

A Qualitative Study of Factors Influencing Teaching Self-Efficacy of Elementary Agricultural Education Teachers

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Abstract

In the realm of elementary agricultural education (EAE), the self-efficacy of educators plays a pivotal role in shaping both their pedagogical practices and self-concept. Grounded in constructivist theory and employing a phenomenological approach, this study investigated the factors influencing EAE teaching self-efficacy. At the time of the study, there were a total of 30 EAE teachers in Georgia. To gain an in-depth understanding, all 30 teachers with diverse backgrounds and teaching experiences were invited to participate. Of these, 18 consented, providing a rich sample for analysis. However, the decision to select 12 participants was influenced by the available time for conducting the focus group sessions and their current teaching responsibilities. Focus group sessions were conducted, with participants stratified by self-efficacy scores. Preliminary analyses dictated the threshold criteria for Focus Group 1 (scores ≤ 7) and Focus Group 2 (scores ≥ 8). Anchored in Bandura's (1986) triadic reciprocal determinism, the research accentuated the dynamic interaction among environmental stimuli, agricultural convictions, and behavior. Three key determinants emerged as influential to EAE teaching efficacy: personal values, boundary-breaking behaviors, and positive school culture. These determinants foster an EAE environment characterized by affective actions, contagious behaviors, and a constructive attitude. Given the implications of these findings, continuous and iterative evaluations of the EAE curriculum are paramount in educational research.

Introduction

The elementary agricultural education (EAE) program in Georgia was launched as a pilot between 2019 and 2021, facilitated through Georgia Senate Bill 330 (Agricultural Education, 2021). In March 2022, it transitioned into a permanent program under Georgia House Bill 1303 (HB 1303 Georgia House, 2022). Every elementary school in Georgia now has the authorization to establish an agricultural program and hire

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an agricultural education teacher to educate students from kindergarten through fifth grade. With the EAE program in its nascent stage, it is anticipated to undergo multiple evaluations to glean insights into its features and impact on student outcomes. A key challenge facing these EAE teachers is the delivery of effective, sustainable, and evidence-based instruction to meet their broader professional responsibilities to positively impact students' academic outcomes. Martinez (2022) argued that a critical determinant of the success of any new initiative is the confidence individuals have in their competencies throughout the implementation process.

As explored by Albert Bandura (1986, 1997), self-efficacy is defined as an individual's belief in their capacity to produce desired results, thereby influencing events shaping their lives and their ultimate success. Perceived self-efficacy plays a pivotal role in determining an individual's confidence, emotional well-being, successes, and failures. Without self-efficacy, individuals tend to withhold effort, perceiving their endeavors as unfruitful (Tschannen-Moran & McMaster, 2009). Teacher self-efficacy (TSE) has garnered significant attention in research due to its profound influence on students' knowledge, values, behavior, and academic performance (Delinger et al., 2008; Tschannen-Moran & Woolfolk Hoy, 2007). Furthermore, a teacher's self-efficacy, grounded in their beliefs about their teaching competencies, is intrinsically tied to effective classroom management (Dibapile, 2012). Supporting this, Bruce et al. (2010) highlighted a direct relationship between high teaching efficacy, supportive workplaces, rigorous academic standards, and positive teacher-student interactions. Elevated levels of teacher self-efficacy have been linked to teaching effectiveness and student achievement (Klassen & Tze, 2014). Hence, the success of EAE teachers is pivotal for agricultural education, especially considering that such courses are often elective and optional in many schools (Talbert et al., 2022).

Purpose and Research Questions

Within the constructivist paradigm, this investigation aimed to delve into the experiential realm of EAE teachers, examining their experiences, perceptions, and beliefs concerning the determinants of their teaching self-efficacy and its subsequent impact on their teaching perspectives. Anchored in the American Association for Agricultural Education National Research Agenda's Research Priority 4: Meaningful, engaged learning in all environments (Roberts et al., 2016), the study's purpose is twofold: to dissect the myriad factors sculpting teaching efficacy and outcome expectancy, and to refine our understanding of the EAE teaching self-efficacy construct through the lens of hermeneutic phenomenology. This inquiry is guided by the following research questions, which provide a structural framework for the study:

1. What factors contribute to EAE teaching self-efficacy?
2. How do these factors influence on EAE culture?

These questions seek to illuminate the multifaceted nature of teaching self-efficacy within the specialized context of EAE, aspiring to contribute a nuanced comprehension of how educators interpret and integrate their beliefs into their professional practices and cultural milieu.

Conceptual Framework and Literature Review

This study is anchored in Bandura's (1986) triadic reciprocal determinism (TRD) within the broader context of social cognitive theory (SCT) (Schunk, 2020). TRD provides the lens through which we can begin to understand the interplay among environmental factors, agricultural beliefs (personal determinants), and agricultural practices (behavioral determinants) in the context of enhancing the teaching self-efficacy of EAE teachers.

