

What's in a Book? An Exploration of Multicultural Extractions Within Secondary Agriculture Textbooks

Abstract

Through real-world applications and illustrations of concepts for diverse disciplines, textbooks have the unique capacity to provide glimpses of industry norms, including biases that may be present, defining the people, values, concepts, and skills that are regarded legitimate in a discipline (Becker & Nilsson, 2021). Researchers identified and examined sex and race inside secondary agriculture education textbooks from the biggest US textbook publishers using a cross-sectional descriptive survey and social semiotics. 34,161 pages, 4,603 images, and 585 case studies from 58 textbooks were reviewed by the researchers. As it comes to enrollment in public schools, students of color now taking secondary agricultural education courses do not perceive themselves reflected in agriculture texts. There aren't many women working in any of the disciplines related to agriculture. The textbooks' glaring lack of diversity and representation could be misunderstood by female and BIPOC students studying agriculture in secondary schools. It is necessary to conduct more study on the intersectionality of racial and gender representation in secondary agriculture textbooks as well as gender nonconformities and colorism.

Keywords: BIPOC; textbooks; race; gender; diversity; multicultural; secondary representation; equity

Introduction

Both students and teachers interact in the classroom and rely on textbooks. Textbooks are used to establish the people, beliefs, concepts, and skills that are deemed legitimate in a discipline and to provide real-world application of concepts for diverse courses (Becker & Nilsson, 2021). Textbooks are an important teaching tool that are available in physical books as well as online e-books. Together with additional instructional resources or as a stand-alone tool, the textbook benefits both students and teachers (Hajdin & Divjak, 2016). To help students have a well-rounded understanding of the subject and the concepts involved, there are several visuals, illustrations, and case studies included alongside the text. The textbook includes unspoken values, prejudices, and ideologies with each image that students may deduce from and judge for themselves, which could affect their sense of identity (Benattabou, 2021). This unspoken context may provide implicit messages about a certain demographic's success in a given field.

According to Van den Ham and Heinze (2018), textbooks help students succeed and perform well while also giving an overview of professional standards, including any potential biases. Through portrayal of many points of interest, including resemblance, these images should help students feel a sense of belonging within a field. It might be challenging for a kid to pursue or be interested in a career in the subject if they don't feel like they belong there at the secondary level (Bush & Mattox, 2018; Taboas-Pais & Rey-Cao, 2015). Various fields of study in education continue to look at the problem of representation in textbooks (Cassese & Bos, 2013; Sánchez, 2019). As Earl (2020) pointed out, when a student feels a sense of belonging, they will gain a desire to succeed in the discipline.

Most textbook authors, teachers, administration, and school staff are white (Stanley, 2006). Within college textbooks a discrepancy was determined as the vast representation are of white male figures; while women and racial and ethnic minority groups do not have proper representation (Becker & Nilsson, 2021; Simpson et. al., 2021; Brandle, 2020; Bush & Mattox, 2020). This missing

representation of *all* students can be discouraging to underrepresented youth who already face issues like solo status, especially in STEM courses (Hurtado et. al., 2010). Additionally, students within science disciplines can feel implications of stereotype threat by image intake, even though this may not be the intention of the authors or publishing companies (Good et al., 2010).

Analyzing textbooks to determine demographics and representation reveals what students are being exposed to throughout their educational career, and the implicit messaging being placed within young developing minds. Although it may not be the intent of the author, textbooks can impact student intake of information beyond the scope of the content written. Issues regarding demographics and representation in textbooks and school resources are not a problem specific to only secondary agricultural education. Unfortunately, there are limited research investigating the human aspect within secondary agricultural education textbooks.

