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Use of Simulated Discussion Prompts to Assess Sentiment Toward Agriculture in Higher Education Instructors

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Abstract

Higher education instructors may include interdisciplinary subjects in the classroom to encourage diverse yet balanced learning. Agriculture is a challenging subject of study that includes elements of art, engineering, and science. Although it is important to know if teachers in higher education incorporate agriculture in their lectures, it is more useful to comprehend the attitudes or opinions that are expressed. The purpose of this study was to determine whether higher education instructors mention agriculture in simulated discussion prompt generation and, if so, indicate the responses of positive, negative, and neutral sentiment towards agriculture. An electronic survey asked teaching faculty from multiple land-grant institutions to respond to a randomized prompt related to their declared area of interest. Qualitative methodologies included open response coding, and reliable and validated thematic coding served as the primary analysis. The study reports that 25 of the 59 responses included comments about agriculture and 72.0% of the responses were neutral. The rest painted agriculture in positive (8.0%) or negative (20.0%) interpretations. The results of the study reveal the challenges that teachers face in making interdisciplinary leaps, including agriculture in the classroom, without risking the spread of inaccurate information. Additional research should be conducted to understand the impacts of loaded language on students' perceptions of agriculture using the results produced by the current study.

Keywords: sentiment; instructors; higher education; agriculture; simulated classroom

1. Introduction

Previous literature has summarized the benefits of multidisciplinary actions of educators (Butler, 2022; Sommier et al., 2022; Svensson et al., 2022; Sommier et al., 2022). Specifically, there is a variety of evidence that addressing scientific agreement or context within societal issues can improve perception of scientific consensus and consequently key beliefs (van der Linden et al., 2016). Though beneficial to students and the scientific community, interdisciplinary efforts have the potential to fail.

Opinion-based teaching, political bias, and science polarization can cloud educators' judgment when making interdisciplinary leaps (Harrington, 2022; Linvill & Havice, 2011; Barry et al., 2008). As an example, the proliferation of media involving intensive animal agriculture has resulted in messages with negative motivations regarding key impacts of food production (Happer & Wellesley, 2019), and these perceptions have spread to all agricultural practices. The pleasant experience of eating meat is outweighed by the

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pronounced negativity bias resulting from the contemplation of animal pain, slaughter, and suffering (Baumeister et al., 2001). Instructors have a remarkable influence on their students, and previous research illuminates the bias against agriculture. In the control and treatment groups, the meat-eating habits of college students were studied (Schwitzgebel et al., 2020). Students who studied animal ethics were found to be more likely to say that they would stop consuming meat in the future than their counterparts who studied charity (Schwitzgebel et al., 2020). Another example includes "nudging" students to consume plant-blended burgers or educational methods that influenced willingness to consume all-beef burgers (Prusaczyk et al., 2021).

It is clear that agriculture plays a significant role in world economics and provides various services to other professions on both a national and international level (Jackson-Smith & Jensen, 2009). By studying agriculture and related topics in a college classroom setting, students can improve their agricultural literacy. Understanding what professors in higher education teach about agriculture can help us develop interventions against false information about animal agriculture. This descriptive observational study describes whether higher education instructors will introduce agriculture when provided the opportunity to create discussion posts on a discipline-related topic.

The following research questions guided this study:

1. If given a prompt, will instructors introduce agriculture in simulated discussion posts?
2. If agriculture is introduced, is it framed in a positive, negative, or neutral perspective?

The researchers hypothesize that participants' responses will contain a greater proportion of negatively framed references to agriculture than positively framed references.

Conceptual Framework

There are numerous entities that influence perceptions of agriculture and perspectives of introducing agriculture into education. The conceptual framework is based on the literature and the design of this research study, and it is influenced by the emphases of social contagion, student–teacher relationships, and belief polarization. Together, these perspectives explain how ideas about agriculture are formed, transmitted, and reinforced within higher-education environments.

As gregarious beings, humans are prone to social contagion. The incentive to propagate rumors, fads, and dangers as a result of a specific topic's rising popularity is explained by the notion of social contagion (Goldstone & Janssen, 2005). Once additional information spreaders begin to engage with one another inside the system, a tipping point is rapidly reached (Elliot, 2021; Christakis & Fowler, 2012). Social connections, relationships, and other demographic factors might affect how contagious a topic is (Konstantinou et al., 2021; Burgess et al., 2018). Due to their better knowledge than the typical individual, those with more professional occupations or those who work or are enrolled in higher education frequently express greater doubts about the welfare, ecological, and health effects of animal agriculture (Liu et al., 2023; Modlinska et al., 2020; Clark et al., 2016). Personal beliefs are perceptions of the truth held by an individual (Cook & Lewandowsky, 2016). As a group of professional educators, these trends in concerns could be considered contagious in nature.