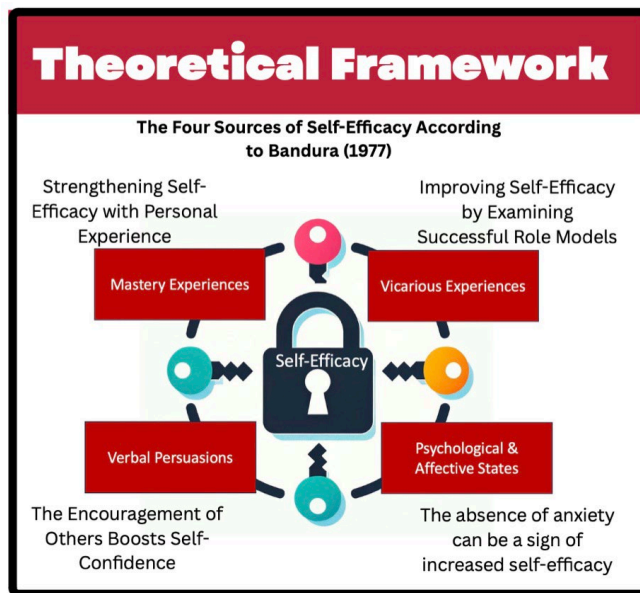
Bandura (1986) posited that human behavior emerges from a dynamic interaction among the individual, their environment, and their actions, forming a reciprocal and interconnected relationship. Each

of these influences interplays and mutually impacts the others. Specifically, individual thought processes shape behaviors and influence environmental contexts, while actions and environments reciprocally influence individual cognition (Schunk & DiBenedetto, 2020). This intricate relationship is pivotal for individuals in setting aspirations and predicting outcomes. Integral to this concept is the inclusion of self-efficacy, emphasizing proactive individual agency in controlling their thoughts, emotions, and behaviors influenced by past experiences and environmental contexts (Rowston et al., 2021). Bandura (1997) outlined multiple sources contributing to self-efficacy as showed in Figure 1, including:

1. Mastery experiences, where personal achievements bolster self-efficacy.
2. Vicarious experiences enhance self-efficacy by observing successful role models in challenging contexts.
3. Verbal persuasion, where others' reassurances amplify an individual's self-confidence.
4. Psychological and affective states, which underscore the absence of anxiety in challenging situations as a marker of heightened self-efficacy.

Figure 1

Sources of Self-Efficacy



Note. This model summarizes the four sources contributing to self-efficacy as outlined by Bandura (1977): mastery experiences, vicarious experiences, verbal persuasion, and psychological and affective states (Helm et al., 2024).

Teachers with robust self-efficacy exhibit superior instructional quality (Holzberger et al., 2013) and elevated teaching performance (Klassen & Tse, 2014), coupled with enhanced job satisfaction (McKibben et al., 2021). Such educators are adept at tailoring their teaching methodologies to cater to diverse learners (Bandura, 1986). Consequently, students are more engaged, achieve better academically, and perceive their educators as genuinely invested in their success. Additionally, empirical evidence suggests that teachers' encouragement and behavior can steer students toward STEM career choices (Faitar & Faitar, 2013).

Methodology

Teachers' beliefs regarding their personal and professional efficacy significantly influence their self-perception. Self-perception is an overall view of oneself that is presumed to be formed through personal experience and evaluations adopted from others (Bandura, 1997). This includes the confidence teachers have in their ability to teach effectively, manage classrooms, and positively impact student outcomes. This study aimed to elucidate the factors influencing EAE teaching self-efficacy using a constructivist lens. Embracing a phenomenological approach, we posit that individuals' lived experiences shape their interpretation of reality (Baker, 2022).

Participants Selection

Data were gathered from the Georgia agricultural website and consultation with an agricultural education professor at the University of Georgia (personal communication, August 2022) to ensure a representative and comprehensive sample. Email was sent to 30 EAE teachers to participate in this study. From this cohort, 18 educators agreed to participate, ensuring a robust and varied sample for analysis. Central to the study's design were the focus group sessions. Participants were categorized based on self-efficacy scores using a stratification method.

The teachers' sense of efficacy scale (TSES) comprises a 24-item scale that assesses teachers' confidence in their ability to influence student outcomes (Tschannen-Moran & Hoy, 2007). Teachers rate each item using a 9-point scale that ranges from 1 (Nothing) to 9 (A Great Deal), indicating the degree to which they believe they can impact students' beliefs in their academic success. When responding, teachers were encouraged to consider their skills, the resources available to them, and the opportunities they have in their roles as EAE educators. The cut-off points for Focus Group 1 (scores ≤ 7) and Focus Group 2 (scores ≥ 8) were established based on a preliminary analysis of the score distributions to ensure equitable representation (Tschannen-Moran & Hoy, 2007). The participants were divided into two groups to examine differences in their self-efficacy levels and the factors influencing these levels. This division allowed for a comparative analysis to understand how varying degrees of self-efficacy among EAE teachers might affect these influencing factors. Six teachers were purposively selected to participate in Focus Group 1, and six in Focus Group 2 (Cheng, 2007). The decision to select 12 participants was influenced by the available time for conducting the focus group sessions and their current teaching responsibilities. Participants were required to have a full time EAE teacher appointment to ensure they had sufficient experience and engagement in agricultural education at the elementary level. Although these sessions were primarily conducted via Zoom for its accessibility and the preference of the participants (Archibald et al., 2019), precautions were taken to address potential limitations of online discussions. These precautions included ensuring stable internet connections and enabling video to observe non-verbal cues. The semi-structured interview guide was rooted in a rigorous literature review on teachers' self-efficacy. It comprised open-ended questions designed to facilitate rich discussions and elicit profound insights into participants' experiences, perceptions, and beliefs regarding EAE. The guide was piloted initially with a small group of educators to ensure clarity and relevance (Majid et al., 2017). Both focus groups were conducted by two facilitators (Roulston, 2022). With participants' explicit consent, focus group sessions were audio and video-recorded and transcribed verbatim. In addition to acquiring consent for audio and video recording, measures were implemented to protect participants' identities. Pseudonyms replaced real names in transcriptions, and all identifying details were redacted. Audio files were securely stored and destroyed post-transcription to safeguard participants' confidentiality.