Theoretical Framework

Semiotics is the study of signs and symbols, the way they are used, and the meaning associated with each (Bezemer & Kress, 2008). For example, a red octagon does not inherently mean stop and red octagons are not produced in nature to mean stop; however, the use of the stop sign has made the red octagon meaning become an immediate thought in an individual's mind. Peirce (1955) explains every symbol or image has three parts: the image itself, its object, and its interpretant; the producer of the sign is referred to as the *sign maker*. The sign maker gives intended meanings to using elements from the sign by meaning and form to show relationships (2008). As for the stop sign, the sign itself is the stop sign, the object is stopping, and the interpretant is the intended relationship between the two.

Social semiotics is the interpretation of semiotic resources, signs or any observable characteristics, and the meanings associated with the semiotic resources as it pertains to the culture of society. Although the sign maker may have certain intentions for how a sign is to be interpreted, "the plural 'meanings' is crucial here, because just as dictionaries cannot predict the meaning which a word will have in a specific context, so other kinds of semiotic inventories cannot predict the meaning" (van Leeuwen, 2005, p. 4). A sign can be interpreted in many ways, and context of signs is dependent on the interpretant. Every individual who observes a sign plays the role of interpretant, and everyone has their own unique lived experience which impacts the context of a sign (Rightler-McDaniels & Hendrickson, 2014). It may not be the intent of the author, but a lack of representation within school textbooks can lead to student feelings of isolation. The first use of social semiotics is seen in the works of Michael Halliday (1978), who argues against the separation of linguistics and society, and whose sole focus was to view linguistics as a societal and cultural medium. However, the scholarly works of Hodge & Kress (1988) and van Leeuwen (2005) focus social semiotics in societal practice, specifically critical perspectives on society and those who hold power. Kress and van Leeuwen (2002) posit there is no group large enough to justify a true shared meaning of colors, the same can be applied to any semiotic mode. Large groups have power which smaller groups lack, this power imbalance is why the same image may present two different conclusions from different groups.

This study focuses on social power and using a critical lens to view the environment in which Black, Indigenous, and people of color (BIPOC) and females are represented within agricultural education. Representation within textbooks and their various activities may show various aspects of the educational system and a society that may or may not reflect the reader. Power imbalances may occur in spaces which contain very little diversity, as one may not feel comfortable doing things outside of the determined norm. Observing race and gender and the representation within agricultural education

textbooks using principles of social semiotics may show ways textbook authors could improve or increase representation.

Studying demographics of textbook images and case studies is important to pinpoint what students may perceive as, “there is another second order of meaning which carries by and large hidden ideological messages not obvious to a non-alerted eye” this second meaning of photographs may send unintended messages to students (Benattabou, 2021, p. 3). An example of this “non-alerted eye” are in the contextual use of emojis and the intention of the user and the perception of the one receiving the emoji. In the case of textbooks, the “non-alerted eye” would be in reference to imagery utilized and how different lived experiences play a different receiving role between the viewers. This is important as demographics of textbooks cannot be used to prove author intent but instead allows researchers to describe with a critical lens what students may be gathering and interpreting as they turn the pages of their textbooks.

Research surrounding social semiotics and the hidden context within educational textbooks began around 2010 in the fields of STEM, language learning, study abroad programs, and early elementary (de Freitas & Zolkower, 2009; Eriksson et. al., 2020; Granly & Maagerø, 2012; Knain et. al., 2021; Michelson & Valencia, 2016; Nabifar, 2015). However, domestic research surrounding social semiotics and education is minimal. Analyzing textbooks using a social semiotic lens is important to pinpoint the possible messages students are obtaining through textbooks.

Purpose

This descriptive study's goal was to pinpoint the social semiotics of sex and race in illustrations and case studies from secondary agriculture education textbooks produced by the biggest American publishing houses. The following goals were set to help achieve the study's purpose:

- Objective 1: Describe the overall demographics present in the secondary agriculture textbooks.
- Objective 2: Describe the demographics present in the secondary agriculture textbooks by agricultural discipline.
- Objective 3: Describe the demographics present in the secondary agriculture textbooks by textbook publisher.

