

Impact of the Curriculum and Structure of School-Based Agricultural Education (SBAE) Program Climate on LGBTQ+ Alumni: A Mixed Methods Study

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Abstract

Many teachers are ill-prepared to support LGBTQ+ students. School-Based Agricultural Education (SBAE) is often perceived as not inclusive of these youth. Therefore, we explored perceptions of SBAE alumni who identified as LGBTQ+ regarding their SBAE programs' climates. The study's quantitative phase described participants' perceptions regarding three constructs of program climate: involvement, investigation, and task orientation. We analyzed their responses to the What's Happening in This Class?(WIHIC) instrument. ANOVA found statistically significant differences depending on participants' characteristics resulting in rejection of the null hypothesis. The investigation's intermediate phase utilized a two-step cluster analysis including eight variables and resulted in three unique clusters operationalized as typologies: Satisfied but Cautious, Contradicting Rural Stereotypes, and Diverse yet Determined Voices. We conducted nine interviews based on participants' typology membership. Results revealed that participants' interactions with the curriculum and views on program structure impacted their mostly positive perceptions. Investigation was rated the lowest construct and task orientation as the highest; interviews found a focus on FFA rather than agricultural content. Improvements to teacher preparation and inservice programming are needed. Future research should examine perceptions of non-LGBTQ+ SBAE alumni to compare their views. In addition, educators are urged to employ strategies and practices to ensure safe and inclusive spaces for LGBTQ+ students in all aspects of SBAE, especially in the face of evolving challenges in American society including its public schools.

Introduction

In the evolving landscape of American society, teachers must be equipped to instruct students from diverse backgrounds (Phipps et al., 2008). Among the demographics often overlooked in educational settings are LGBTQ+ students, presenting challenges for many teachers (Anderson, 1997; Clark, 2010). This difficulty in serving LGBTQ+ youth can foster unsafe learning environments and widen academic disparities compared to their peers (Clark, 2010; Kosciw et al., 2022; Talbert & Edwin, 2008). A pressing need exists for researchers to address gaps in the literature about the training of teachers to establish

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inclusive environments for LGBTQ+ students (Griffin & Ouellett, 2003; Kosciw et al., 2022; Murray et al., 2020), including within specialized areas of learning such as School-Based Agricultural Education (SBAE).

Students cultivate intellectual, social, and emotional capacities over the course of their educational journeys (Ambrose et al., 2010). Learning is shaped by students' conscious and subconscious engagement with their educational experiences and environments (Ambrose et al., 2010; Kolb, 1984). In addition, it has been reported that building communities and networks outside of the immediate educational setting are important for the development of LGBTQ+ youth (Elliott-Engel et al., 2020; Higa et al., 2014). Further, adolescent development is known to involve transitions coinciding with shifts in identities, particularly evident in sexual minority youth (Cohler & Hammack, 2007). As such, school staff should demonstrate compassionate and validating behaviors, fostering inclusive school environments for LGBTQ+ students who may otherwise experience marginalization in educational spaces (GLSEN, 2021).

Ambrose et al. (2010) stated: "An adverse environment could hinder learning and performance, whereas a positive one can enhance student engagement" (p. 6). Moreover, hostile educational environments are likely to diminish the academic and behavioral achievements of LGBTQ+ students (Kosciw et al., 2022). Barksdale et al. (2021) asserted that learning spaces where individuals feel safe to take risks and participate freely motivate students to learn and interact more. Classroom structure and environment have been found to play a major role in the extrinsic value students place on the importance of certain subjects (Spearman & Watt, 2013). Further, researchers (Jacobs et al., 2002; Mittleman, 2022) have found that gay male students in hostile or unwelcoming learning environments were twice as likely to report feeling unsafe compared to their straight male peers, and lesbian female students reported feeling slightly more unsafe than straight girls in these spaces. Fraser et al. (1982) identified four properties as significant for research on classrooms as social groups, involving (a) interpersonal relationships among students, (b) the relationships between students and their teachers, (c) students' relationships with the subject and learning method, or curriculum, and (d) the students' perceptions of the program structure. Educational research regarding LGBTQ+ youth has shifted over time to look more specifically at the schools attended rather than the students themselves (Russell et al., 2010).

SBAE and what it offers can assist youth in the process of adolescent development (Phipps et al., 2008). It can be a space where LGBTQ+ students thrive when teachers and school staff are caring and supportive (Hall, 2021). However, adolescents who struggle to mature during this stage of identity development may find it difficult to discover a sense of belongingness essential to their well-being (Phipps et al., 2008). According to Jones (2023), approximately 20% of individuals born in the United States from 1997 to 2003 self-identified as LGBTQ+. From this statistic, SBAE may be serving as many as 160,000 LGBTQ+ youth, if considering its national enrollment. As such, it is imperative that SBAE teachers proactively foster an environment where all students cultivate and practice cultural humility while gaining insight on the importance of inclusivity, and as such each student's uniqueness is recognized and validated (Austin et al., 2021; Eck et al., 2019). Teacher education programs, therefore, should equip educators to effectively serve all student populations (Talbert & Edwin, 2008), including the sexually and gender diverse (Clark, 2010; Sorenson et al., 2018; Warren & Alston, 2007).

Policies and resources within educational institutions significantly influence the experiences and well-being of LGBTQ+ individuals (Barksdale et al., 2021; Woodford et al., 2018). Recognizing the crucial link between classroom atmosphere and student performance is essential, given that students spend a majority of their time in schools (Barksdale et al., 2021). Nevertheless, a challenge remains to effectively foster supportive school environments for LGBTQ+ youth in U.S. educational institutions (Russell et al., 2010). The perceived absence of LGBTQ+ representation in SBAE curriculum, in the agricultural industry, and in the National FFA Organization underscores the importance of identifying strategies to aid educators in developing inclusive SBAE programs (Elliott-Engel et al., 2020; Murray et al., 2020). This need is particularly critical due to the unique potential SBAE has to provide a pathway for LGBTQ+ youth to