Table 1*Background of Participant Teachers*

Level of Education	Teaching Self Efficacy	Context of Where you grew up	Context of your School	Years of Teaching Experience
FG 1				
Master	5.50	Suburban	Rural	less than 3
Bachelor	5.67	Rural	Rural	3-7 years
Master	6.00	Suburban	Urban	more than 13 years
Bachelor	4.25	Rural	Suburban	more than 13 years
Doctorate	6.75	Suburban	Urban	more than 13 years
Bachelor	6.17	Rural	Rural	8-12 years
FG 2				
Master	8.33	Rural	Rural	8-12 years
Doctorate	7.08	Rural	Rural	8-12 years
Specialist	7.83	Rural	Rural	more than 13 years
Master	8.08	Rural	Rural	8-12 years
Doctorate	8.33	Suburban	Rural	more than 13 years
Specialist	7.50	Rural	Rural	more than 13 years

Note. Focus Group 1 comprises teachers with average to low teaching self-efficacy. This is a significant variable, as teaching self-efficacy is known to influence teaching behaviors and student outcomes (Bandura, 1997; Tschannen-Moran & Hoy, 2007). Focus Group 2 consists of teachers with high teaching self-efficacy, all of whom hold advanced degrees and possess over eight years of teaching experience. Additionally, members of Focus Group 2 have reported that they currently teach in rural areas.

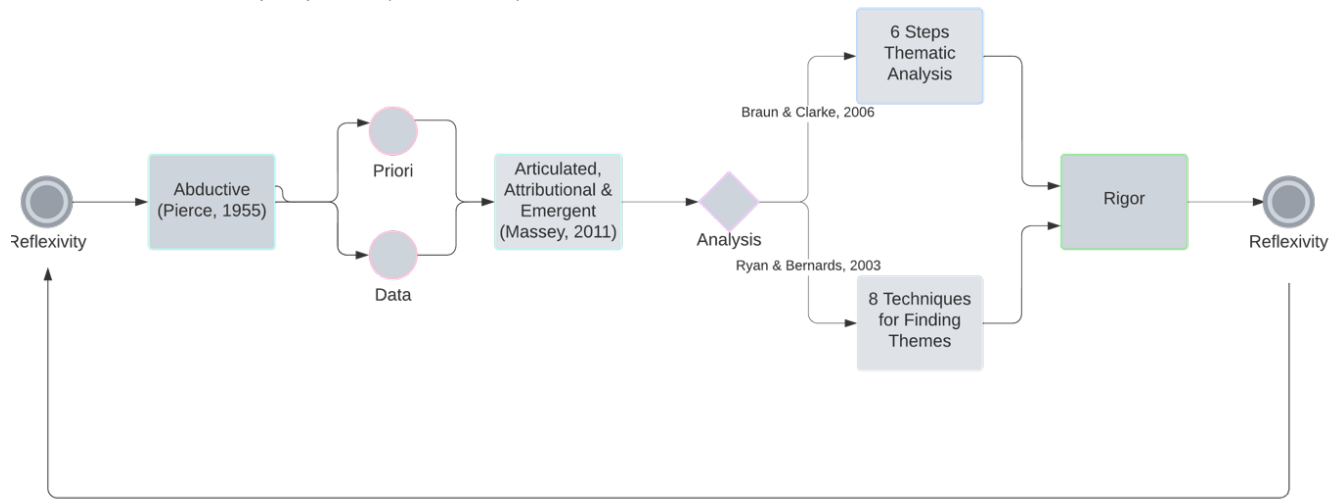
Hermeneutic Circle of Reflexivity and Analysis

The hermeneutic circle is a fundamental concept in hermeneutics, describing the process of understanding as an interaction between the whole and its parts (Grondin, 2015). This concept suggests that we always interpret and understand based on our pre-existing assumptions. The circle emphasizes that understanding the parts of a text depends on having a general idea of the whole, and understanding the whole depends on comprehending its parts.

Heidegger (1927) argued that the key is not to escape this circle but to enter it correctly, elucidating understanding through continuous interpretation. Gadamer (1990) expanded on this idea, proposing a dynamic process where the interpretation of parts is guided by an understanding of the whole, which is then revised through further interpretation.

Grondin (2015) described the hermeneutic circle as a positive condition for achieving deeper understanding within the humanities. He emphasized that understanding is always influenced by presuppositions shaped by culture, history, language, and education. This circle is not a flaw but a necessary feature of the interpretive process, enabling a richer and more nuanced comprehension of texts and meanings. The analytical paradigm of this investigation is anchored in the hermeneutic circle, as illustrated in Figure 2, initiating and concluding with a robust reflexive process to foreground the influence of the researcher's perspective.