To determine if the demographics found are a significant difference to the cultural norms within US public schools, the following research hypothesis were developed:

- Ho1: There will be no difference between observed sex (male and female) and expected (public school enrollment) values of the textbooks by discipline.
- Ho2: There will be no difference between observed sex (male and female) and expected values (public school enrollment) of the textbooks by publisher.
- Ho3: There will be no difference between observed race (white and BIPOC) and expected (public school enrollment) values of the textbooks by discipline.
- Ho4: There will be no difference between observed race (white and BIPOC) and expected values (public school enrollment) of the textbooks by publisher.

Methods

This study utilized a descriptive cross-sectional research design. Cross-sectional research design studies are descriptive in nature and occur at a single moment in time. They are used to determine prevalence of an outcome in a population (Levin, 2006). Using descriptive cross-sectional research is useful in social sciences, as it allows researchers to observe a cross-section of the population within a short amount of time, allowing research to show current trends (Lunenburg & Irby, 2007). The researchers conducted this study with a transformative lens; the researchers are interested in underrepresented minority populations, gender, and the power relationships present in society (Creswell, 2017).

This study began through qualitative observations of textbook images, illustrations, and stories to capture the demographics present in secondary agricultural education textbooks that were available for teachers during the 2021 academic school year by the leading textbook publishers. The cases (photos, chapter information, tables, charts, figures, examples, review questions, and scenarios) captured were coded into dyadic demographics used for quantitative magnitude calculations (Creswell, 2017): male, female, white, and BIPOC (Black, Indigenous, and People of Color). Throughout the coding and analysis process, we considered how the representation and lack of representation within each textbook creates Social Semiotics messaging that assisted in the development of the conclusions and recommendations.

Currently, the United States has 33 secondary textbook publishers (Hickey & Jones, 2012). This population was chosen as researchers wanted to determine whether differences exist among publishing companies. To establish a representation of the current secondary agricultural classroom textbooks, researchers utilized textbooks published between 2011-2021 from the top five publishing companies: Cengage Learning, Houghton Mifflin Harcourt, McGraw-Hill Education, Pearson Education, and Scholastic (BookScouter, 2020). Within these companies, three produced textbooks related to the agriculture, food, and natural resources: Cengage, Pearson, and McGraw-Hill. A total of 58 books were obtained from the publishers through a variety of options: loan book program from publisher; online view subscription, purchase, and publisher provided copy.

A scholar not associated with the study, but competent in Social Semiotics theory and methodology, served as a reviewer. Random samples were drawn by the reviewer to maintain the integrity of the evaluation (Kisorio & Langley, 2015; Miller, 1997; Lincoln & Guba, 1985). Every page of the textbook was reviewed and within each page, the researchers examined the photos, chapter information, tables, charts, figures, examples, review questions, and scenarios. If a name was given within a scenario or review question, the researchers utilized a name search engine to determine the most common ethnicity and/or gender associated with the name.

When a face was not present, but an individual body part was a focal point, we identified race only. We determined the focal points based upon the provided photo's caption or if the individual consumed two-thirds of the photo. In the presence of multiple individuals in the same photo, we implemented a strict guideline that secured inter- and intra-rater reliability: if at least one of each category (e.g. female/white) was represented it would account for the sum of one (1) in each category (e.g. 1 female/1 white). In situations where a group of individuals and multiple people of the same identity were present, the count would still be one. A photo used multiple times throughout a textbook was considered only once. We maintained a reflective journal to assist in describing images that either did not reflect the theme of the chapter or a trend of occurring marginalization. To assist with organization, we maintained a different reflective journal for each book. Codes were in the form of

numbers, also referred to as magnitudes, and were generated by discipline then by publisher. At the conclusion of the review, we evaluated 34,161 pages, 4,603 photos, and 585 case studies for a total of 5,188 cases collected.