The student-teacher connection is an additional important topic to discuss when addressing misinformation in higher education. Many organizations that govern the trust between students and their professors explain this relationship (Platz, 2021; Basch, 2012). Simply defined, the institutional environment in which instructors work and the idea of paying for a more advanced, sophisticated education support students' trust in their teachers (Platz, 2021). Students seek specialized knowledge and pursue academic achievement when they enroll in college, which strengthens teachers' authority (Platz, 2021). In college, students learn about and engage in epistemic competence, which improves

the ability of the instructor to guide their constituents (Platz, 2021; Basch, 2012). It is also observed that when a positive relationship between students and their instructors is present, there generally are higher success rates amongst the students (Platz, 2021). Also, it has been found that students succeed more frequently when they have a good working relationship with their teacher (Platz, 2021). Although positive relationships between educators and students are opportunities to improve learning, educators' opinions shared in the classroom can jeopardize the positive experience. Sharing opinions can alter the social climate in the classroom (Pennycook et al., 2018; Rodriguez et al., 2016a, 2016b). Students may feel challenged or intimidated by the change in "safe spaces" or conditions for discussion, as well as fear the potential repercussions if they express their divergent viewpoints (Flensner & Von der Lippe, 2019).

People experience a phenomenon known as belief polarization when they learn similar information, and as a result, their opinions deviate (Cook & Lewandowsky, 2016). Teachers have strong opinions that may be politically motivated or influenced by other factors. It is imperative to emphasize that instructor epistemologies affect students' receptivity to information (Barnes et al., 2015). A subcategory of belief polarization, scientific polarization is the propensity for public acceptance of a topic to be driven by popular opinion (van der Linden et al., 2017). Particularly in times of uncertainty, the public looks to professionals in the field, authorities, or politically motivated opinions presented as facts for advice (van der Linden et al., 2017). Polarized science is frequently politically motivated, according to people with valued opinions (van der Linden et al., 2017).

These three concepts outline a framework for understanding how perceptions of agriculture can develop within educational environments. We use these elements to guide our exploration into agriculture's presence in higher education environments. Social contagion explains how ideas circulate, student-teacher relationships describe the mechanisms through which those ideas are transmitted, and belief polarization accounts for why interpretations may differ even when people have access to the same information.

2. Materials and Methods

This study uses qualitative data using an observational approach. The questions were crafted by research personnel and validated by instructors in each discipline. Study elements including survey questionnaires and all Institutional Review Board documentation were submitted and approved in November 2022 through Auburn University's IRB office under protocol #22-517 EX 2211. The approval verifies that all participants were at low risk and that anonymity was maintained. University instructors at land-grant universities within the 50 US states were invited to participate in a study testing their ability to craft impromptu discussion prompts that foster student learning. Instructors were contacted through email by the first author, which contained the Qualtrics survey (Version 2022, Provo, Utah, U.S.) link using appropriate methodologies explained by Dillman et al. (2014). To ensure that teaching instructors were sampled, participants were requested to provide their position appointments prior to survey. Participants who responded with zero percent in "teaching" and "extension" categories were not permitted to take the survey. However, the participants who responded with position appointments with greater than zero percent in "teaching" or "extension" categories were allowed to take the survey. Data collection ranged from December 2022 to February 2023. The survey consisted of the following: an information letter, demographics, discipline selection, and generation of discussion prompts. Incomplete responses were first removed from the data analysis, leaving 59 findings for statistical analysis and interpretation.

2.1. Discipline Selection and Discussion Prompt Generation

Discipline selection involved participants choosing the area of interest in which they teach provided by the American College Testing guidelines in 2022 (ACT, 2023). To answer Research Question #1 and measure the frequency with which agriculture is introduced as a discussion prompt, we did not ask instructors to explicitly craft an agriculture-based prompt. Instead, we asked instructors to write a prompt related to a topic within their area of interest that fosters student engagement and learning. Participants were asked to write a discussion prompt or post if online that they would be likely to use in their classroom. To provide further details, participants were given the opportunity to include an example student response to the prompt they created. With the selection of disciplines, a topic was provided to keep the responses within certain limits, as presented in Table 1. Each had the potential to address agriculture, but did not explicitly ask to address agriculture directly. For example, participants who select agriculture, natural resources conservation, or sciences as their area of interest were provided the topic, "climate change." Animal or plant-focused agriculture could be addressed when discussing climate change, but is not always discussed as a cause or solution.

Table 1. Discussion topics assigned based on declared area of interest [z].