Figure 2

Hermeneutic Circle of Reflexivity and Analysis

Note. This figure depicts the hermeneutic circle framework guiding the study, rooted in a cycle of reflexivity that encompasses personal and transpersonal dimensions to acknowledge and account for the researchers' influences. The research journey commenced with an abductive approach that synthesized a priori frameworks with inductive data, sorting information according to Massey's (2011) classifications of articulated, attributed, and emergent themes. Following the structured thematic analysis procedures of Braun and Clarke (2006, 2012) and utilizing Ryan's and Bernard's (2003) techniques, the study identified robust themes. Rigor was fortified by member checking peer debriefing, inter-coder reliability and integrating reflexivity, ensuring a recursive process that progressively refined the researchers' understanding.

This reflexive methodology incorporates elements of both personal and transpersonal reflexivity, thereby deepening the interpretive engagement with the data corpus. Such a dialectic interplay between the researcher's a priori theoretical commitments and the emergent data-derived insights is instrumental in cultivating interpretations that are both contextually resonant and reflexively sophisticated (Creswell & Creswell, 2018). The study adopts an abductive methodological approach (Vila-Henninger, 2022), which fosters a synthesis of deductive theoretical framing and inductive empirical inquiry. This methodological framework utilizes a categorization schema delineated by Massey (2011) as follows:

1. **Articulated** – This category encompasses information that participants explicitly communicate in direct response to the inquiry at hand. It encompasses direct answers to the moderator's specific questions and probes and the substantive dialogue that unfolds among participants as they engage with these queries.
2. **Attributional** – This classification pertains to the data derived from systematic hypothesis testing and thematic coding rooted in theoretical constructs, aiming to elucidate its significance concerning the research themes of interest. Such data is yielded from meticulously designed processes and the use of an interview guide structured to elicit participant engagement on pertinent topics, even in the absence of direct questioning.
3. **Emergent** – This category refers to insights related to collective meanings, dynamics, and standards within the group that offer novel perspectives and foster the generation of new

hypotheses. It arises spontaneously from the participants' interactions and commentary, contributing significantly to the themes that emerge inductively. This contrasts with the attributional data's more deductive, a priori themes, capturing the implicit normative beliefs that inform social conduct and the latent group dynamics that typically remain unspoken and outside the realm of conscious articulation thereby facilitating a nuanced exploration of the data yielded from focus group interactions.

Ensuring Trustworthiness and Dependability

The use of MAXQDA 2022 (VERBI Software, 2022) for data analysis underscored the study's commitment to employing advanced qualitative data analysis software, enhancing the efficiency and depth of thematic analysis (Elliot, 2018). The thematic approach, as delineated by Braun and Clarke (2006; 2012), provided a systematic and transparent framework for data analysis, encompassing six distinct phases: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining themes, and reporting the findings. This methodology was further enriched by employing Ryan's and Bernard's (2003) eight techniques for identifying themes, thereby ensuring a comprehensive and nuanced thematic exploration of the data.

To enhance methodological rigor, the study used investigator and theoretical triangulation using the abductive method (Bans-Akutey & Tiimub, 2021). Investigator triangulation involved multiple researchers collecting and analyzing data (Creswell & Cresswell, 2018; O'Connor & Joffe, 2020). Specifically, two researchers conducted the interview, with one facilitating the discussion and the other taking notes (Natow, 2019). Inter-rater reliability was achieved by having researchers independently code the same data, assess their agreement, and resolve discrepancies through discussion (Braun & Clarke, 2013; O'Connor & Joffe, 2020). Theoretical triangulation applied multiple theories to interpret data, using the abductive method to generate and test hypotheses, enriching the analysis with diverse perspectives. Corroborative strategies, such as member checking and peer debriefing were used to confirm the accuracy and authenticity of the data (Cresswell & Poth, 2018). This study follows phenomenological sufficiency, ceasing data collection once conceptual depth is achieved, ensuring a diverse and meaningful exploration without unnecessary repetition (Braun & Clarke, 2019b; Low, 2019).

Reflexivity Statement

As the principal researcher in a team of five, I recognize the significant impact of personal biases, perspectives, and identities on scholarly work. As Krieger (1991) notes, reflexivity in research underscores the need for awareness of biases, positionality, and situationality rather than their elimination. My viewpoints, shaped by my life experiences and cultural background, permeate my research. Swaminathan and Mulvihill (2018) assert that confronting and embracing bias is crucial, while Bergen and Labonté (2019) emphasize recognizing that preconceptions can change over time. As a woman and educator rooted in Filipino and American cultures, my positionality influences my approach to EAE, integrating collaborative and individualistic teaching methods. Residing in Georgia post-pandemic, my situationality shapes this research by focusing on sustainability and resilience in education. Acknowledging how my perspectives, values, and beliefs, shaped by gender, socioeconomic status, age, sexual orientation, ethnicity, language, culture, personal history, and 15 years of teaching experience, steer the research, I strive for an authentic and insightful exploration of the phenomena under study. This reflexive approach enhances the rigor of my research and aims to enrich agricultural education with diverse cultural insights and adaptive, resilient teaching practices.