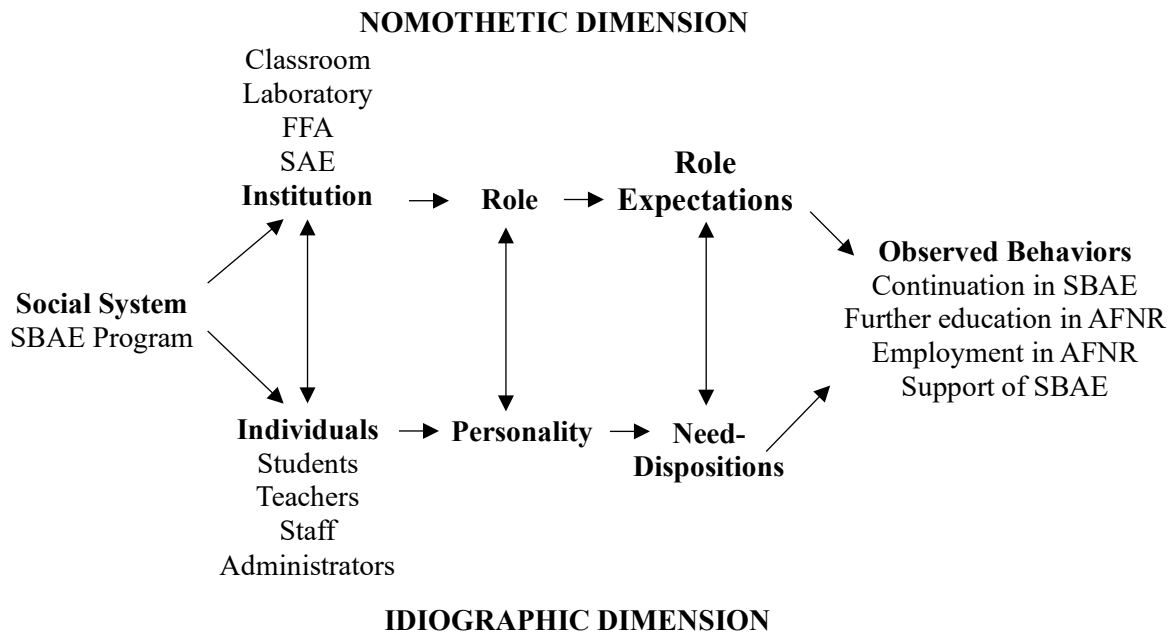
engage in the agriculture, food, and natural resources (AFNR) sector as adult members of its workforce (Elliott-Engel et al., 2020).

Conceptual Framework

Researchers (Chorafas, 1965; Hall & Fagen, 1968; Peretomode, 1999) have characterized *systems* as a mix of components interacting to attain specific objectives. Ekpo et al. (2009) explained how a systems approach can be employed in educational institutions, conceiving them as cohesive entities comprised of interconnected elements. Given the aim of this study to describe the interconnections among variables within a social framework, i.e., a SBAE program, Parsons’ (1951) social systems theory (SST) served as its foundational framework. Getzels and Guba (1957) applied SST to examine school administrations, positing that a social system encompasses two primary categories of phenomena: (a) the institution and (b) the individuals within it. In the context of this study, SBAE programs were operationalized as the *social system*. The institutional or structural aspects of the study were the three established components of SBAE programs (Croom, 2008), while the primary individuals of interest included both students and teachers involved in SBAE programs. Figure 1 illustrates the study’s conceptual model, as based on Parsons’ (1951) SST, and adapted by Getzels and Guba (1957).

Figure 1

A Visual Display of the Study’s Conceptual Framework



Note. Components of the conceptual framework for this study are shown. Adapted from Getzels, J. W., & Guba, E. G. (1957). Social behaviour and the administrative process. *School Review*, 65(4), 92–102.

Purpose, Research Questions, and Hypothesis

This manuscript features one aspect of a larger investigation that explored the perceptions of SBAE alumni who identified as LGBTQ+ regarding the climates of their former SBAE programs (Price, 2023). This work describes the participants’ perceptions of the experiences students had with the curriculum as well as their perceptions of program structure. Participants’ perceptions of relationships among students and relationships between students and teachers in their respective SBAE programs are reported in a

separate manuscript (Price & Edwards, 2024). Three research questions and one null hypothesis guided this portion of the study:

- (1) What were the perceptions of LGBTQ+ alumni regarding the climates of the SBAE programs in which they participated?
- (2) What differences existed in perceptions of the constructs of program climates based on selected personal and professional characteristics of the participants?
 - (i) H_0 : No statistically significant differences ($p < .05$) existed in perceptions of their SBAE programs' climate constructs based on selected personal and professional characteristics of the participants.
- (3) How did qualitative findings help to explain the participants' perceptions of SBAE program climate, especially regarding curriculum, including related pedagogy and programmatic structure?

Methods and Procedures

We used a sequential mixed methods design (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003) that included the collection of both quantitative (Phase I) and qualitative (Phase II) data (Tashakkori & Teddlie, 2003). Potter and Potter (2020) stated that mixed methods studies are often found to serve the LGBTQ+ community well by providing an understanding of the participants' lived experiences. Educational research has also transitioned to using more mixed methods approaches rather than solely quantitative measures to gather enhanced insight on the perceptions of students and teachers regarding their learning environments (Dorman et al., 2006; Fraser, 1989).

Phase I involved collecting quantitative data through an adapted, web-based version of the What is Happening in This Class? (WIHIC) instrument (Fraser et al., 1996). This data strand described participants' perceptions of their SBAE programs' climates regarding Fraser et al.'s (1996) constructs of classroom climate of which three are reported on here. The qualitative data gathered in Phase II were used to more deeply explore and further explain the quantitative findings. We used cluster analysis procedures (Macia, 2015) to analyze select quantitative variables for significant differences during the intermediate phase of the study. A two-step cluster analysis (Chiu et al., 2001; Mooi & Sarstedt, 2011; Norusis, 2011) was followed to analyze statistically significant differences ($p < .05$) among ordinal and nominal variables. This analysis also prevented any single variable from overpowering the cluster solution by standardizing all variables (Norusis, 2011). Eight variables were included in the analysis for which predictor importance was revealed: 1) number of years in SBAE, (2) gender, (3) out as LGBTQ+ during SBAE enrollment, (4) LGBTQ+ identity, (5) SBAE community size, (6) race/ethnicity, (7) age, and (8) overall program climate mean score.

After analyzing multiple solutions, we determined that the solution resulting in three clusters was the best model with a silhouette coefficient of 0.2 (Aggarwal & Reddy, 2013). The three clusters were later operationalized as typologies for the purpose of qualitative interviews. Random selection (Teddlie & Yu, 2007) was used to begin Phase II of the study, with three qualitative cases chosen from each cluster ($n = 9$). Random selection has been used in qualitative research if it supports the study's purpose (Miles et al., 2014). Because this study sought to explain the perspectives of LGBTQ+ alumni concerning the climates of their SBAE programs, random selection allowed us to choose participants for interviews based on their views with an expectation of representativeness regarding the clusters, i.e., typologies, from which they were drawn.

The three constructs examined were chosen based on coherence to two of Fraser et al.'s (1982) four properties of classroom climate: (a) relationships between students and the curriculum, and (b) students' perceptions of a learning environment's structural characteristics. Fraser et al. (1982) stated: "Perceptions of the speed of the class, the difficulty of the subject matter, and the amount of diversity in classroom

activities relate to the subject and the method of study” (p. 2). As such, the constructs of *involvement* and *investigation* corresponded to this property (see Table 1). Regarding students’ perceptions of structure, Fraser et al. (1982) also asserted: “Structural characteristics included the acceptance of common goals toward which activities are directed, pupils’ perceptions of their physical environment, and the degree of stratification of the class into friendship cliques” (p. 2). As such, *task orientation* was identified as the construct that corresponded best to this property. Table 1 offers a description of the three constructs.

