachers also felt they had little agency over grades. According to the teachers, the schools had blanket polices about how work could be graded. In Anna's school, "the district froze grades . . . the grades could no longer go down [only] up." Jan similarly noted, "anyone who had a grade they liked in any class, you didn't have to do anything for the rest of the year." According to Carl, his school, "kind of said, hey, if they've done any kind of work at all, just give them the grade they would have had at the end of the third nine weeks." Carl went on to note, "I never got to see those [student work] packets. All we got was a yes, Little Johnny sent his back, little Sally never sent her's back. Do their grades accordingly." Henry stated, "they put some limits on work that could be graded . . . Electives could only have one graded assignment a week." He also noted, "we were required to be in contact with all of our students at least once per week."

However, the quality of contact was superficial. According to Henry "our contact could count as an email" or the "remind app."

Teaching Approaches

Teachers reported mixed opinions about being forced to use new teaching approaches. One of the teachers noted using "Alternative Methods of Instruction" packets to shift quickly at the initial onset of COVID-19. According to Carl, these packets were designed, "for snow days" so the students could do work from the packet and it "would count as a day of instruction for the state." These packets were already at the student's home and had two weeks of material for each of their classes. Similarly, Henry stated, "Going to the purely distance learning or online learning was not a real big adjustment at our school. We have been a one-to-one school for [two years] so students are already using the online platform."

Other teachers faced challenges. Anna found it difficult to engage students in online learning. According to Anna, "regardless of all my cheerleading that I was trying to do online, it [student engagement] just wasn't happening." Anna went on to share that students who were already satisfied with their grades did not wish to engage. Jan observed that students were more engaged in online meetings that focused on keeping in contact with each other, rather than delivering content. Jan concluded that "I think I had so many people show up to those zoom classes because they were there to see their friends." She found interactive approaches like trivia, scavenger hunts, and "two truths and a lie" were most successful.

Technology issues also impeded engaging in meaningful learning. Carl noted, "Our area of internet is a huge problem. A lot of our students do not have access to reliable internet." Henry echoed this, "our internet is so sketchy still in this county. … I was running from home off a hotspot on my phone." Henry also explained student challenges, saying "I know a lot of kids were having to pull into the school parking lot [to get Wi-Fi] and dump their assignments every week." Henry also discussed how this was a barrier to synchronous teaching,

> As far as maybe thinking about me videoing myself doing like a lecture or doing like a demonstration or something like that I didn't feel like knowing the situation a lot of kids in internet wise, I mean, and go sit in the parking lot of McDonalds on the Wi Fi and watch you for 30 minutes . . . So, I didn't feel like that was worth my effort to do that.

Outcome Changes

Teachers reported how COVID-19 forced the outcomes of their programs to change. They specifically noted changes related to FFA and other educational experiences.

FFA Opportunities

Carl noted the major goals of his program before the pandemic was to "bring back participation in FFA and just I wanted kids to get excited about FFA." Pre-COVID-19, Carl saw the FFA as a tool to keep students engaged and away from "drugs, alcohol, teen pregnancy." He said, "I want to turn this program around and give these kids some hope you know that there is something more." Henry had a goal to use the new affiliate membership for FFA as a way of

engaging more "Hispanic and black kids by saying, hey, you don't have to pay dues, you're already a part of this." However, when the schools closed, those goals were put on hold.

> COVID kind of destroyed that because then you don't have that face to face stuff with those kids to encourage them to do things and do sample stuff that they'd be doing an FFA contests in class to see if that perked any you know any interest in them, so that kind of hurt us on that because that's what's starting to be one of our pushes back there is to you know get more diversity in our, in our organization. (Henry)

Anna noted the shift happened without her even reassessing the goals, saying "I didn't even reassess thinking what my new goals might be actually. After that happened that's probably something I should [have done]."