Limitations of the Study

This qualitative investigation employed a purposive sampling methodology to delve into the experiences and insights of elementary agricultural education teachers in Georgia. The principal investigator limited follow-up to non-respondents to a single reminder email, respecting their potential disinterest in contributing. The study concentrated on two focus groups, comprising 12 teachers out of the 30 practicing at the time of the investigation. This intentional selection was designed to garner in-depth understanding of the educational strategies and viewpoints within this particular setting. It is crucial to acknowledge that the findings are context-specific, serving not as a broad generalization, but rather as a source of profound, localized knowledge that could inform subsequent inquiries in similar contexts. The results, while not universally applicable, contributed valuable perspectives and provoked further questions for future research endeavors. By focusing on a select group of participants, the research embraces a depth of exploration but also accepts the constraints it imposes on its breadth. Experiences of those outside the selected sample, especially in regions where agriculture plays a differing economic or cultural role than in Georgia, remain unexamined and could vary substantially (Creswell & Creswell, 2018).

Findings

A teacher's perceived self-efficacy is an important contributor in initiating performance and putting effort into fulfilling different levels of tasks, whatever the underlying knowledge and skills might be. The participants in this study shared their experiences, beliefs, and perceptions about EAE and how their self-efficacy influenced the design and layout of their own class experiences and how it affected interactions with their students, parents, administrators and community members.

RQ1: *What factors contribute to EAE teaching self-efficacy?*

Three themes emerged from the participants that identified factors which contributed to EAE teachers in Georgia teaching self-efficacy. These included personal values, boundary-breaking behaviors, and positive school culture.

Personal Values

Personal values served as the cornerstone of motivation and inspiration for teachers, driving them to excel in their professional duties and to face challenges with resolve. Schwartz (2012) conceptualized personal values as goals that, while varying in importance, significantly influence the direction of an individual's life. This influence was evident among the study participants, nearly all of whom cited their family and upbringing in agricultural settings as the roots of their passion for agriculture. For these teachers, personal values were not abstract concepts but lived experiences that shaped their identity and career choices. Bob, for example, shared vivid memories of his upbringing:

My grandfather and uncle were essentially commercial farmers, cultivating crops like soybeans, peanuts, cotton, and all that good stuff. Throughout my life, my family maintained a garden, which to me as a child seemed more like a farm – it was vast, spanning several acres. My grandfather lived next door, also owning a few acres. We had an entire field of corn, as well as extensive plots of peas, beans, and the like. Growing up, tending to the garden was a part of my everyday life. We consistently raised chickens and pigs among other livestock. It was an activity I was always deeply involved in.

Similarly, Leo shared his educational journey, highlighting the impact of his formative years:

Agriculture has always been a fundamental part of my life. I progressed through an exceptional middle school and high school AG program, where I was very involved. I can

confidently attribute my decision to pursue a degree in agriculture to my experiences in early years and the influence of a particular teacher.

Participants also highlighted the broader implications of instilling agricultural values early in education. They advocated for the introduction of agricultural education in elementary schools, emphasizing its potential to foster healthy eating habits and provide practical life skills. Tanya highlighted the long-term benefits of such education, noting:

...the earlier you introduce it in elementary school, those habits become embedded and become part of who they are. I think it's incredibly important for our kids to understand that. They then share that with their family or their friends, and it only takes one person to truly impact the culture, or to influence other people. So, the overarching goal is definitely to shift the entire mindset regarding your health, understanding where your food comes from, and to be that individual who acts as a change agent.

Ruby added, "When we reach the kids at this young age, we're opening up so many more doors for them in life as they go through." Joey expanded on the versatility of agricultural education, explaining, "It fits into any subject; there are lessons for plant science, space, and even basic skills like using a tape measure and reading the numbers on it." Participants collectively agreed that EAE teaches more than just farming practices; it also imparts essential soft skills that are crucial for social interaction and collaboration. Sheila shared her approach, starting with the basics: "I begin by teaching my students soft skills, such as how to shake hands, the importance of facing the person they are talking with, and how to communicate and take responsibility effectively."

The discussion then turned toward the challenges, with Tanya raising concern about the marginalization of science in the elementary curriculum, while Joey emphasized the need for advocacy: "People have to put pressure on all elementary schools to start this program (EAE)." This call to action resonated with the belief that EAE is not just an educational program but a transformative experience that can shape students' futures.

Boundary-breaking Behaviors

In EAE, teachers are often seen as pioneers on the frontiers of learning, tasked with the mission to not only impart knowledge but to inspire a generation to think beyond traditional classroom walls. The participants of this study embodied the spirit of innovation and adaptability, embracing their roles as catalysts for change. Nadia, acknowledged the inevitable ebb and flow of the teaching experience. "It will not be a successful day every day," she admitted, but swiftly added, "make those disappointing occurrences a teachable moment." This sentiment of turning challenges into opportunities was echoed by Ruby, who advised her peers not to let setbacks unsettle them. "Don't let it ruffle your feathers," she shared, underscoring the importance of adaptability, "it's good realizing the importance of being flexible." Judith also expanded on this need for flexibility, noting the diverse array of interactions teachers manage daily:

So you're dealing with a lot of different people, not just teachers. You're engaging with individuals from outside the classroom, which means you have to be flexible in almost every situation. With our program being new, we constantly have people coming in and out. Not every time is ideal for visitors, but you just always have to be prepared. Being prepared means being ready to 'be on' and having your own behavior management system in place in your classroom. You may need to adapt or adjust how you manage behavior or your incentives. Our school, implementing a specific educational scheme, required me to integrate our PBIS model with our activities. I've established a behavior management

system that differs for the lower grades versus the upper grades, because not all methods work for every age group. So being flexible and taking charge of your space is crucial, as at any moment, the door may open, and there are four or five people coming in to see what your class is doing. Recognizing and understanding that whether we're discovering something new or breeding mealworms for a project, being able to maintain control is incredibly important.