Table 1

Description of selected WIHIC’s Constructs

Constructs	Descriptions
Investigation	Describes the emphasis placed on inquiry skills and problem-solving abilities.
Involvement	Describes the attentiveness, enjoyment, and participation of students in class and their willingness to perform additional work.
Task Orientation	Describes the importance placed on completing activities that are planned and the ability to stay on task.

Note. Each construct was measured using eight related items derived from the WIHIC questionnaire.

Instrumentation

With the developers’ consent, we used an adapted version of the WIHIC questionnaire (Fraser et al., 1996) during Phase I of our investigation. The WIHIC instrument stands out as the most widely used tool for assessing the climate within formal learning settings and was designed initially for secondary school classrooms (Fraser, 1998, 2023; Oo et al., 2022). Our participants responded to 24 items, eight per construct, using a rating scale that ranged from 1 = *Almost never* to 5 = *Almost always* (Fraser, 2023; Oo et al., 2022). The original questionnaire was modified as follows: (a) adaptation to the online platform *Qualtrics*, (b) addition of consent and filter questions, (c) items were rewritten with past tense verbiage, (d) participants were instructed to operationalize the term “class” throughout the instrument as *program* to reflect the three-component model of SBAE (Croom, 2008; Phipps et al., 2008), (e) personal and professional characteristic items were added, (f) open-ended questions were included; (g) one scaled question regarding current support of SBAE and FFA activities was added, and (h) an option was provided for participants to volunteer for Phase II of the study.

Phase II was guided by a semi-structured interview protocol (Creswell & Plano Clark, 2011) with each interview lasting approximately 60 minutes. Participants were prompted regarding three main themes: (a) their SBAE experiences and related impact, (b) their perceptions of the properties of SBAE program climate, and (c) their perceptions of the importance of the constructs of program climate. According to Fraser (1998), the internal consistency, i.e., Cronbach’s alphas, of the WIHIC instrument’s constructs ranged from 0.81 to 0.93. Our post hoc analysis after Phase I data collection revealed Cronbach’s alphas ranging from 0.818 to 0.966, which were all deemed acceptable (Field, 2013). Content validity of the WIHIC was established by Fraser et al. (1996). Face validity was verified by a panel of faculty experts at Oklahoma State University and the University of Kentucky to ensure that the items represented the domain of interest and would appear valid to the participants regarding their former SBAE programs.

Data Collection

Approval from the lead researcher’s Institutional Review Board was received for this study (Price, 2023). Using active recruitment methods (Potter & Potter, 2023), participants were sought through electronic mail messaging and social media. Hughes et al. (2021) highlighted that challenges exist in sampling the LGBTQ+ community and other marginalized groups. Factors such as (a) the relatively small

percentage within the overall population, (b) the reluctance of individuals to participate in research, and (c) the complexities of accurately assessing gender and sexual identity have been cited as making studies of the LGBTQ+ community difficult (Gray et al., 2020; Hughes et al., 2021; Newcomb et al., 2016). A private Facebook group ($N = 830$) comprised of individuals identifying as LGBTQ+ and involved in the AFNR industry served as our initial recruitment frame during the first 28 days of data collection. However, due to a low response rate, an IRB modification was approved to allow using the lead researcher's personal social media accounts and known contacts to employ a snowballing approach (Ary et al., 2014). Data collection resulted in 109 potential participants from the LGBTQ+ community. Of those, 103 had completed at least two courses in SBAE. The study's reported sample included 68 usable, or 66.02% of the initial 109; however, not all participants responded to each item.

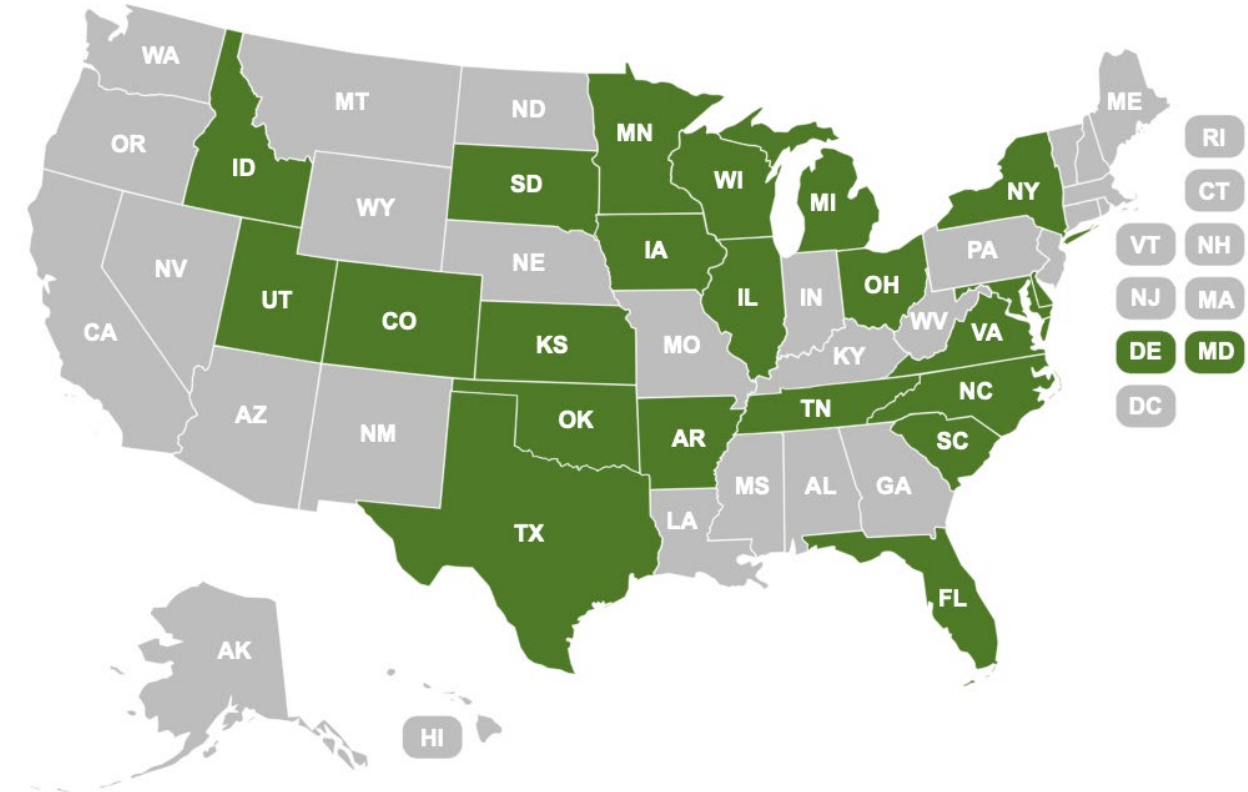
Description of the Participants

The sample was composed of 48 participants (70.59%) who identified as men, 11 (16.18%) who identified as women, and one (1.47%) who identified as non-binary or third gender. Eight (11.76%) identified as lesbian, 46 (67.65%) responded as gay, five (7.35%) selected bisexual, and two (2.94%) identified as queer. Participants provided their ages with nine (13.24%) who responded as 18 to 24 years old, 41 (60.29%) from 25 to 34 years old, seven (10.29%) from 35 to 44 years old, and three (4.41%) from 55 to 64 years old. A majority ($f = 48$, 70.59%) reported that they were *not* out as LGBTQ+ during their SBAE experiences.