ACT Area of Interest	Discussion Topic
Agriculture and Natural Resources Conservation	Climate change
Sciences: Biological and Physical	
Architecture	Urban sprawl and/or imminent domain
Repair, Production, and Construction	
Area, Ethnic, and Multidisciplinary Studies	Challenges facing rural communities
Education	
Business	International trade
Communication	Product marketing of food
Community, Family, and Personal Services	
Health Administration and Assisting	Dietary choice
Health Sciences and Technologies	
Computer Science and Mathematics	Agricultural census
English and Foreign Languages	Migrant workers
Philosophy and Religion	Ethical or theological reasoning toward dietary choice
Social Sciences and Law	Politically policy ramifications of the Animal Welfare Act
Engineering	Genetically engineered products
Engineering Technology and Drafting	
Arts: Visual and Performing	Incorporation of natural landscapes and environmental elements into the arts

[z] ACT = American College Testing; (ACT, 2023).

2.2. Statistical Analysis

Demographic data were analyzed using SPSS (Version 26). To answer Research Question #2, open response questions served as qualitative measures in which focused and thematic coding (Saldaña, 2016) were analyzed using ATLAS.ti (ATLAS.ti, Web Version, 2022). Responses were organized by the first author, which produced a transcript consisting of 19 pages of single-spaced text. Following guidelines by Saldaña (2016), four agriculture

professionals reviewed and validated the transcribed text, themes, and codes to ensure dependability and reliability (Cypress, 2017). If there were differences in interpretation, the coders worked together to ensure steady responses by combining codes with comparable meaning into one code using second-cycle coding. Second-cycle coding was followed by categorization and grouping of codes into themes (O'Sullivan & Jefferson, 2019). These coding techniques produced reliable results upon which the notions of reliability and validity are predicated in the research study (Seale, 1999).

2.3. Participants

Participants in this study included faculty members from land-grant institutions across the United States with position appointments of teaching or extension roles. The information summarizing the major demographic information of the participants is shown in Table 2, separated by personal and academic characteristics. Personal characteristics include gender, age, ethnicity, and upbringing, while academic characteristics include descriptors of their profession including their academic rank and position appointments. Of the 59 responses, the participants were evenly split in terms of gender. Sample majorities include that the participants were millennials (49.2%), white (89.8%), and grew up in a rural area (47.5%) or a suburban area (45.8%). Additionally, the participants had diversified university ranks, with assistant professors (33.9%) and professors (27.1%) composing more than 50% of the group. Position appointments were summarized from numerical responses, and many of the respondents had large roles (>70%) of teaching or extension work.

Table 2. Personal and academic demographic characteristics of participants [z].

Personal Demographics	***n***	**%**	**Academic Demographics**	***n***	**%**
Gender			University Role or Rank		
Female	28	47.5	Instructor or Lecturer	8	13.6
Male	30	50.8	Assistant Professor	20	33.9
Third gender/non-binary	1	1.7	Associate Professor	9	15.3
Age [y]			Professor	16	27.1
Millennial (27–42)	29	49.2	Professor of Practice	3	5.1
Generation X (43–59)	22	37.3	Other	3	5.1
Baby Boomers (60–77)	8	13.6	Position Appointment		
Ethnicity			Majority teaching or extension	37	62.7
Caucasian/White	53	89.8			
Hispanic/Latino	2	3.4	Majority research with some teaching or extension	9	15.3
African American/Black	1	1.7			
Asian/Pacific Islander	1	1.7			
Mixed/Other	2	3.4	Majority administration with some teaching or extension	6	10.2
Upbringing					
Urban	4	6.8			
Suburban	27	45.8	Evenly split teaching or extension or research	7	11.9
Rural	28	47.5			

[z] Survey utilizing Qualtrics (n = 59) for teaching faculty introduction and sentiment toward agriculture. [y] Generations defined by Research Guides at the University of Southern California (2023).

Figure 1 displays the regions which participants indicated house their institution. To protect the identities of the land-grant institutions, states and university names were not collected. Most

of the respondents worked at land-grant institutions in the Midwest, particularly the north central Midwest (59.3%) followed by the central Southeast region (10.2%).