Participants stipulated the importance of always trying things out and resilience on those plans that did not work as planned. Tanya brought to light another facet of an EAE teacher's life and shared:

If you're not careful, you could spend your entire life planning in the evenings and preparing for the next day, or during breaks. You might find yourself at the school all the time, watering the garden, feeding chickens, all of that. You really have to organize yourself along with the people in the community and try to have a plan. Try to get ahead of it before time, especially if you may be going on vacation and might need someone to help out. Often, we take on everything ourselves, and it becomes extremely burdensome. And those are some of the lessons you learn the hard way, especially when the program is so new. Initially, you may not have clear ideas of what to do because everything is so fast-paced. However, it's not until I collaborate with other elementary AG teachers that I realize, 'Hey, maybe I should try this or that.' So, I think the collaboration piece is incredibly important because the program is so new.

Collectively, the participants recognized that disappointments and challenges were part and parcel of life's journey. These hurdles are not just obstacles but stepping stones to becoming better educators and nurturing resilience within themselves and their students. They unanimously agreed that overcoming these challenges not only enhanced their well-being but also fortified their capacity to serve as agents of change for their students.

Positive School Culture

The journey of establishing the EAE program in a school is akin to planting a seed in fertile soil - the process requires care, attention, and a nurturing community to flourish. The soil is analogous to the culture with which exists in one's school. Juliet faced the initial challenge of cultivating this supportive environment. Juliet shared:

When it was first introduced that we would be running the pilot [EAE] program for our school, the staff wasn't on board, and the children didn't know what it was. I felt like I had to really introduce it in a way that would be super impactful, and I knew that they would feed off of my energy. Teachers didn't get on board right away because they didn't quite understand what it was. So, I took the approach of explaining to the teachers, "Hey, support your kids as we're doing this, because if you show that you're motivated about it, it'll become contagious. Because if I'm generating a lot of positivity and it's upbeat, and they come back to tell you, support them in a positive way, even though you may not be an 'outside person', you know, you may not like gardening or stuff that's on the premises. Still, be supportive because you never know how adults impact children. So the first couple of weeks, they didn't quite support. Once they saw my energy and how I got the community involved, and, you know, wrote out grants to make sure that we were able to get the funding that we needed, I also made really big tweets and made sure social media was super involved. I invited stakeholders and parents to whatever we were doing. I always included people in our community. Within a month or so, I could see that the whole attitude changed because it was a culture change for everybody in the building, and they were just super

receptive. It put a different spin on getting partnerships with our school and changed the attitude towards teachers as well. They were more willing to help. And I think it just made a difference in how the program was received from the beginning versus how it transformed to where it is now.

Echoing Juliet's experiences, Fane emphasized: "establishing relationships with those academic teachers, parents, and administrators can make your life easier." Juliet added, sharing a light-hearted rivalry about which class students prefer, with agriculture now leading the way:

Just like everyone in my county, there's been full support. I always joke with the teachers and with some students; we like to see who is the favorite among the classes. And now, I think agriculture is in the lead, I believe I have outdone the other teachers. So that's a running joke we have: where do the students want to go? The kids are loving it, the teachers are loving it, and my administration is also providing 110% full support. Over at the board office, I enjoy collaborating a lot with my middle school and high school AG teachers, as well as with the young farmer programs. We try to get the community involved as much as possible.

Nadia affirmed and added that building a relationship with the students "means a lot more than you think." Bob also shared that communicating with everyone involved in the student's education is very important." Leo admitted, "you do not have to be a hero or know everything, do not be afraid to ask for help because you are not in this alone." Bob concluded with a strategic insight on community engagement by stating:

...develop support with your community, to reach out to your Georgia Farm Bureau, to reach out to the different businesses in the community ... building those relationships with academic teachers and teaching your class as a support to academic classes is something that will really help you have an enjoyable and effective experience.

Through their shared narratives, it's clear that a positive school culture, founded on strong relationships and open communication, is not just beneficial but essential for the success of EAE programs and the self-efficacy of their teachers.

RQ2: How do these factors influence an EAE culture?

To address the second research question, three themes emerged, detailing the influence of teaching self-efficacy factors, identified from the first research question, on EAE culture. These themes were affective actions, contagious behaviors, and constructive attitudes.

Affective Actions

Elementary agricultural teachers play a vital role in shaping students' understanding of farming, food, and the environment. To create meaningful learning experiences, teachers must carefully plan lessons that incorporate hands-on activities and real-world applications that help students build essential skills. Participants emphasized that well-structured lessons not only enhance classroom performance but also prepare them with practical knowledge they can apply in their daily lives, such as problem-solving, teamwork, and an appreciation for agriculture. Judith highlighted the power of collaboration, stating, "if they are engaged in working together, getting along, and getting stuff done, those are the good days." Tanya added, "when students use tools they've never used before, build anything that finds it cool, and when they take pride of what they do, that is success." Leo elaborated on the impact of hand-on learning in fostering affective engagement:

When students step outside and actually get their hands in the soil, it changes everything. They start asking questions, making connections, and seeing the relevance of what we're teaching. It's not just about growing plants or raising animals, it is about growing confidence, responsibility and other skills that they will carry with them for life.