Educational Experiences
The participants also noted specific learning experiences their students missed out on because of the school closures. When describing a school-based enterprise, Jan said,

> The kids were super bought into the herb business like we've spent all this time like coming up with our logo, they voted on the name. We had kind of like a general manager who would do the jobs every day. Like assign them and oversee them. We had taken pictures like we've done all the product lines . . . so they spent all this time doing this I ordered their stuff. . .that just completely shattered and ended and there will be no closure because they're not going to do horticulture next year, they're cutting out that program. So those kids really lost out.

Henry shared a similar experience with his horticulture class, discussing how hands-on learning opportunities were not possible. Without access to labs, students "just got to read about it and see diagrams of it over a PowerPoint" (Henry). Henry went on to say, "we couldn't deliver hands on activities . . . so it was just awful." Anna shared having to cut out a capstone experience and research projects she was planning to do." Despite the abrupt shift, the participants seem to look forward to the next steps. Carl stated, "You can't stop the train, but just, you can figure out where the next station is going to be. So just start with next year and start making a plan."

The teachers noted a hesitation in delivering new and engaging content to students. When Jan was asked if she taught any new content to her students, she stated, "Nope, and I probably regret that the most. I just didn't see how it was possible." She went on to note that trying something new in the classroom may not work even under the best of conditions, so she felt powerless to try new things during the pandemic because of limitations of what students had access to in their homes. In her words, "The 'what ifs' kept me paralyzed." When asked to describe her teaching goal after the shutdown, Anna stated, "sadly, kind of getting through the curriculum." Anna went on to share that before the shutdown she had hoped her students would "fall in love and have a passion for the stuff that I'm teaching." However, she had

challenges getting students to engage in the online learning. She shared that "maybe three four kids, and every class out of 37 that kind of hung in there, all of them already had A's."

Not all the teachers shared the same frustrations. Henry was able to find some innovative ways to engage students. He shared about having his students do a scavenger hunt for food items in their homes. Students had to read the nutrition labels to look for specific information and then take a picture of the item to submit. He did figure out that students "had to be in the picture where I know they didn't get it off of Google."

Teacher Well-Being
Teachers reported how COVID-19 impacted their well-being in both positive and negative ways. Two sub-themes emerged within this theme, exhaustion, yand professional growth.

Exhaustion
Teachers reported facing issues dealing with their own personal and professional stagnation when schools were closed. When schools closed, "the momentum just stopped like a giant train wreck" according to Carl. Anna noted additional responsibilities due to the closures, stating "I was in the greenhouse for probably four of five days planting plugs and caring for them." She continued, "My days ended up being like 12-hour days, almost every day with school then maybe two of three hours for my kids to help with their schoolwork . . . so it was actually really stressful." Jan noted being "exhausted" by the end of the day despite working less hours than normal. Jan noted that although she would have typically been spending extra time working with students after school in a normal year, when teaching by distance students asking for extra assistance proved to be exhausting. She said, "I hear it's because of this zoom fatigue or whatever and like this is not natural only be engaging with this part of our bodies."

For some, the added stress led to more serious issues than exhaustion. Carl stated, "I can't say I wasn't depressed after spring break." He went on to say,

> [My wife] was reading all this stuff everyday about, you know, COVID, she's ordering stuff online every day. Just truckloads of groceries and vitamins and, you know, we're not going to be able to shop . . . and on top of, you know, now everything I'd worked at the last year and half, two years, was just suddenly stopped. It really was depressing. It caused a lot of trouble at home and I hated it.

Professional Growth
The participants did find ways to engage in professional development opportunities during the shutdown. Anna worked closely with the other agriculture teachers at her school to work on curriculum alignment. According to Anna, "We've actually already gone through and realigned our district standards with our state standards when we use that time to really do some stuff, we needed to get done, but probably would have never found time to get done." The participants reported having professional development provided by their school that was largely ineffective. According to Jan,

> During the time everyone was just in triage mode. They were looking at the people that literally haven't logged into their Google classrooms ever set up and we're just like '*Oh, we need to support you'* and anyone that was above that was like '*you guys got it'*.

Anna noted that the professional development provided by her school was "100% around platforms, like how to use teams," which was not particularly helpful for her because she was "comfortable with it." Henry did not find the professional development to be particularly helpful. According to Henry, "I'm at the I'm at the stage in my career where about professional developed out." He went on to state, "I'm not averse to new things . . . but it's just at that point we were all about on brain overload."