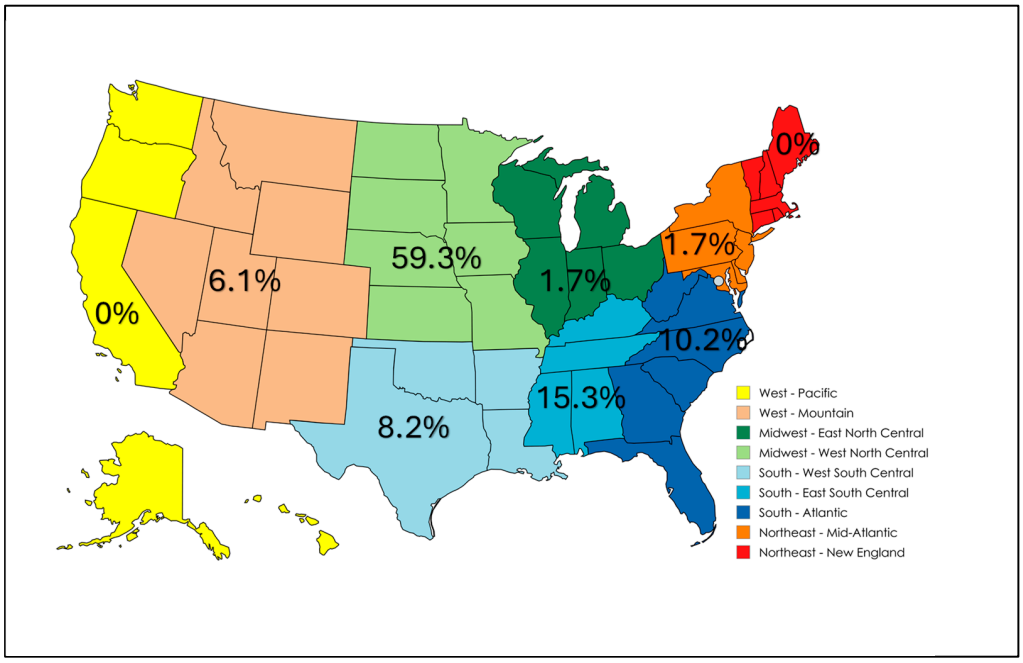

Figure 1. Regional map of participants' affiliated university. Note: United States map with Census areas and divisions shown. n = 59 teaching faculty.

3. Results

Open-ended responses were analyzed using a validated thematic coding framework described in the Methods section; therefore, the Results presented focus on emergent themes and sentiment patterns rather than reiterating coding procedures. Because discussion prompts did not explicitly reference agriculture, the inclusion of agricultural themes reflects participant-initiated connections rather than prompt-driven cues. Analysis of prompt assignment indicated no discernible pattern suggesting that specific prompt categories were more likely to elicit agricultural references. Agricultural mentions appeared across multiple prompt types and disciplinary contexts, suggesting that the inclusion or omission of agriculture was driven primarily by respondent framing choices rather than prompt-induced bias. As such, randomization served as a control mechanism to reduce systematic topic effects rather than a variable of analytical focus. Although prompt randomization reduced the likelihood of topic-driven bias, the study does not claim equivalence across prompts; rather, it emphasizes spontaneous discourse as the unit of analysis. The first round of coding involved sorting the responses that mentioned agriculture. The themes are bolded, while codes are capitalized for readability. The Agriculture codes contained codes related to addressing specific sectors of agriculture, mentioning the word "agriculture," or highlighting specific agricultural products such as meat and milk. Of the 59 responses, 34 did not mention agriculture and 25 continued with coding analysis. Shown in Table 3, most of the responses came from the area "Agriculture and Natural Resources Conservation," but it is not clear why this captured the highest response.

Exploratory comparison across self-reported disciplinary groupings suggested that agricultural references were more likely to emerge among respondents in applied or systems-oriented fields (e.g., environmental science, biological sciences) than in abstract or humanities-oriented disciplines; however, sample size limitations precluded formal

inferential statistical testing. As such, these observations are presented as descriptive trends rather than statistically validated differences.

Table 3. Area of interest, frequencies, and code words in prompt formation [z].

ACT Area of Interest	*n*	Code Words for Agriculture
Agriculture and Natural Resource Conservation	14	BEEF, FOOD PRODUCTION, FARM PRODUCTION ENTERPRISES, HORSE INDUSTRY, CROPPING SYSTEMS, LIVESTOCK PRODUCTION, GROW FOOD, RUMINANT
Sciences: Biological and Physical	1	ANIMAL AGRICULTURE
Business	1	FOOD SUPPLY, SUPPLY CHAIN
Communication	1	DAIRY MILK
Health Sciences and Technologies	1	GLOBAL AG PRODUCTION, FRUITS, VEGETABLES, MEAT
Computer Science and Mathematics	2	AG CENSUS DATA, FARM MODEL
English and Foreign Languages	1	FARM LABORERS
Philosophy and Religion	1	INDUSTRIAL FARMING, MEAT CONSUMPTION
Social Sciences and Law	2	ANIMAL RIGHTS, COCK FIGHTING RING
Engineering Technology and Drafting	1	GMO FOOD [y]
Total	25	

[z] Survey utilizing Qualtrics (n = 59) for teaching faculty introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] American College Testing = ACT.