Most ($f = 54$, 79.42%) identified as White, three (4.41 %) selected American Indian or Alaska Native, and two (2.94%) identified as Black or African American. Twenty-seven (39.71%) participants reported completing four years of SBAE, and 20 (29.41%) indicated at least six years of enrollment. Participants were asked to identify the size of the community in which their SBAE programs were located. Slightly more than one-half ($f = 35$, 51.47%) selected rural (1-2,500), 20 (29.41%) chose suburban (2,501-49,999), and four (5.88%) indicated urban (50,000+). Participants represented 22 states where they had been enrolled in SBAE: 20 (29.41%) in Oklahoma, 13 (19.12%) in Texas, three (4.41%) in South Carolina and Arkansas, and two each (2.94%) in Colorado and Maryland. Sixteen states provided one participant each (see Figure 2).

Figure 2

Map of the United States with the Green shaded States indicating where Participants in the Study had been enrolled in SBAE (n = 22)



Data Analysis

Phase I of this study involved analyzing the quantitative data. *SPSS Statistics* (Version 29) software was used for this analysis. We used descriptive statistics (Ary et al., 2014), including frequencies, percentages, means, and standard deviations to describe the participants and to compute their scores for the instrument's three constructs and overall mean scores of SBAE program climate. For interpreting and reporting results, the real limits of the instrument's scales were 1.00 to 1.49 = *Almost never*, 1.50 to 2.49 = *Seldom*, 2.50 to 3.49 = *Sometimes*, 3.50 to 4.49 = *Often*, and 4.50 to 5.00 = *Almost always*. We used either one-way ANOVA or two-sample *t*-tests (Ary et al., 2014) to identify differences between the mean scores of each WIHIC construct (dependent variables) regarding seven independent variables, including (a) whether participants were out as LGBTQ+ during their enrollment in SBAE, (b) LGBTQ+ identity, (c) gender identity, (d) race/ethnicity, (e) age, (f) number of years enrolled in SBAE, and (g) SBAE program's community size. Analyses that yielded differences with a *p*-value of less than .05 required either a Games-Howell post hoc test or a two-sample *t*-test to be computed (Field, 2013). These tests identified specific group differences when exploring multiple comparisons or between-group variations, providing a more nuanced and accurate interpretation of the statistical findings (Field, 2013).

Before collecting the qualitative data strand, cluster analysis procedures were used (Macia, 2015) to analyze statistically significant differences between the quantitative variables. Mooi and Sarstedt's (2011) procedures guided the analysis. A two-step cluster analysis was chosen because the variables analyzed were

both ordinal and nominal (Chiu et al., 2001; Norusis, 2011). In addition, the process standardized variables to ensure that one variable did not overpower the cluster solution (Norusis, 2011). After analyzing multiple solutions ranging from one to three clusters, we determined that the best solution model included three clusters. The chosen solution resulted in the highest silhouette coefficient (0.2), showing that the data points were well-matched to their own clusters (Aggarwal & Reddy, 2013). The three clusters were operationalized as typologies for analysis and interpretation of results. The analysis calculated *three quality clusters* based on predictor importance (Mooi & Sarstedt, 2011). Predictor importance included participants' (a) number of years enrolled in SBAE, (b) gender identity, (c) whether participants were out as LGBTQ+ during their enrollment in SBAE, (d) LGBTQ+ identity, (e) SBAE program's community size, (f) race/ethnicity, (g) age, and (h) overall program climate mean, i.e., seven independent variables and one dependent variable.

The qualitative data strand collected in Phase II involved using *Zoom* to record the nine interviews and *otter.ai* to ensure each interview was transcribed verbatim. Member checking (Lincoln & Guba, 1985; Stake, 1995) was completed by sending transcripts to the respective interviewees to confirm accuracy. All transcripts were confirmed as accurate by these participants. We explored the data with *MAXQDA* software. Each case was analyzed using open, axial, and selective coding procedures (Saldaña, 2012). Reflective bracketing was employed to reduce bias and ensure confirmability (Tufford & Newman, 2010). The lead researcher's engagement with the data in the different phases requires revealing previous experiences and biases. He is an openly gay male who grew up in SBAE and was an SBAE teacher for seven years. Prior relationships with the participants through interactions at professional venues and conferences may have influenced them to participate and perhaps impacted which experiences they chose to share as well as the explicitness of their responses.

Findings

Research question one investigated the perceptions of LGBTQ+ alumni regarding the climates of their SBAE programs around three constructs, as validated by Fraser (2023) and Oo et al. (2022). Mean scores for each construct ranged from 3.48 to 4.37. The *investigation* construct mean was found to be 3.48 ($SD = 1.06$), which was in the range of *sometimes*, while the other constructs' means and the overall mean were in the range of *often* if considering the scale's real limits. Table 2 presents the mean scores by construct and the overall mean score for SBAE program climate.

Table 2

Descriptive Statistics of the WIHIC by Construct and Overall

Constructs	Descriptive Statistics				
	<i>f</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
Investigation	68	1.00	5.00	3.48	1.06
Involvement	68	1.13	5.00	3.73	1.04
Task Orientation	68	3.13	5.00	4.37	.53
Overall Mean	68	1.75	5.00	3.86	.75

Note. Scale anchors: 1 = *Almost never*, 2 = *Seldom*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Almost always*. Real limits of the scale: 1.00 to 1.49 = *Almost never*, 1.50 to 2.49 = *Seldom*, 2.50 to 3.49 = *Sometimes*, 3.50 to 4.49 = *Often*, and 4.50 to 5.00 = *Almost always*.

The second research question investigated the differences in participants' perceptions regarding the three constructs of program climate based on their personal and professional characteristics. For the *involvement* construct, gender identity ($F(3, 59) = 3.171, p = .031$) yielded a statistically significant difference ($p < .05$) among the groups. The two-sample *t*-test revealed a statistically significant difference in the scores between men and women ($t(56) = 2.462, p = .008$), with men scoring significantly higher after the single response for non-binary/third gender was removed from the analysis. Regarding the *investigation* construct, LGBTQ+ identity ($F(3, 59) = 2.998, p = .038$), gender identity ($F(1, 57) = 8.018, p = .006$), and years in SBAE ($F(4, 59) = 2.556, p = .049$) yielded statistically significant differences ($p < .05$) in scores. However, the Games-Howell post hoc test for LGBTQ+ identity did not reveal where the difference existed among the groups. The two-sample *t*-test indicated a statistically significant difference ($p < .05$) in the scores between men and women ($t(56) = 2.832, p = .003$), with men scoring significantly higher after the single response for non-binary/third gender was removed from the analysis. For this construct, the Games-Howell post hoc test for years in SBAE did not identify where the difference existed among the groups. The third construct, *task orientation*, yielded statistically significant differences ($p < .05$) in mean scores regarding LGBTQ+ identity ($F(2, 57) = 5.870, p = .005$) and gender identity ($F(3, 59) = 3.919, p = .013$). The statistically significant differences in construct mean scores for LGBTQ+ identity were between lesbian and gay ($p = .007$) individuals and bisexual and lesbian ($p = .033$) participants. The two-sample *t*-test found a statistically significant difference ($t(56) = 3.132, p = .001$) in mean scores between men and women regarding this construct, with men scoring significantly higher after the single response for non-binary/third gender was removed from the analysis. As a result, the null hypothesis was rejected because groups demonstrated statistically significant differences at $p < .05$ regarding their construct mean scores for perceptions of *involvement*, *investigation*, and *task orientation*.