The data spread across two workbooks. We classified and separated the textbooks into the following disciplines of agriculture: agricultural mechanics, animal science, business, horticulture, introduction to agriculture, agricultural science, natural resources/environment, food science, and veterinary science. In the second workbook, we separated the textbooks by publisher. We used Microsoft Excel to analyze the magnitude codes into both frequencies and percentages. Chi-square Goodness of Fit evaluation determined differences to the overall secondary school population (D'Agostino, 2017) and an online calculator assisted in the analysis. We realize that the utilization of all US secondary school enrollment is not a true representation of the student population where agricultural education is conducted; however National FFA Organization nor the National Association of Agricultural Educators were unable to provide us with demographic of the schools where all secondary agricultural education is provided. To conduct a Goodness of Fit, we compared the observed value to the expected value (Sprinthall, 2007). In this study, the expected value was set based upon student enrollment in public schools as set by the National Center for Educational Statistics (2020). Such analysis was appropriate for the size and research objectives in a descriptive study (Foster, 2021). Haven and Van Grootel (2019) consider the act of quantifying qualitative codes as *preregistering qualitative research* and posit that it improves the credibility of qualitative research.

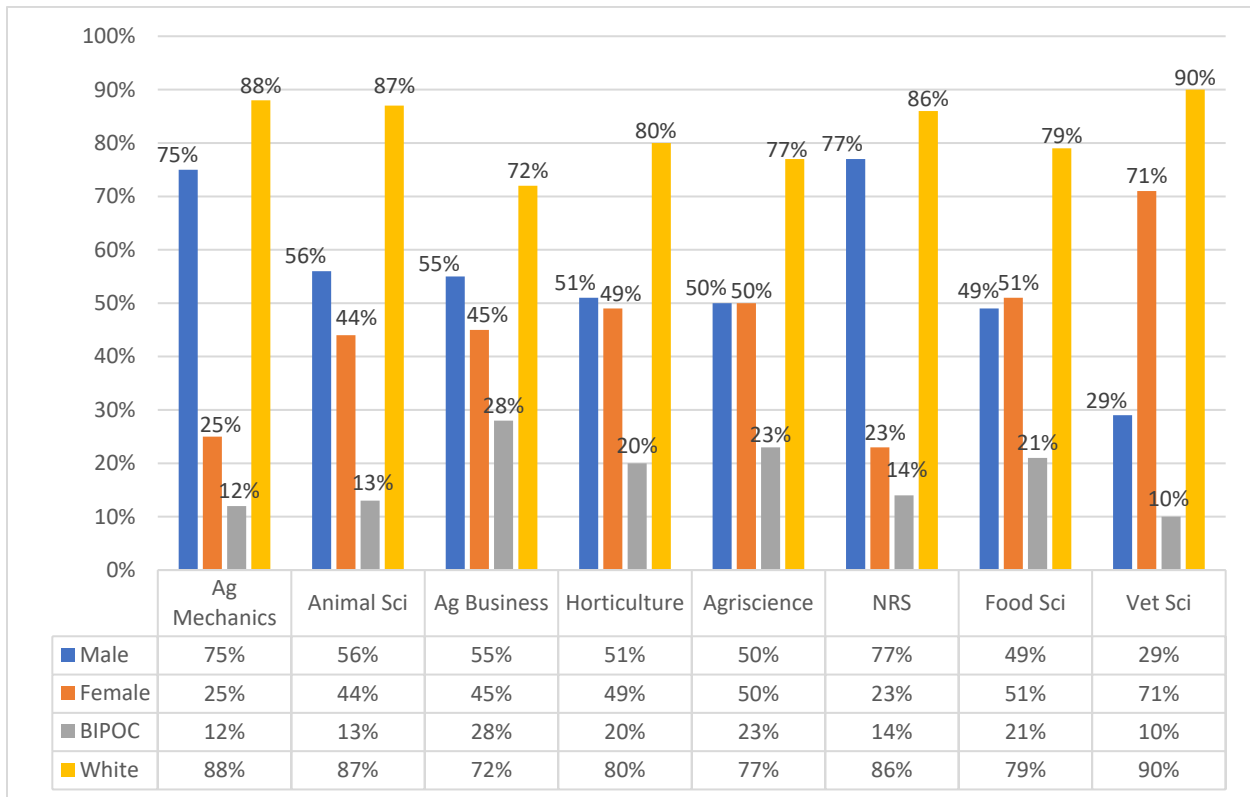
We acknowledge that the study has its limitations which include the researchers' own biases and experiences about gender and sex. Gender is beyond a male-female binary although throughout the study individuals are classified as one gender or the other. Names and phenotype of an individual do not entirely represent ethnicity or race present. However, this exploratory study can be a starting point for important conversations regarding the issues present with the homogeneity of agricultural education. The researchers utilized current public-school enrollment data for all US public secondary education. Nevertheless, the Census enrollment is useful as secondary agricultural education continues to expand into schools where agriculture once was not an option, such as urban school districts. Additionally, in areas with limited resources and educational funding, the assessment of textbooks has a longer period of relevancy as school resources can be very costly.