Sentiment Analysis for Prompts Mentioning Agriculture

Further analysis of participant-generated discussion prompts and example answers included sentiment analysis. Sentiment analysis through cyclical coding methods resulted in Positive, Negative, and Neutral themes. Frequencies for sentiment analysis are displayed in Table 4. In general, the majority of prompts mentioning agriculture were positioned with neutral sentiment (72.0%), followed by negative (20.0%), and positive (8.0%) sentiments. These proportions were consistent across responses in which agriculture was referenced, indicating that neutral sentiment predominated regardless of prompt topic. Agricultural references appeared across multiple declared areas of interest, suggesting that interdisciplinary connections emerged organically rather than being isolated to agriculture-adjacent disciplines. The sentiment analysis artificial intelligence mechanism through ATLAS.ti coded responses in a similar way.

Table 4. Sentiment frequencies for responses that mention agriculture.

Sentiment	*n*	%
Positive	2	8.0
Negative	5	20.0
Neutral	18	72.0
Total	25	100.0

Positive responses contained codes such as natural cycle, sustainability, ag solutions, health benefits, and others. Respondents who demonstrated positive remarks towards agriculture framed different sectors of industry as sustainable sources of healthy foods. Furthermore, respondents indicated that agriculture is not the main driver of climate change, rather it is a solution and should be used as a tool to reduce the temperature of the Earth. There were two responses that had positive sentiment, with one response from

the areas of "Agriculture and Natural Resources Conservation" and "Communications." The most common codes for positive responses presented in Table 5 encompassed the pro-agriculture language (PRO-AG) and that agriculture could solve (AG SOLUTIONS) the issue of climate change in a sustainable way (SUSTAINABILITY). In Table 6, shortened positive discussion prompts are provided.

Table 5. Code words and frequencies for positive sentiment responses found in land-grant instructor discussion prompts mentioning agriculture [z,y].

Code Words	*n*	%
NATURAL CYCLE	1	8.3
SUSTAINABILITY	3	25.0
AG SOLUTIONS	3	25.0
PRO-AG	4	33.3
HEALTH BENEFITS	1	8.3

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 25 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 2 (n = 1 for Agriculture and Natural Resources Conservation; n = 1 for Communications).

Table 6. Positive sentiment prompt responses and code words from land-grant instructors amongst different areas of interest [z,y].

Area of Interest [x]	Example Quotes
Agriculture and Natural Resources Conservation	"When considering the percentage of greenhouse gas emissions the agriculture sector is responsible for compared to other industries, it seems the blame is not justified. Those in the livestock industry argue that, livestock can actually be part of the climate change solution with their ability to sequester and recycle carbon from the earth's atmosphere and help lower earth's temperature. . . Based on your own research in conjunction with what you have learned in this course about livestock production and stewardship of land, discuss what you think options are for sustainable solutions to climate change are in the agriculture industry."
Communication	"You are working with an integrated marketing and communications team to increase the reach of your social media campaign focused on the health benefits of dairy milk to consumers. . . What would be one strategy you would recommend for the company to pursue? How would you measure the success of the strategy?"

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 25 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 2 (n = 1 for Agriculture and Natural Resources Conservation; n = 1 for Communications). [x] (ACT, 2023).

Negative responses contained codes such as climate change contributors, reduced meat intake, and others. Respondents demonstrating negative themes posed agriculture as an industry destructive to the planet in terms of environmental impact and nudged that reduced meat intake could solve this issue. The codes for the negative responses are displayed in Table 7. Most of the negative responses were attributed to the blame of agriculture for immeasurable contributions to climate change (climate change contributors, massive effects). Other positions negative to agriculture included prompts for consumers to declare that current global agriculture producers do not meet demand of producing fruits, vegetables, or meat for the world to consume (underproducing). Examples of negative discussion prompts are presented in Table 8.

Table 7. Code words and frequencies for negative sentiment responses found in land-grant instructor discussion prompts mentioning agriculture [z,y].

Code Words	*n*	%
CLIMATE CHANGE CONTRIBUTORS	6	40.0
MASSIVE EFFECTS	4	26.7
JUSTIFYING EXTREMIST ANIMAL RIGHTS ASSOC.	1	6.7
UNDERPRODUCING	3	20.0
REDUCED MEAT INTAKE	1	6.7

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 23 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 5 (n = 2 for Agriculture and Natural Resources Conservation; n = 1 for Sciences: Biological and Physical; n = 1 for Health Sciences and Technologies; n = 1 for Philosophy and Religion).

Table 8. Negative sentiment prompt responses and code words from land-grant instructors amongst different areas of interest [z,y].