In the study's intermediate phase, a two-step cluster analysis resulted in three distinct clusters that were operationalized as typologies: (a) *Satisfied but Cautious*, (b) *Contradicting Rural Stereotypes*, and (c) *Diverse yet Determined Voices*. Table 3 provides the participants' mean scores for the WIHIC constructs (Fraser et al., 1996) and their overall mean scores for SBAE program climate.

Table 3

Overall Mean Scores by Construct of the Study's Three Typologies

Constructs	Satisfied but Cautious ($n = 23$)		Contradicting Rural Stereotypes ($n = 20$)		Diverse yet Determined Voices ($n = 13$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Investigation	3.47	.85	3.58	1.33	3.01	1.11
Involvement	3.82	1.02	3.83	1.08	3.42	1.20
Task Orientation	4.48	.50	4.49	.53	3.73	.55
Overall Mean	3.92	.63	3.97	.82	3.50	.78

Note. Not all participants met the criteria for placement in one of the three typologies.

Research question three sought to understand how the qualitative findings more fully explained participants' perceptions of their SBAE programs' climates regarding curriculum and program structure by interviewing nine randomly selected alumni. Using the procedures of Teddlie and Yu (2007) as a guide for random selection, three cases from each typology were chosen for semi-structured interviews. As such, nine subthemes emerged supporting Fraser et al.'s (1982) properties of classroom climate. Table 4 displays these participants' pseudonyms and characteristics by typology.

Table 4*Personal and Professional Characteristics of Phase II Participants (n = 9)*

Typologies ^a	Participants' Personal and Professional Characteristics
<i>Satisfied but Cautious</i>	
Alex	White; not out as LGBTQ+ during SBAE; gay; man; between 25 and 34 years old; SBAE program in a rural community; enrolled for four years.
Derek	White; not out as LGBTQ+ during SBAE; gay; man; between 25 and 34 years old; SBAE program in a suburban community; enrolled for four years.
Owen	White; not out as LGBTQ+ during SBAE; gay; man; between 18 and 24 years old; SBAE program in a suburban community; enrolled for four years.
<i>Contradicting Rural Stereotypes</i>	
Jackson	White; not out as LGBTQ+ during SBAE; gay; man; between 18 and 24 years old; SBAE program in a suburban community; enrolled for at least six years.
Mark	White; not out as LGBTQ+ during SBAE; gay; man; between 25 and 34 years old; SBAE program in a suburban community; enrolled for at least six years.
Richard	White; out as LGBTQ+ during SBAE; gay; man; between 18 and 24 years old; SBAE program in a rural community; enrolled for five years.
<i>Diverse yet Determined Voices</i>	
April	White; not out as LGBTQ+ during SBAE; lesbian; woman; between 25 and 34 years old; SBAE program in a rural community; enrolled for five years.
Callie	White; not out as LGBTQ+ during SBAE; bisexual; woman; between 25 and 34 years old; SBAE program in a rural community; enrolled for four years.
Meredith	White; not out as LGBTQ+ during SBAE; lesbian; woman; between 45 and 54 years old; SBAE program in a rural community; enrolled for four years.

Note. ^aTypology names were derived from a comparison and integration of the study's two data strands.

Cluster 1: Satisfied but Cautious

Four subthemes emerged from this typology describing participants' perceptions of the curriculum, including related teaching methods, and the structure of their SBAE programs. These included: (a) hands-on experiences stimulated student interest and participation, (b) true to tradition, (c) local, supportive programs, and (d) optimism with caution. The participants representing this typology spoke highly of the experiences created by their SBAE teachers to engage in hands-on learning activities, which helped fuel their passion for the curriculum. Regarding the SBAE curriculum and the *involvement* and *investigation* constructs, Derek shared: "The learning experiences facilitated by the teacher were some of the things I remember . . . it was very hands-on in nature." Alex explained: "I really liked a lot of the real-world application of the content, so that was something that really intrigued me." Owen remembered his teacher always making sure students had a good time learning about agriculture, which motivated him.

While discussing their perceptions of program structure and the *task orientation* construct, participants reflected on negative experiences they had that were tied to the traditions of the FFA. Alex stated: "I was just kind of hoping that [SBAE teacher] would change some of those traditions that aren't necessarily welcoming to certain groups of people." He also expressed: "As I reflected more on why I

wasn't out in high school, FFA was one of those reasons." Owen also referenced the traditionally conservative climate of SBAE and FFA and warned current LGBTQ+ students in agricultural education that "you're going in a typically conservative setting where you might feel like you're about to be 'hate crimed' like every five seconds." However, members of this typology generally praised their SBAE teachers for creating supportive local programs. Derek said: "Everyone was welcome. [SBAE teacher] opened the doors to all types of students." Alex echoed this sentiment: "I think my best, favorite memories were like local FFA things . . . Like really anything that was state or national [level] was just a hell no." Those in this typology were optimistic about the future but cautious. Derek further shared: "I feel like it's definitely gotten better . . . we're kind of on track to making it more accepting." Alex, however, cautioned that hard times would happen in FFA: "There is going to be difficult times just like anything in life . . . that might not feel as inclusive, as long as you're feeling welcomed at your school, that's the biggest thing."

Cluster 2: Contradicting Rural Stereotypes

Three subthemes emerged from this typology: (a) a passion paradox, (b) a way out, and (c) FFA over AFNR curriculum content. When reflecting on their programs' curricula and the constructs of *involvement* and *investigation*, participants in this typology shared that their passion for the agriculture industry was often shrouded in the paradox that LGBTQ+ individuals, and specifically gay men, should not be interested or active in the agriculture sector. Mark explained: "[SBAE] was my one thing that I kind of clung to, which is odd because as a young gay man, you don't think of ag related stuff." He continued: "It was my passion, but it was also kind of my biggest kind of thing that beat me down behind closed doors." Richard opined that the cultural landscape of FFA puts queer members in a precarious position of wanting to be involved but also struggling to find where their identity lies within the SBAE program. And Jackson said it was not until he saw others outside of rural America like him that he felt he could be involved in the agriculture industry. The opportunities to be involved in different activities in SBAE also showed members of this typology avenues for leaving the places they called home. Richard shared: "[SBAE] was the first place that really showed me opportunity, and that it could take me from point A to point B . . . where I could leave my community and do something impactful." As a rural American, Jackson stated: "Ag actually provided an opportunity, I could see a path out of, ironically, rural America."