Results

Male representation was 52% (or 2,796) and female representation was 48% (or 2,622) across all 58 textbooks. White people made up the bulk of the population ($n = 5,581$; 81%). The second research goal was to describe the demographics related to the field of agriculture (see Figure 1). Natural Resources had the highest presence of males ($f = 106$; 77%) while Veterinary Medicine textbooks had the highest presence of females ($f = 450$; 71%). Agricultural Business textbooks had the highest presence of BIPOC ($f = 367$; 28%). Figure 1 provides a breakdown of all 5,188 cases reviewed.

Figure 1

Demographic Breakdown in Secondary Textbooks by Agricultural Discipline



For each publisher, Cengage textbooks had 52% ($f = 2,208$) male representation and 81% ($f = 4,488$) white representation. Pearson reflected 52% ($f = 571$) male representation and 80% ($f = 1073$) white representation. McGraw-Hill agriculture textbook reflected a 63% ($f = 17$) and 71% ($f = 20$) white representation.

A Chi-Square Goodness of Fit Test was conducted to determine whether the proportion of gender representation present was equal between the textbooks by discipline and the national average for public school enrollment (National Center, 2021). There was a significant relationship between textbook representation of females and public-school enrollment in the agricultural mechanics textbooks [$X^2(1, 58) = 22.11, p < .01$], natural resources textbooks [$X^2(1,58) = 26.03, p < .01$], and the veterinary medicine textbooks [$X^2(1,58) = 20.27, p < .01$].

A significant relationship between racial representation present and public-school enrollment existed among the agricultural mechanics textbooks [$X^2(1,58) = 67.48, p < .01$], the animal science textbooks [$X^2(1,58) = 64.23, p < .01$], the horticulture textbooks [$X^2(1,58) = 43.71, p < .01$], the agriculture business textbooks [$X^2(1,58) = 25.09, p < .01$], the agriscience textbooks [$X^2(1,58) = 67.48, p < .01$], the food science textbooks [$X^2(1,58) = 41.11, p < .01$], the natural resources textbooks [$X^2(1,58) = 61.06, p < .01$] and the veterinary medicine textbooks [$X^2(1,58) = 74.23, p < .01$]. Overall, throughout all the secondary agricultural education textbooks, there was a significant relationship between racial representation present and public-school enrollment [$X^2(1,58) = 46.41, p =$

< .01]. The results of the Chi-Square Goodness of Fit Test across the disciplines within agriculture can be found in Table 1.