Area of Interest [x]	Example Quotes
Sciences: Biological and Physical	"Assuming you believe in climate change, how large a role do you think animal agriculture plays in the general warming of the planet?"
Philosophy and Religion	"PETA argues that we should be vegan because industrial farming is harming the environment. Suppose they are right (and they might be—Milford reservoir has been closed to fishing and swimming due to green algae blooms for at least a month of the summer in most of the past 10 years in consequence to nitrogen pollution). Does PETA's argument justify government policies designed to decrease stockyard pollution by decreasing the demand for meat?"

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 23 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 5 (n = 2 for Agriculture and Natural Resources Conservation; n = 1 for Sciences: Biological and Physical; n = 1 for Health Sciences and Technologies; n = 1 for Philosophy and Religion). [x] (ACT, 2023).

Neutral responses contained codes that inquired about specific topics with no distinct lean toward pro- or anti-agriculture. Some examples of these codes were ECONOMICS, AG ADAPTATIONS, FARM LABOR, FOOD SUPPLY, and others. Respondents demonstrating neutral tendencies may have framed agriculture as a potential problem or resolution, but most of the prompt presented agriculture in a neutral position. Many responses directly mentioned a specific agriculture industry, such as the beef industry (ANIMAL AGRICULTURE) or fruit producers (PLANT OR CROP AGRICULTURE). The largest number of codes, shown in Table 9, were those labeled FACTFUL INSIGHT. This label was applied to instructor responses asking about knowledge or plans of action of their hypothetical classroom audiences. In Table 10, examples of neutral discussion prompts are provided.

Table 9. Code words and frequencies for neutral sentiment responses found in land-grant instructor discussion prompts mentioning agriculture [z,y].

Sentiment	*n*	(%)
FACTFUL INSIGHT	27	(42.9)
ECONOMICS	3	(4.8)
POLICY ACTIONS	5	(7.9)
AG ADAPTATIONS	4	(6.3)
ANIMAL AGRICULTURE	6	(9.5)
PLANT OR CROP AGRICULTURE	9	(14.3)
AG CENSUS DATA	2	(3.2)
FARM MODEL	1	(1.6)
FARM LABOR	1	(1.6)
FOOD SUPPLY	5	(7.9)

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 23 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 16 (n = 1 for Agriculture and Natural Resources Conservation; n = 1 for Communications).

Table 10. Neutral sentiment prompt responses and code words from land-grant instructors amongst different areas of interest [z,y].

Area of Interest [x]	Example Quotes
Agriculture and Natural Resources Conservation	"For this assignment, please provide a 5-min video discussion of the issue of methane production by ruminants and its effects on the environment. Frame this discussion as if you were talking to an audience of dieticians at a human nutrition conference. You should discuss some data (with sources), as well as how those data should be interpreted in the context of the current debate in the public square." "How might a changing climate in Florida impact an invasive species like citrus greening and therefore impact Florida's citrus industry?"
English and Foreign Languages	"How does Pam Munoz Ryan's young adult novel *Esperanza Rising* depict migrant workers compared with your own perceptions of them? In your response, you can discuss your perspective in terms of experience (direct or observational), research or studies, assumptions or stereotypes, and opinions based on media depictions (including social media, news sources, films/shows, etc.)."
Business	"When considering supply chain issues in the food service industry; What attributes can influence a food products ability to enter the United States? How does this effect your production, menu design, and pricing structure?"

[z] Survey utilizing Qualtrics of 59 higher education instructors (n = 23 for mentioning agriculture) introduction and sentiment toward agriculture. The themes are bolded, while CODES are capitalized for readability. [y] n = 13 (n = 9 for Agriculture and Natural Resources Conservation; n = 1 for Business; n = 1 for English and Foreign Languages; n = 1 for Social Sciences and Law). [x] (ACT, 2023).

4. Discussion

This study was intentionally exploratory, designed to assess whether and how agriculture emerges in simulated discussion prompts and the sentiment associated with those references, rather than to test discipline-specific or demographic hypotheses. Together, our findings suggest that while agriculture is not commonly foregrounded in simulated instructional discourse, it emerges intermittently and is most often framed in neutral terms. To promote unique yet balanced learning, higher education instructors can introduce interdisciplinary topics in the classroom. Agriculture, a complex field of study with elements of art, engineering, and science, can be a source of information for instructors. Agriculture is a relevant topic to draw from and understand, as it is evident that agriculture contributes significantly to global economic activity and offers a range of services to other industries on a local, national, and global scale (Jackson-Smith & Jensen, 2009). Teaching concepts about agriculture reinforces efforts to improve agricultural literacy (Looney, 2009). Agricultural literacy is defined by the National Agricultural Literacy Outcomes (NALO) program (Spielmaker & Leising, 2013) as the capacity to digest information about and comprehend our food and fiber system. By illustrating actual-world problem scenarios, agricultural examples in the context of other disciplines can help students develop their mathematical and scientific application skills (Mabie & Baker, 1996). It is important to know if higher education instructors introduce agriculture in classrooms, but it is more powerful to discern the position or attitudes in which the information is presented. While inferential analyses were not appropriate given the sample size and qualitative design, the observed variation in agricultural sentiment across disciplinary contexts highlights a promising avenue for future research. Larger-scale studies could integrate simulated discussion prompts with demographic and disciplinary variables to assess whether instructor background systematically influences the framing of agriculture in higher education discourse.