When recalling experiences related to their perceptions of program structure and the *task orientation* construct, participants in this typology referenced the focus on FFA content rather than agricultural content. Mark offered: "Ag was always a kind of gimme subject. Everybody had to take it at some point." Jackson summarized his response by stating, "I'm sorry, it's very non-classroom answers for me because that's my experience. [Classroom instruction] was very limited." All the participants reflected on the amount of time spent preparing for FFA competitions during their SBAE enrollment rather than learning about agricultural topics. Jackson experienced this downside and shared: "When I entered college, and especially some of my ag-based classes, [for example,] animal science, it was jarring how much I didn't know compared to my peers." Richard, however, granted that the visibility and celebration of FFA success throughout his SBAE experience helped to motivate him and other students.

Cluster 3: Diverse yet Determined Voices

Two subthemes emerged from the third typology: (a) just do it and (b) diverse expectations. Participants of this typology spoke to the expectation to do as you were told to complete the class assignments. When reflecting on the SBAE curriculum and the *involvement* and *investigation* constructs, participants recalled how their learning was structured. As Meredith described: "It was a lot of memorization, here's the information, memorize it, test it." Callie somewhat echoed this sentiment: "As long as we were getting the IMS packet done nobody was saying anything. Most kids were there for the easy grade." When reflecting on her desire to learn what was being taught, Callie shared: "I didn't feel like we had a choice if we enjoyed [the subject or team preparation content]. I think it was the loyalty we had

to the [FFA] chapter.” April acknowledged that the requirement of students having to take SBAE courses at her school was a major factor impacting how involved students were in each component of the SBAE program.

When referencing perceptions of their programs’ structures and the *task orientation* construct, participants of this typology said that different expectations existed for students, which may have promoted or hindered participation. Callie described: “I mean all we did was train teams. . . . The expectation was to win from the community, and the expectation from the ag teachers was to win, and so you had no choice but to do well.” However, Meredith said that opportunities were not as available to her. She explained: “[SBAE teacher] really didn’t expose us, or allow us to be exposed, to other people, except when I encouraged him to do so.” In addition, Meredith mentioned that few opportunities existed to participate in SBAE activities above the chapter level, which motivates her now as a SBAE teacher to provide as many experiences as possible to her students. She said: “I’m not going to be like my [SBAE teacher] and not expose kids to opportunities.” And April referenced the common vision she and the other SBAE students had for their program: “We all . . . wanted to be successful, and anytime we got the opportunity to put on an event at school we wanted FFA to look cool and Ag classes a place people wanted to be.”

Conclusions, Implications, Recommendations, and Discussion

We sought to describe participants’ perceptions of their SBAE programs’ climates, especially regarding experiences with the curriculum and perceptions of program structure. Most participants ($n = 48$, 70.59%) were not out as LGBTQ+ while enrolled in SBAE, and perceived that their experiences in SBAE were *often* positive (3.86, $SD = .75$). The study revealed variations in how program climate was perceived depending on participants’ gender identities. This finding is consistent with previous studies by Mittleman (2022) and Jacobs et al. (2002), which noted that lesbian females tended to perceive their competence and safety was lower compared to gay male students. Such underscores the significance of teacher sensitivity, highlighting the necessity for SBAE instructors to be responsive to the diverse needs of all students, regardless of their gender identities (Austin et al., 2021; Eck et al., 2019). The mean score of the *investigation* construct in the range of *sometimes* suggests that inquiry-based learning in SBAE was inconsistent or even lacking based on our participants’ experiences. Moreover, the qualitative data strand highlighted a focus on FFA related content over that of AFNR curriculum. Of note, the study also illuminated the impact of SBAE programming above the local level, as well as how students’ interactions, their personalities, and their needs may determine the actions they are likely to take in the future, including careers, which Getzels and Guba’s (1957) adaption of Parsons’ (1951) SST supports (see Figure 1).

This study highlighted the usual behavior of students in SBAE programs choosing not to openly identify as LGBTQ+. However, many still reported positive experiences within these programs. This underscores the importance of fostering an environment where students feel safe and supported in expressing their authentic identities (Higa et al., 2014). Encouraging openness could further enhance students’ overall experiences in SBAE programs, contributing to their academic and personal growth (Ambrose et al., 2010; Fraser et al., 1982) while also strengthening the programs in myriad ways.

This study emphasized the value of using a mixed methods approach to examine the climate of educational environments; in this case, SBAE. These methods enable researchers to gain deeper insights into the perspectives of both students and teachers (Dorman, 2003; Fraser, 1989). Further, as highlighted by Potter and Potter (2020), mixed methods research is particularly beneficial for members of the LGBTQ+ community, offering detailed accounts of their lived experiences. As such, our quantitative results showed that the participants’ SBAE programs only *sometimes* provided opportunities for investigation as a mode of learning, although robust “hands-on” learning experiences were described by several alumni in their interviews, which may have included inquiry-themed activities. Moreover, the sequential mixed method approach (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003) used during Phase II of the study

allowed participants to detail more granular experiences of what their SBAE teachers taught and thereby revealed the prevalence of FFA content over AFNR curricula. These experiences may not have been uncovered if only one form of data had been collected and analyzed, supporting the salience of mixed method designs in social science research.

Based on our findings, rural SBAE programs have the potential to be welcoming of LGBTQ+ students, especially if SBAE teachers work to create inclusive programming. Following Getzels and Guba's (1957) description of a social system, rural schools can be supportive of LGBTQ+ students by working to meet their needs and providing them opportunities to be their authentic selves through the different institutions, i.e., components, of the SBAE program (see Figure 1). Data analysis led to rejecting the study's null hypothesis, indicating that statistically significant differences ($p < .05$) existed in mean scores among or between the groups for their perceptions of all the constructs reported in this study: *involvement*, *investigation*, and *task orientation*. This indicates that differences existed in how various identity groups perceived essential aspects of the educational setting, which is SBAE. Educators and policymakers should take note of this when considering interventions and strategies to customize learning environments to best suit the needs of all students, including members of the LGBTQ+ community.

Regarding recommendations for practice, SBAE teachers should strive to make all components of their programs inclusive of students from *all identities* at the local, state, and national levels. Listening sessions with LGBTQ+ support groups should be conducted to help teachers better understand the unique experiences and needs of LGBTQ+ students as they participate in SBAE, including with program alumni who identify as members of the LGBTQ+ community. In addition, teacher preparation programs and professional development should demonstrate inclusive strategies to support LGBTQ+ students and help teachers develop curriculum augmenting the use of investigation and inquiry learning methods while stressing agricultural content rather than only or mostly FFA topics.

We also recommend including discussions on sexuality and gender diversity in teacher preparation programs to better equip educators to serve diverse student populations (Clark, 2010; Sorenson et al., 2018; Talbert & Edwin, 2008; Warren & Alston, 2007). Promotion of LGBTQ+ alumni stories and celebrations of their identities should occur to create representations showcasing the AFNR career possibilities for LGBTQ+ students in SBAE.