As EAE teachers develop their self-efficacy, they place increasing importance on affective learning. They seem to value more the act of making sure that students get experiences with which they can connect to their everyday life. Participants agreed that it is not the number of concepts that students can repeat or worksheets they can complete but the importance of students having fun, participating and engaging in class activities.

Contagious Behaviors

In EAE, teachers have not only imparted knowledge to their students but also ignited a spark of enthusiasm in these minds that transcended the classroom. Participants spoke passionately about how their lessons create a ripple effect, influencing peers, families, and the broader school community. Judith shared:

What's great about this program is that you start to see your students have these conversations outside of your classroom with other students and teachers, you will hear them talk about an AG (agriculture) activity in the hallway or in the cafeteria...it is fulfilling.

Fane proudly recounted a story that highlighted this impact:

Parents have come to me asking, "How did you get my child to enjoy eating squash? I can't even get them to taste it at home, and yet you can get them to eat it raw at school." I always tell them that when kids plant it and grow it themselves, they're more likely to try it. They're more willing to try new things that way.

Nadia shared an emotional memory from a former students' family:

Her family told me this year that ever since she was in third grade, many years ago, every year they have to plant sunflowers in their yard because she did that at school. Some of the kids that I have had graduated and moved on, but I've been at the school for 20 years, and I still see the traditions they started in my class continue in their families.

It is the fulfillment that teachers in this study felt when they realized that the lessons they shared with their students have become a part of the lives of their students and likely their students' children. These stories suggest that EAE classrooms serve as the birthplace of family traditions noticed in agriculture, reinforcing the idea the agricultural education extends far beyond the classroom and school walls, shaping lifelong habits and values

Constructive Attitude

Agricultural education lessons are designed with mostly hands-on activities aligning with pedagogical understanding that tactile experience supports learning. What stood out in the conversations with participants in this study was the enthusiasm they observed when their students connected objects or situations learned in previous lessons they completed. Judith shared:

when we're wearing masks and I have a few students that don't speak a lot and one of these kids points at my mask and talked about bees because she sees honeybees on my mask, and she correlates that in agriculture.

Kelsey also recounted,

One of our yearlong projects is to develop and maintain our school farmer's market so they will be in charge of building a business plan...they came up with some of the best ideas and used previous lessons that I thought they were not interested in but they remembered and that made me proud.

It appears that EAE teachers' self-efficacy impacts their students' attitude to use information presented and connects it to previously acquired knowledge. The participants also agreed that it was not just the concepts, knowledge and skills that their students were building, it was also their enthusiasm to learn and use agriculture in their everyday lives. Bob emphasized this transformation "they realized that it affects them as well, that is why they become on board with ideas and activities they weren't on board with at the start."

Discussion

The interplay between self-efficacy and behavior is dynamic, as teachers' beliefs about their abilities can influence their instructional practices while simultaneously being shaped by their experiences in the classroom. Bandura (1997) posited that self-efficacy contributes to an individual's ability to exercise personal control by reinforcing behaviors that lead to desired outcomes while mitigating those that result in undesired ones. This framework provides a useful lens for understanding how teachers develop confidence in their instructional capabilities over time. Rather than being a fixed trait, self-efficacy is fluid and continuously shaped by professional experiences, interactions, and contextual factors within the educational environment.

Findings from this study suggest that teachers' self-efficacy is reinforced not only through their internal beliefs but also by the broader school and community culture. Participants emphasized the value of partnerships with local farmers, agricultural businesses, and extension agencies in providing experiential learning opportunities that extend beyond the classroom. These external supports contributed to teachers' confidence in delivering agricultural education effectively. Importantly, the sources TSE appeared consistent across varying levels of self-efficacy, as both Focus Group 1 and Focus Group 2, regardless of their initial self-efficacy levels, identified similar factors influencing their self-efficacy development. This finding suggests that while individual levels of self-efficacy may vary, the mechanisms through which it is cultivated remain stable across. Additionally, encouragement and school support emerged as critical contributors to self-efficacy development. While verbal affirmations played a role, participants highlighted the significance of structural support mechanisms, such as professional development opportunities, collaborative teaching experiences, and recognition of teacher contributions by school leadership. These findings align with prior research suggesting that sustained institutional support fosters teacher resilience, engagement, and instructional effectiveness (Tschannen-Moran & Woolfolk Hoy, 2007). In this study, participants indicated that such support mechanisms not only enhanced their teaching practices but also reinforced their long-term commitment to EAE. Given these findings, self-efficacy can be leveraged as a strategic component of professional development initiatives aimed at strengthening agricultural education. Enhancing teachers' self-efficacy has the potential to improve instructional strategies, increase educator commitment, and refine classroom management techniques. This is particularly relevant in the context of EAE, where effectively imparting agricultural literacy to younger students requires confidence and adaptability. Several participants noted that, because EAE is still a relatively new initiative in Georgia, an adaptive mindset was crucial in recognizing and capitalizing on teachable moments that arise within the activities.

This study underscores the transformative potential of EAE when facilitated by teachers who possess strong self-efficacy and are supported by a school and community culture that actively nurtures their professional growth. Participants emphasized that self-efficacy alone is not sufficient, ongoing school and community engagement play a vital role in reinforcing teachers' confidence and effectiveness in the classroom.