In our investigation, it was discovered that instructors in subjects other than agricultural science may discuss agricultural issues. Importantly, the present study establishes simulated discussion prompts as a viable methodological tool for eliciting latent sentiment, providing a foundation for future mixed-methods research that combines qualitative discourse analysis with inferential modeling. Specifically, these findings suggest that higher education instructors outside of agricultural sciences do introduce agricultural topics in their classrooms, most often framing them in neutral rather than explicitly positive or negative terms. To handle complicated issues and advance information literacy, interdisciplinarity as a knowledge regime is important, and this may reflect an attempt to manage complex, contested topics in ways that minimize perceived bias (Svensson et al., 2022; Felt et al., 2012). Consistent with previous literature, it was revealed in our results that instructors may present agriculture in negative perspectives, but less frequently than neutral positions. These negative perspectives could be influenced by opinion-based teaching in higher education (Kunkle & Monroe, 2018; Linvill, 2011), the motivation to share preconceived biases (Schwitzgebel et al., 2020; Linvill & Havice, 2011), science polarization (van der Linden et al., 2017), or belief polarization (Cook & Lewandowsky, 2016).

Instructors formulated negative perspectives on agriculture and food production in the fields of biological or physical sciences, human health sciences, philosophical and religious studies, and agriculture or natural resources sciences. Some traditional science instructors promote less conservative instruction on climate change by making unfounded claims that agriculture is the only cause of it, while others instruct the opposite (Kunkle & Monroe, 2018; Gil-Perez et al., 2003). The work of Kunkle and Monroe (2018) illustrates a division in teaching science, also coined science polarization. Science polarization is the propensity for public acceptance of a subject to be determined primarily by popular opinion on the subject (van der Linden et al., 2017). Other examples of disparities of agriculture and

science educators include conversations of genetically modified foods (Mohapatra et al., 2010), reducing meat consumption to mitigate pollution of the planet (Fonseca & Vizachri, 2023), or having a negative impression of agriculture education (Malecki et al., 2004).

Regarding human health sciences, there are discrepancies in perspective between scientists and agriculturalists. Many nutritionists or medical professionals claim that in addition to reducing emissions, minimizing red meat intake can prevent heart disease, cancer, premature death (Misra et al., 2018; Christophersen & Haug, 2011), and limit higher body mass indices (Hobbs-Grimmer et al., 2021). Other nutrition and health scientists argue the benefits of eating red meat, including but not limited to the benefits of satiety, the maintenance of lean body mass, complete protein composition (Jampolis et al., 2016; Wyness, 2016), improvement of cardiac function (Pereira & Vicente, 2013), and benefits to the neurological system (Riesberg et al., 2016; Szcześniak et al., 2014). A specific benefit and one of the most important benefits of consuming red meat that is less discussed includes the neurological, growth, and developmental gains of children consuming red meat (Leroy et al., 2023; Hawthorne et al., 2022; Krebs et al., 2011). Philosophical studies and religious studies can also have qualms with agriculture. These groups admire utilitarian efforts, which is the ethical mindset that whatever is morally right is the best action to produce good (Driver, 2014). This view includes avoiding harvesting animals for consumption purposes, minimizing planet pollution, maintaining natural resources, abstaining from genetically modified foods, and avoiding the use of synthetic resources to promote crop development (Theisen, 2020; Barnhill & Doggett, 2018; John & Flores, 2018; Thompson, 2016; Korthals, 2008; Zwart, 2000). Addressing the negative comments of agricultural sciences and natural resource sciences, natural resources sciences tend to have the same perspectives on agriculture as traditional science fields, but many have opposite perspectives (MacDonald et al., 2015). As discussed earlier, agricultural communicators have shown poor efforts to combat negative messages against agriculture. Therefore, it was unexpected that agricultural instructors created discussions that had unfavorable themes or attitudes toward their subjects. While such critique may reflect disciplinary maturity, it also underscores the need for agricultural educators to develop communication strategies that contextualize challenges without reinforcing deficit-based narratives. This phenomenon demonstrates the need to educate agriculturalists about effective, positive messaging strategies, especially in educational settings.