This study also spawned additional questions that warrant investigation, including (a) How would the SBAE program climate perceptions of non-LGBTQ+ alumni compare? (b) How do the perceptions of SBAE program climate compare to those of other CTE programs or extra-curricular, school-sanctioned organizations and groups ranging from athletics to band to foreign language clubs? (c) What strategies and methodological approaches may gather more responses from members of the LGBTQ+ community who are often hesitant to participate in research studies? and (d) In what ways may legislation, state and federal, intended to ban or stifle the integration of inclusive curriculum, impact SBAE and how it serves LGBTQ+ students as well as other often marginalized youth.

We explored the experiences of LGBTQ+ alumni in the context of SBAE programs, highlighting both positive and negative aspects. This contributes to our literature by emphasizing the importance of understanding the perceptions of LGBTQ+ students in SBAE and calls for continued research to address other knowledge gaps (Griffin & Ouellett, 2003; Kosciw et al., 2022; Murray et al., 2020). The significance of SBAE activities beyond the local program should not be underestimated. These activities provide an opportunity for LGBTQ+ students to grow and interact with others like them and illustrate the importance of networks outside their immediate educational settings and communities (Elliott-Engel et al., 2020; Higa et al., 2014). Overall, the study highlighted the necessity of ongoing efforts to create inclusive, supportive, and diverse learning spaces in SBAE programs. However, the potential legal challenges to implementing related recommendations considering the enactment of anti-LGBTQ+ legislation across the United States

should be acknowledged, and the implications of such warrant study, especially regarding the welfare of LGBTQ+ youth. Nevertheless, we urge educators to employ strategies and practices to ensure safe and inclusive spaces for LGBTQ+ students in all aspects of SBAE as they and their allies may face evolving and growing challenges.

Assumptions and Limitations

We assumed that *program climate* was interpreted by our participants to include each aspect of SBAE's three-component model (Croom, 2008). Our results should not be generalized to other marginalized or underrepresented groups in SBAE or to all identities of the LGBTQ+ community. Despite being a validated tool, the WIHIC questionnaire had not been used previously in SBAE and warrants further examination in this and other educational spaces. Hughes et al. (2021) stated that individuals within minority populations may be hesitant to engage in research due to previous negative experiences or broken trust with researchers or the need to disclose sensitive personal information. Our articulation of the study's objectives might have led to diverse understandings of the questionnaire items among the respondents. In addition, other researchers may have concluded different interpretations of the study's qualitative data, and the passage of time could have influenced the participants' recall of events (Rogers, 2003).

References

- Aggarwal, C. C., & Reddy, C. K. (2013). *Data clustering: Algorithms and applications* (1st ed.). Chapman and Hall.
- Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. Jossey-Bass.
- Anderson, J. D. (1997). Supporting the invisible minority. *Educational Leadership*, 54(7), 65-68. <https://www.ascd.org/el/articles/supporting-the-invisible-minority>
- Ary, D., Jacobs, L. C., & Sorensen, C. (2014). *Introduction to research in education* (8th ed.). Wadsworth Cengage.
- Austin, A. C., Rice, A. H., & Vincent, S. K. (2021). Examining likeness among secondary agriculture youth. *Journal of Agricultural Education*, 62(2), 66-82. <https://doi.org/10.5032/jae.2021.0266>
- Barksdale, C., Peters, M. L., & Corrales, A. (2021). Middle school students' perceptions of classroom climate and its relationship to achievement. *Educational Studies*, 47(1), 84-107. <https://doi.org/10.1080/03055698.2019.1664411>
- Chiu, T., Fang, D., Chen, J., Wang, Y., & Jeris, C. (2001). A robust and scalable clustering algorithm for mixed type attributes in large database environment. *Proceedings of the 7th International Conference on Knowledge Discovery and Data Mining* (pp. 263-268), San Francisco, CA, United States.
- Chorafas, D. (1965). *Systems and simulation*. Academic Press.
- Clark, C. T. (2010). Preparing LGBTQ-allies and combating homophobia in a U.S. teacher education program. *Teaching and Teacher Education*, 26(3), 704-713. <https://doi.org/10.1016/j.tate.2009.10.006>

- Cohler, B. J., & Hammack, J. C. (2007). The psychological world of the gay teenager: Social change, narrative, and “normality.” *Journal of Youth Adolescence*, 36, 47-59. <https://doi.org/10.1007/s10964-006-9110-1>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE.
- Croom, D. B. (2008). The development of the integrated three-component model of agricultural education. *Journal of Agricultural Education*, 49(1), 110-120. <https://doi.org/10.5032/jae.2008.01110>
- Dorman, J. P., Aldridge, J. M., & Fraser, B. J. (2006). Using students’ assessment of classroom environment to develop a typology of secondary school classrooms. *International Education Journal*, 7(7), 906-915. <https://eric.ed.gov/?id=EJ854348>
- Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education*, 60(4), 1-18. <https://doi.org/10.5032/jae.2019.04001>
- Ekpo, K., Akpan, O. E., Essien, E. E., & Imo-Obot, M. M. (2009). Classroom climate and students’ academic achievement in social studies in Cross River, Nigeria. *African Research Review*, 3(4), 413-428. <https://doi.org/10.4314/afrev.v3i4.47576>
- Elliott-Engel, J., Amaral, J. R., & Westfall-Rudd, D. (2020). Perspectives on LGBTQ inclusion and identity development from a college of agriculture and life sciences. *NACTA Journal*, 64(2), 102-112. <https://www.jstor.org/stable/27157782>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). SAGE.
- Fraser, B. J. (1989). Twenty years of classroom climate work: Progress and prospect. *Journal of Curriculum Studies*, 21(4), 307-327. <https://doi.org/10.1080/0022027890210402>
- Fraser, B. J. (1998). Classroom environment instruments: Development, validation, and applications. *Learning Environments Research*, 1, 7-33. <https://doi.org/10.1023/A:1009932514731>
- Fraser, B. J. (2023). The evolution of the field of learning environments research. *Education Sciences*, 13(3), 257-267. <https://doi.org/10.3390/educsci13030257>
- Fraser, B. J., Anderson, G. J., & Walberg, H. J. (1982). *Assessment of learning environments: Manual for learning environment inventory (LEI) and my class inventory (MCI) third version*. ERIC. <https://files.eric.ed.gov/fulltext/ED223649.pdf>
- Fraser, B. J., Fisher, D. L., & McRobbie, C. J. (1996). *Development, validation, and use of personal and class forms of a new classroom environment instrument* [Paper presentation]. American Educational Research Association. New York City, NY, United States. <http://www.waier.org.au/forums/1996/fraser.html>
- Gay, Lesbian & Straight Education Network [GLSEN]. (2021). *Improving school climate for transgender and nonbinary youth* (Research brief). GLSEN Research Institute. https://www.glsen.org/sites/default/files/202111/GLSEN_Trans%26Nonbinary_Research_Brief.pdf