Conclusions, Implications & Recommendations

Elementary Agricultural Education (EAE) extends beyond traditional curriculum development, it transforms teacher-student interactions and fosters meaningful learning experiences that have lasting effects beyond the classroom. This study underscores the critical role of self-efficacy in shaping these interactions. Teachers who are deeply rooted in agricultural values and drawing from personal experiences create learning environments that are not only informative but also deeply engaging and impactful.

Building on this foundation, research by Sheehan and Moore (2019) and Dishon-Berkovits (2019) highlights that when educators possess a strong foundation in core agricultural values, their ability to engage and inspire students significantly improves. This engagement is transformational, turning standard lessons into immersive, real-world experiences that foster critical thinking and long-term knowledge retention. Supporting this notion, Jensen et al. (2016) delved deeper into how authentic, hands-on learning experiences strengthen teaching efficacy, demonstrating that practical applications of agricultural education reinforce both educator confidence and student engagement.

Key Findings and Implications

The Role of Personal Values in EAE

This study found that personal values play a foundational role in shaping self-efficacy among EAE teachers. Participants consistently referenced their agricultural upbringing and experiences as sources of motivation, driving them to create meaningful and engaging learning spaces. Furthermore, teachers expressed the importance of instilling agricultural values in students from an early age, reinforcing the idea that EAE is not just about technical skills but also about fostering a deep, lifelong appreciation for agriculture and sustainability.

Boundary-Breaking Behaviors and Adaptability

The study also revealed that effective EAE teachers exhibit boundary-breaking behaviors, demonstrating flexibility, resilience, and innovation in their approach to teaching. Participants emphasized that teachable moments arise organically, requiring them to adapt to different classroom dynamics, visitor interactions, and evolving student needs. Teachers frequently engaged in problem-solving and collaboration with colleagues and community members, highlighting the importance of professional networking and knowledge-sharing in refining their pedagogical approaches.

The Impact of Positive School Culture and Community Collaboration

A supportive school culture was identified as a critical factor influencing teacher self-efficacy and the success of EAE programs. Participants shared experiences of initial resistance from colleagues and administrators but noted that strong leadership, proactive outreach, and visible student enthusiasm ultimately shifted institutional attitudes. Collaboration with FFA, 4H, farmers' organizations, and extension programs proved instrumental in expanding learning opportunities, increasing student engagement, and strengthening agricultural literacy. These findings reinforce the importance of building relationships with

academic teachers, parents, administrators, and community stakeholders to ensure sustainable program development and broader educational impact.

The Universal Nature of Self-Efficacy Sources

Another significant finding was that the sources of self-efficacy, mastery experiences, vicarious experiences, verbal persuasion, and psychological feedback were consistent across teachers, regardless of their initial self-efficacy levels. This suggests that all educators, whether novice or experienced, benefit from similar mechanisms of reinforcement and support. Recognizing this consistency allows for targeted professional development initiatives, ensuring that teachers receive the necessary guidance, mentorship, and experiential learning opportunities to strengthen their self-efficacy over time.

Recommendations for Additional Research in EAE

1. Longitudinal Impact Studies

Future research should incorporate longitudinal studies to examine the long-term effects of EAE on students' academic and career trajectories. A suggested approach would be tracking a cohort of students from their introduction to EAE through their higher education and career paths, analyzing the correlation between early agricultural education exposure and subsequent engagement in agricultural sciences, sustainability initiatives, or leadership roles within the industry.

2. Soft Skills Development

Researchers should investigate the role of EAE in fostering critical soft skills such as communication, collaboration, leadership, and adaptability. Comparative studies could analyze differences between EAE and non-EAE students, particularly in real-world problem-solving scenarios such as community-based agricultural projects, entrepreneurship opportunities, or hands-on team initiatives that simulate workplace challenges.

3. Innovative Pedagogical Models

Further research should explore innovative instructional methods that enhance engagement, knowledge retention, and applied learning in EAE settings. A potential study could examine the effectiveness of gamification and experiential learning strategies, assessing whether interactive, game-based approaches improve student motivation and comprehension of complex agricultural concepts compared to traditional instruction.

Recommendations for Practice - Teacher Preparation Programs

1. Self-Efficacy Training

Teacher training programs should integrate structured self-efficacy development modules to better prepare pre-service educators for the challenges of EAE instruction. These could include workshops where experienced EAE teachers share best practices, mentorship programs pairing new educators with seasoned professionals, and simulation-based teaching experiences that allow pre-service teachers to receive targeted feedback in a controlled yet dynamic environment.

2. Community-Building Platforms

Establishing strong professional networks for EAE teachers essential for knowledge exchange, support, and shared resource development. Platforms such as online forums, regional meetups, and structured professional learning communities can foster collaboration. For example, a monthly webinar series or digital discussion group could facilitate ongoing conversations about best practices, classroom innovations, and challenges unique to agricultural education.

3. Feedback and Reflective Mechanisms

Incorporating structured reflection and feedback opportunities into teacher preparation and

professional development can enhance teaching effectiveness and adaptability. This could include peer-review sessions where teachers exchange lesson plans and receive constructive feedback, as well as digital teaching portfolios that allow teachers to document their progress, reflect on teaching experiences, and track student learning outcomes over time. These reflective mechanisms can help teachers refine their instructional strategies and continuously improve their pedagogical approaches.

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