Conclusions, Discussion, and Recommendations

The teachers in this study faced numerous challenges and successes in the Spring of 2020 due to COVID-19. Their personal accounts of their experiences were organized into three themes, each with two sub-themes.

Our first conclusion was that these teachers reported facing challenges based on the initial changes they were forced to make. They reported feeling a lack of agency in the process of making important decisions and frustrations about the ways they were being asked to teach. When viewing this through a PDC lens (Brown, 2009; Knight-Bardsley & McNewill, 2016), these changes impacted teacher resources (teacher beliefs and pedagogical content knowledge) as well as instructional resources (other tools and curriculum). Based on the impacts to PDC, it is easy to understand why teachers felt the way they did.

Teachers were clearly exhibiting a problem-solving coping behavior (Thieman et al., 2012) and wanted to have input in decisions which impacted themselves and their students. In the future, school administrators should consider the PDC of teachers and involve them in choices being made. SBAE teachers are best positioned to consider the unique features of their curriculum and needs of their students (Phipps et al., 2008).

Our second conclusion was that these teachers were worried about changes to outcomes of their programs. They specifically mentioned how they have had to adjust the FFA opportunities for students and how they also had to change the types of educational experiences they could provide to their students. When viewing these results through a PDC lens (Brown, 2009; Knight-Bardsley & McNewill, 2016), COVID-19 forced changes in classroom instruction, which affected program outcomes.

SBAE in the U.S. is typically operationalized in a 3-circle model including classroom/lab instruction, FFA, and Supervised Agricultural Experience (SAE) (Phipps et al., 2008). Although the PDC model only shows classroom instruction, the FFA and SAE pieces of the 3-circle model can be viewed as out-of-class instructional activities. In a typical SBAE program, the classroom/lab instruction part of the model is often operationalized through a wide variety of teaching labs and hands-on learning experiences for students (Phipps et al., 2008). Our results

revealed teacher frustrations about having to adjust their expected outcomes for all aspects of the 3-circle model. Teacher likely need professional development on how to deliver a comprehensive 3-circle SBAE curriculum when forced to use remote instruction practices. Professional development on how to engage students in meaningful SAEs in a distance learning environment could be beneficial. It would also be insightful to document actual student outcomes to see how they compare to teacher perceptions of outcomes.

Our third conclusion was that the well-being of these teachers was impacted both negatively and positively. A negative impact was the exhaustion faced by teachers in trying to manage all the teaching labs at their schools without student support and learn a new way to teach. A positive impact was the opportunities for continued professional growth. When looking at this through a PDC lens (Brown, 2009; Knight-Bardsley & McNewill, 2016), professional growth is an instructional resource. Interestingly, teacher exhaustion is not directly evident in the PDC model, however it is reasonable to assume that the physiological and emotional readiness of the teacher could have implications on all parts of the model.

Managing a comprehensive SBAE program in normal times requires teachers to maintain and manage a variety of teaching labs, typically with support of students enrolled in the program (Phipps, et al., 2008). Removing those students created a burden on teachers. In the future, school administrators should provide additional human resources to assist teachers, thus allowing teachers to focus more on teaching and less on program management. This would allow teachers to better capitalize on their felt need for professional development to improve their online teaching abilities. Organizations that provide professional development should work to create meaningful professional development to give SBAE teachers opportunities beyond the district offerings. Universities who prepare SBAE teachers should examine their curricula to see how they might better prepare preservice teachers for online and blended teaching.

Although this study does not allow for wide-spread generalizations about how COVID-19 affected all SBAE teachers in the U.S., the transferability highlights some potential issues which should be examined at the local level in case a similar event happens in the future. The complexities of a SBAE program, and perhaps other Career and Technical Education programs, create challenges for SBAE teachers that are different than other teachers with only classroom teaching responsibilities. School administrators should examine their policies and resource allocations to be better prepared if faced with a similar problem in the future.

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