Table 1

Differences among demographics by agriculture textbook disciplines

Discipline (# of books)	Category	Observed	Expected	Contribution to χ^2	χ^2	<i>p</i>
Ag Mech (<i>n</i> = 2)	Female	75.0	48.5	10.72	22.11	.01
	Male	25.0	51.5	11.39		
	BIPOC	12.0	53.0	31.72	67.48	.01
	White	88.0	47.0	35.77		
Animal Science (<i>n</i> = 12)	Female	44.0	48.5	0.42	0.81	.37
	Male	56.0	51.5	0.39		
	BIPOC	13.0	53.0	30.19	64.23	.01
	White	87.0	47.0	34.04		
Horticulture (<i>n</i> = 15)	Female	49.0	48.5	0.01	0.01	.92
	Male	51.0	51.5	0.00		
	BIPOC	20.0	53.0	20.55	43.71	.01
	White	80.0	47.0	23.17		
Ag Business (<i>n</i> = 8)	Female	45.0	48.5	0.25	0.49	.48
	Male	55.0	51.5	0.24		
	BIPOC	28.0	53.0	11.79	25.09	.01
	White	72.0	47.0	13.30		
Agriscience (<i>n</i> = 7)	Female	50.0	48.5	0.05	0.09	.76
	Male	50.0	51.5	0.04		
	BIPOC	21.0	53.0	19.32	41.11	.01
	White	79.0	47.0	21.79		
Food Science (<i>n</i> = 1)	Female	49.0	48.5	0.01	0.01	.92
	Male	51.0	51.5	0.00		
	BIPOC	21.0	53.0	19.32	41.11	.01
	White	79.0	47.0	21.79		
Natural Resources (<i>n</i> = 5)	Female	23.0	48.5	13.41	26.03	.01
	Male	77.0	51.5	12.63		
	BIPOC	14.0	53.0	28.7	61.06	.01
	White	86.0	47.0	32.36		
Veterinary Science (<i>n</i> = 8)	Female	71.0	48.5	10.44	20.27	.01
	Male	29.0	51.5	9.83		
	BIPOC	10.0	53.0	34.89	74.23	.01
	White	90.0	47.0	39.34		
Overall (<i>N</i> = 58)	Female	48.0	48.5	0.01	0.01	.92
	Male	52.0	51.5	0.00		
	BIPOC	19.0	53.0	21.81	46.41	.01
	White	81.0	47.0	24.60		

A Chi-Square Goodness of Fit Test was conducted to determine whether the proportion of gender representation present was equal between the textbooks by publisher and the national average

for public school enrollment. No significant relationship existed between gender in textbooks and the public-school enrollment among all three textbook publishers (see Table 2).

A significant relationship between racial representation and the public-school enrollment existed among Cengage [$X^2(1,58) = 40.41, p = < .01$], Pearson [$X^2(1,58) = 43.72, p = < .01$], and McGraw-Hill [$X^2(1,58) = 23.12, p = < .01$].

Table 2

Differences among demographics by agriculture textbook publishers

Publisher	Category	Observed %	Expected %	Contribution to X^2	X^2	p-value
Cengage	Female	48.0	48.5	0.01	0.01	.92
	Male	52.0	51.5	0.00		
	BIPOC	19.0	53.0	21.81	46.41	.01
	White	81.0	47.0	24.60		
Pearson	Female	48.0	48.5	0.01	0.01	.92
	Male	52.0	51.5	0.00		
	BIPOC	20.0	53.0	20.55	43.72	.01
	White	80.0	47.0	23.17		
McGraw-Hill	Female	37.0	48.5	2.73	5.30	.02
	Male	63.0	51.5	2.57		
	BIPOC	29.0	53.0	10.87	23.12	.01
	White	71.0	47.0	12.26		

Conclusions, Implications, & Recommendations

The demographics of each discipline and publisher do not match the expected values set by the national public-school enrollment. The demographic percentages of each discipline and the low percentages of BIPOC representation in the textbooks show that diversity is limited; thus, providing social semiotic conditioning of industry representation norms (Nabifar, 2015).