On the other hand, agricultural and natural resource scientists and communication instructors presented positive outlooks on agriculture. As previously discussed, agricultural instructors should and are expected to communicate balanced, evidence-based facts regarding their own industry. People who are more involved in food production are obligated to know more and think more clearly about issues like animal welfare, the safety of foods derived from animals, and the effects of animal agriculture on the environment. Regarding the positive response from the communications area, the instructor decided to use the prompt to educate others about agriculture. Specifically, communicating about the health benefits of dairy milk (González-González et al., 2022; Ali et al., 2021) can reach millions of people through social media mechanisms (Farrell et al., 2022). The existing connections between managing the land for wildlife, crops, and animals for production may lead to a more favorable impression or relationship with agriculture for natural resources and conservation sciences (NRCS Conservation Programs, n.d.). To maintain the quality of the land for both agriculturalists and conservationists, there are several conservation tactics in place (NRCS Conservation Programs, n.d.). Communication-focused instructors leveraged agriculture as a case study for broader public engagement, suggesting that familiarity with audience-centered messaging may influence how agriculture is framed in educational contexts.

5. Conclusions

Instructors and leaders in higher education are highly trusted individuals; therefore, it is crucial to study precise language used during teaching sessions referring to the most vital industry in the world, food production. When presenting agriculture in positive or negative perspectives, higher education instructors have the influential potential to alter student perceptions of agriculture (Prusaczyk et al., 2021; Schwitzgebel et al., 2020). In this study, we were able to quantify the possibility that instructors would introduce agriculture and conduct sentiment analysis to examine the perspectives on agriculture and food production. Collectively, our findings suggest that agriculture is not absent from higher education discourse but is often framed cautiously or neutrally, potentially reflecting instructor uncertainty or concern about disciplinary boundaries. The predominance of neutral sentiment underscores the challenge of integrating agriculture into interdisciplinary teaching without explicit training or confidence in the subject matter. Simulated discussion prompts offer a novel means of capturing these dynamics by revealing how instructors naturally frame—or avoid—agriculture when not explicitly prompted to do so. Therefore, the findings of this study help explain patterns observed in prior research highlighting widespread negative perceptions of animal agriculture in higher education, specifically in college students. In a previous study conducted by this research group, nearly half of participants reported negative views of animal agriculture regardless of their familiarity with food production, indicating that exposure alone does not guarantee understanding or trust (Corbitt et al., 2025). The present results provide insight into one potential mechanism underlying this disconnect: how agriculture is framed within higher-education classrooms. Together, these studies suggest that higher education plays a critical role not only in transmitting knowledge about agriculture but also in shaping the framework through which that knowledge is understood. The predominance of neutral sentiment suggests that agriculture may be viewed by many instructors as a peripheral or contextual topic rather than a central instructional domain, highlighting challenges in making interdisciplinary connections without risking oversimplification or misinformation.

However, the study had some limitations. Given the modest sample size and uneven representation across disciplines and demographic categories, inferential statistical analyses were not conducted to avoid underpowered or potentially misleading conclusions. Instead, descriptive frequencies were used to identify preliminary patterns that may inform future hypothesis-driven research.

First, our sample was small and drawn exclusively from faculty at land-grant institutions. While this population provided relevant expertise, it also limits the generalizability of the findings. Land-grant institutions have their history and missions tied to agriculture; therefore, many faculty often have disciplinary orientations and institutional cultures that differ from those at non-land-grant or private institutions. As a result, the perceptions and experiences captured in this study may not reflect those of instructors in broader higher-education contexts. This limitation suggests that the patterns identified here, such as motivations for introducing agriculture in the classroom or concerns about misinformation, should be interpreted with caution. Future research would benefit from recruiting a larger and more diverse sample, including faculty from non-land-grant universities, community colleges, and institutions across a wider range of disciplines. A more heterogeneous sample would allow for comparative analyses and provide a clearer understanding of how agricultural topics are approached across different educational environments. Future studies with larger and more balanced samples could examine whether the likelihood or sentiment of agricultural references varies by academic discipline, teaching experience, or institutional context using inferential and multivariate approaches.

Additionally, recommendations include using the current study prompts, specifically positive- and negative-positioned discussion prompts, and surveying students responding to the discussion prompts. This would allow for measures of impact on the student based on the positioning of agriculture in higher education discussion settings. Lastly, instructors who make interdisciplinary leaps by immersing agriculture in classrooms can be difficult and may result in the spread of misinformation. As a potential intervention to agricultural misinformation and to provide background knowledge of agricultural concepts, the inclusion of modules, training, or workshops in teacher education or faculty development programs is another option for additional research.

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