- Getzels, J. W., & Guba, E. G. (1957). Social behaviour and the administrative process. *School Review*, 65(4), 92-102. <https://www.jstor.org/stable/1083752>
- Gray, A., Macapagal, K., Mustanski, B., & Fisher, C. B. (2020). Surveillance studies involving HIV testing are needed: Will at-risk youth participate? *Health Psychology*, 39(1), 21-28. <https://doi.org/10.1037/hea0000804>
- Griffin, P., & Ouellett, M. (2003). From silence to safety and beyond: Historical trends in addressing, lesbian, gay, bisexual, transgender issues in K-12 schools. *Equity & Excellence in Education*, 36(2), 106-114. <https://doi.org/10.1080/10665680303508>
- Hall, A. (2021). Creating a safe space for LGBTQ+ students in career and technical education. *Techniques: Connecting Education and Careers*, 96(3), 17-19.
- Hall, A. D., & Fagen, R. E. (1968). Definition of systems. In B. Walter (Ed.), *Modern systems research for the behavioral scientists* (pp. 21 – 51). Aldini.
- Higa, D., Hoppe, M. J., Lindhorst, T., Mincer, S., Beadnell, B. Morrison, D. M., Wells, E. A., Todd, A., & Mountz, S. (2014). Negative and positive factors associated with the well-being of lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) youth. *Youth & Society*, 46(5), 663-687. <https://doi.org/10.1177/0044118X12449630>
- Hughes, P., Harless, C., & Leach, K. (2021). Methods and strategies for effectively surveying the LGBTQ+ population. *Research in Social and Administrative Pharmacy*, 17(5), 997-1003. <https://doi.org/10.1016/j.sapharm.2020.06.024>
- Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: Gender and domain differences across grades one through twelve. *Child Development*, 73(2), 509-527. <https://doi.org/10.1111/1467-8624.00421>
- Jones, J. M. (2023). *U.S. LGBTQ identification steady at 7.2%*. Gallup. <https://news.gallup.com/poll/470708/lgbt-identification-steady.aspx>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall, Inc.
- Kosciw, J. G., Clark, C. M., & Menard, L. (2022). *The 2021 national school climate survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools*. GLSEN. <https://www.glsen.org/sites/default/files/2022-10/NSCS-2021-Full-Report.pdf>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.
- Macia, L. (2015). Using clustering as a tool: Mixed methods in qualitative data analysis. *The Qualitative Report*, 20(7), 1083-1094. <http://nsuworks.nova.edu/tqr/vol20/iss7/9>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis* (3rd ed.). SAGE.
- Mittleman, J. (2022). Intersecting the academic gender gap: The education of lesbian, gay, and bisexual America. *American Sociological Review*, 87(2), 303-335. <https://doi.org/10.1177/00031224221075776>

- Mooi, E., & Sarstedt, M. (2010). *Cluster analysis*. Springer.
- Murray, K. A., Trexler, C. J., & Cannon, C. E. B. (2020). Queering agricultural education research: Challenges and strategies for advancing inclusion. *Journal of Agricultural Education*, 61(4), 296-316. <https://doi.org/10.5032/jae.2020.04296>
- Newcomb, M. E., Clifford, A., Greene, G. J., & Mustanski, B. (2016). Parent perspectives about sexual minority adolescent participation in research and requirements of parental permission. *Journal of Adolescent Health*, 59(4), 443-449. <https://doi.org/10.1016/j.jadohealth.2016.05.014>
- Norusis, M. J. (2011). *IBM SPSS statistics 19 procedures companion*. Addison-Wesley.
- Oo, C. Z., Khine, M. S., & San, N. M. H. (2022). A reliability generalization meta-analysis of “What is happening in this class?” (WIHIC) questionnaire. *Education Sciences*, 12(12), 929-940. <https://doi.org/10.3390/educsci12120929>
- Parsons, T. (1951). *The social system*. Free Press.
- Peretomode, V. F. (1999). *Educational administration: Applied concepts and theoretical perspectives*. Joja Educational Research and Publishers.
- Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. (2008). *Handbook on agricultural education in public schools* (6th ed.). Delmar.
- Potter, E. C., & Potter, D. J. (2020). Methods, recruitment, and sampling in research with LGBTQ-parent families. In A. E. Goldberg & K. R. Allen (Eds.), *LGBTQ-parent families: Innovations in research and implications for practice* (2nd ed., pp. 507-533). Springer. <https://doi.org/10.1007/978-3-030-35610-1>
- Price, T. J. (2023). *Impact of school-based agricultural education (SBAE) program climate on the participation and continuation of LGBTQ+ students: A mixed-methods study*. [Unpublished doctoral dissertation]. Oklahoma State University.
- Price, T. J., & Edwards, M. C. (2024). *LGBTQ+ alumni perceptions of SBAE program climate and its impact on their experiences with other students and their teachers: A mixed-methods study*. [Conference presentation]. 2024 Association for Career and Technical Education Research Conference, San Antonio, TX, United States.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Russell, S. T., Kosolw, J., Horn, S., & Saewyo, E. (2010). Social policy report: Safe schools for LGBTQ students. *Sharing Child and Youth Development knowledge*, 24(4), 1-25. <https://doi.org/10.1002/j.2379-3988.2010.tb00065.x>
- Saldaña, J. (2012). *The coding manual for qualitative researchers* (2nd ed.). SAGE.
- Sorenson, T. J., Lawver, R. G., Hopkins, N., Jensen, B., Dutton, C., & Warnick, B. K. (2018). Pre-service agriculture teachers' development during the early phase of student teaching. *Journal of Agricultural Education*, 59(4), 105-119. <https://doi.org/10.5032/jae.2018.04105>

- Spearman, J., & Watt, H. M. G. (2013). Perception shapes experience: The influence of actual and perceived classroom environment dimensions on girls' motivations for science. *Learning Environments Research, 16*, 217-238. <https://doi.org/10.1007/s10984-013-9129-7>
- Stake, R. E. (1995). *The art of case study research*. SAGE.
- Talbert, B. A., & Edwin, J. (2008). Preparation of agricultural education students to work with diverse populations. *Journal of Agricultural Education, 49*(1), 51-60. <https://doi.org/10.5032/jae.2008.01051>
- Tashakkori, A., & Teddlie, C. (2003). *Mixed methodology: Combining qualitative and quantitative approaches*. SAGE.
- Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research, 1*(1), 77-100. <https://doi.org/10.1177/1558689806292430>
- Tufford, L., & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work, 11*(1), 80-96. <https://doi.org/10.1177/1473325010368316>
- Warren, C. K., & Alston, A. J. (2007). An analysis of diversity inclusion in North Carolina secondary agricultural education programs. *Journal of Agricultural Education, 48*(2), 66-78. <https://doi.org/10.5032/jae.2007.02066>
- Woodford, M. R., Kulick, A., Garvey, J. C., Sinco, B. R., & Hong, J. S. (2018). LGBTQ policies and resources on campus and the experiences and psychological well-being of sexual minority college students: Advancing research on structural inclusion. *Psychology of Sexual Orientation and Gender Diversity, 5*(4), 445-456. <http://dx.doi.org/10.1037/sgd0000289>