Agricultural mechanics, natural resources, and veterinary medicine have a significant difference between gender representation and public-school enrollment. While agricultural mechanics and natural resources have more males represented in the textbooks than public-school enrollment, veterinary medicine textbooks have more females present. These relationships that currently exist impact students and their sense of belonging within the given fields of agriculture and provide semiotic meanings related to that of gender schema. The missing representation may lead to inaccurate conclusions about various fields.

The social semiotics present within the textbooks can provide subconscious messages for gender roles in particular professions. What one may expect to see represented, based on stereotypes, is seen. These semiotic references with what youth see create difficult sociological battles that teachers must overcome while striving for an inclusive learning environment. Although pushing gender roles may not be intent of the authors, having a higher rate of diversity within the textbooks could reduce these feelings of isolation. These images may not convey gender roles to every interpretant; however, being cognizant of the different interpretations of images may assist authors in providing culturally relevant educational materials for the modern classroom which encourages belonging. Knain et al.

(2021) uses a lens of social semiotics to suggest, students rely on resources, images, and social interactions to fully grasp abstract concepts, specifically gas exchanges within a greenhouse.

All the agricultural education textbooks expose a significant gap in BIPOC representation as compared to the student enrollment in public schools. The overwhelming discrepancy in racial presence negatively impact feelings of belonging among BIPOC youth (Villegas et al., 2012). It is recommended that authors and publishers become more cognizant of the racial demographics present in the textbooks and the positioning of the images so that BIPOC individuals are a focal point or that names within examples and case studies reflect names of diverse racial groups. For publishers it is imperative that they provide their authors with a diversity of photo options and that the author be cognizant of the racial imagery of the students being selected for the textbooks in which they are writing. In addition, we encourage authors, not publishers, to use gender neutral names (e.g. Kelly, Shea, etc) and names that are reflective of various ethnicities. The use of popular name searches by ethnicity is an approach to obtaining names to use as a pseudonym.

Among the publishing companies, none exposed a significant relationship between gender representation. We commend the textbook companies as well as the authors for their effort to provide gender representation within the various cases observed (photos, chapter information, tables, charts, figures, examples, review questions, and scenarios). Considering some of the stereotypes which may be associated with agriculture or agricultural education, this equal representation of both males and females shows where textbooks within agricultural education excel in representation.

While it is important to have proper gender representation, it was not the only variable studied and only represents certain aspects of current and future agricultural education students. All the publishing companies present within the study had a significant relationship between racial representation present within secondary agricultural education textbooks and the national public-school enrollment. Meaning, within three of the largest educational publishing companies, not a single company had a significant BIPOC representation. Students of color currently enrolled in secondary agricultural classrooms do not see themselves represented in textbooks utilized by their students, rather the presence of individuals who look like their white colleagues. The lack of diversity and representation present in textbooks provides unintended messages to the students of color within agricultural education, even if there is no intention of excluding students of color (Rightler-McDaniels & Hendrickson, 2014). The lack of supplemental resources for teachers, including textbooks, reveal a representation of both the agricultural industry and public education enrollment could be detrimental to the enrollment and inclusion of underrepresented students. Knowing this lack of representation exist, it is recommended that classroom teachers offset the deficiency through the examples they provide in class as well as on their assessments. In addition, we encourage the classroom teacher to diversify other elements of their classroom, so representation does exist, such as their classroom bulletin board.

In present day, “both school/pedagogue[s] remain the agent of culture and society . . . The pedagogic institution has the task to provide navigational aids. The students’ task in response is to make use of the resources that have been made available for further semiotic work,” (Kress, 2007, p. 264) students are tasked with critical thinking and there is a possibility fully engaging with agricultural education textbooks could lead to students drawing false conclusions about the field.

It important to note there must be more than teacher effort because school effort of inclusivity is equally necessary. Representation should be considered when choosing textbooks best for the classroom, by textbook authors, and by educational publishing companies. Addressing the homogeneity

of individuals within the textbooks should be placed to accurately represent race both within the industry of agriculture and the United States workforce.

Within each discipline several repetitions and visual trends in images, illustrations, and case studies were observed. Farnia and Gerami (2019) state, “both drawings and photos are utilized in reading comprehension texts with a balanced trend” which further emphasizes the importance of being intentional with images in text. Across all disciplines, many illustrations and case study examples were primarily white people. Particularly within each textbook, authors develop examples such as illustrations; thus, providing an opportunity to supplement the representation currently lacking among images. We encourage textbook authors to analyze the representation within images of a textbook prior to including illustrations and case studies to the text. Illustrations are an easy way to increase the diversity within the textbook.

Although not part of the objectives in the study, we do note that in animal science textbooks, most scientists pictured were white males, while BIPOC representation was limited to chapters specific to global perspectives, especially in cases of less developed countries or hunger and poverty. Additionally, the BIPOC photos revealed individuals working in manual labor, used for examples of zoonotic diseases, and when explaining implications and strategies of urban agriculture. When analyzing veterinary medicine textbooks, the number of people of color increased in examples of rodent care and exotic animals. In the food science textbook, the images of people of color increased when explaining world issues surrounding food insecurity. A further exploration that thematically explains the use of BIPOC within the classroom textbooks is recommended.

Across all disciplines, the frequency of people of color increased when units were devoted to global conditions and perspective; poverty; and social injustices. Additionally, the researchers noticed in the textbooks, a limited presence of differently abled individuals, those who use assistive devices, and those in religious clothing such as head coverings. While the mere presence cannot show student perception, the lack of representation can lead to decreased sense of belonging among underrepresented students (Benattabou, 2021) in agricultural education.

Considering the limited studies regarding previous studies of textbooks and textbook demographics within secondary agricultural education, it is almost impossible to determine if these relationships between gender and racial representation have improved throughout the years of agricultural education textbooks production. However, considering trends of FFA membership demographics, it is important to note the organization is becoming more diverse than ever before. It is imperative for student resources to be inclusive and diverse to increase sense of belonging among both minority FFA members and secondary agricultural education students.

Need for Additional Research

The current study looked at race and gender separately as two different factors and did not consider an individual's intersectionality by looking at both. Future studies on textbook demography should take intersectionality and the influence of many cultural elements into account. It is important to be aware of how these many identities interact since they might have varied effects on someone's experiences. A more thorough evaluation of the representation in the agricultural education textbooks can be obtained by examining gender, race, and their interaction.

Further research is needed to address gender nonconformities, if any, are present in secondary agricultural education textbooks as the current study solely observed gender on a binary. Research regarding agricultural education textbook representation among specific ethnicities could explain what

representation is present for specific racial minority groups as the current study places a very broad lens on BIPOC representation. Observing colorism that may be present would give more insight on specifically the representation in the textbooks. Utilizing a lens of critical whiteness studies when observing skin tones of those pictured in agricultural education textbooks may show a more complex relationship present.

Unfortunately, no system is in place that allows scholars to compare the data with the demographics of students enrolled currently in secondary agricultural education throughout the United States and the membership within the National FFA Organization. Scholarship that sought to obtain this dynamic would assist future research throughout the profession in providing census data for comparison purposes.

Finally, qualitative research considering student perception of textbook images could give interesting perspectives about belonging within agricultural education. Further research could address if underrepresented students feel there is a difference between teacher effort of inclusion and how much resources impact feelings of inclusion. Overall, there is limited research regarding the sense of belonging among underrepresented students in agricultural education. In research regarding student belonging and perceptions of teachers, future work should include a lens of Critical Race Theory or critical whiteness studies, as the demographics of textbooks show the white able body at the center of the images, illustrations, and case studies. Utilizing these frameworks may result in research which more fully describes the way education is impacted by the larger society to which it belongs.

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