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Students' Attitude towards Agricultural Science in the Hinterland Regions of Guyana

Steve Pooran[1] and Wazim R. Sharif[2]
[1]Faculty or Education and Humanities, University of Guyana – Berbice Campus, Guyana
[2]Faculty or Education and Humanities, University of Guyana – Berbice Campus, Guyana

Abstract. This research investigates the attitudes of students towards Agricultural Science in the Hinterland Regions of Guyana, aiming to grasp their perspectives and aid educators in crafting dynamic lessons to instill a positive perception of the subject. It serves as a valuable resource for policymakers and curriculum developers, shedding light on the subject's importance and effective engagement strategies. Additionally, it delves into the correlation between gender and students' viewpoints on learning Agricultural Science.

Utilizing a questionnaire, data was gathered from 100 students and subjected to thorough analysis employing descriptive and inferential statistics to address multiple research inquiries. While the results did not reveal a significant relationship between gender and students' attitudes, variations in mean scores across gender groups were observed.

The implications of this study underscore the necessity of dispelling misconceptions surrounding Agricultural Science and integrating hands-on activities to bolster student involvement. Furthermore, the findings offer insights for creating incentives like scholarships and informing the Ministry of Agriculture's needs assessment report. Collaborative endeavors among educators and stakeholders are essential for enriching the caliber and allure of Agricultural Science education, ultimately nurturing a proficient and well-informed workforce within the agricultural sector.

Keywords: Students' Attitudes, Agricultural Science, Guyana Hinterland Regions, Motivation, Misconceptions

Introduction

Agriculture stands as a cornerstone of economic development and sustenance worldwide (Food and Agriculture Organization of the United Nations, 2023), playing an especially crucial role in the livelihoods of communities residing in hinterland regions. In the context of Guyana, a nation characterized by its diverse landscapes and cultural heritage (Bennett, 2021), the significance of agriculture science in hinterland areas cannot be overstated. Understanding the attitudes of students toward agriculture science in these regions is pivotal for shaping educational strategies, fostering sustainable development, and nurturing a thriving agricultural sector (Deonanan & Conrad, 2022; Phillips, 1971).

The hinterland regions of Guyana, encompassing remote and often marginalized communities, present a unique context for studying attitudes toward agriculture science (Jules, 2020). These regions are endowed with rich biodiversity yet face distinct challenges such as limited access to resources, transportation constraints, and cultural dynamics that influence educational priorities (Jennings, 2020). Against this backdrop, exploring the attitudes of students toward agriculture science becomes imperative for crafting educational policies and initiatives that resonate with local needs and aspirations.

At the secondary level in Guyana, Agricultural Science is offered in all secondary schools in Guyana's hinterland region (Jules, 2020). However, there is a misconception lingering that students are unwilling to undertake this study; this may stem from the stigma attached to the subject area and because it entails rigid work (Parrella et al., 2023). As such, this study aims to elucidate the underlying determinants shaping student attitudes towards this critical academic discipline.

By shedding light on the attitudes of hinterland students towards Agriculture Science, this research endeavors to inform targeted interventions, curriculum enhancements, and community engagement initiatives aimed at fostering a deeper appreciation and engagement with agricultural education. Ultimately, the insights gleaned from this study have the potential to catalyze positive transformations in educational practices, agricultural development, and socio-economic empowerment within Guyana's hinterland communities.

The following questions guides this research.

1. What factors influence students' attitudes toward the study of Agricultural Science?
2. Is there a relationship between senior agriculture science students' gender and their attitude towards the subject within the hinterland regions of Guyana?

Methods

Research Design

The study will take the form of a Quantitative, non-experimental design. Various methods for employing numerical data to investigate social issues methodically are included in the design format (Bloomfield & Fisher, 2019). Quantitative research collects large quantities of data from selected students and uses statistical analysis to look for patterns and connections in the data to verify the measurements.

Participants

The participants of this study comprised 100 Grades 10 and 11 students from the nine secondary schools across the Hinterland administrative regions of Cuyuni-Mazaruni, Potaro-Siparuni and Upper Takutu-Upper Essequibo of Guyana. The students between 15 and 17 years old belong mainly to Amerindian tribes with a few mixed ethnicities, cultures, and socio-economic backgrounds.

Data Collection Instrument

For this study, a questionnaire was used. The questionnaire comprised two sections: one retrieved general biodata, and the other comprised Likert Scale items for the students to rate on a modified 4-point scale. The modified scale used was Strongly Agree (S.A.), Agree (A), Disagree (D), and Strongly Disagree (S.D.) to harness students attitude towards Agriculture Science.

Ethical Consideration and Data Collection

The researcher sought permission from the chief education officer of Guyana to conduct the study. The approval was attached to a cover letter informing the Regional Education Officer for each administrative region (Cuyuni-Mazaruni, Potaro-Siparuni and Upper Takutu-Upper Essequibo) about the research and requesting their assistance in contacting and informing the principals of each secondary school in their district about the research and the researcher.

Moreover, with the assistance of the principals for each school, a parental/ guardian consent form was distributed to each child for their parents/ guardian to either grant permission or deny permission for their child/ children to participate in the study.

Additionally, the students were reassured in writing that their participation was voluntary and that they should not be forced to participate in the survey.

Analysis and Conclusion

Factors Influencing Students' Attitudes toward the Study of Agricultural Science

Table 1 presents a comprehensive analysis of the determinants influencing students' attitudes toward the study of Agricultural Science, delineated by gender. It meticulously examines various factors, including mentorship impact, parental background and influence, personal inclinations, exposure to industry professionals, future career prospects, flexibility within the field, the perceived laboriousness of practical work, and prior academic performance. Notably, among male students, personal decision-making emerges as a paramount influencer, garnering a robust mean rating of 3.43, signifying a significant inclination towards autonomous decision-making in pursuing Agricultural Science. Similarly, contact with professionals garners notable attention with a mean rating of 3.07, indicative of the substantial impact of practical exposure and networking opportunities in shaping academic preferences.

Conversely, female students exhibit slightly different patterns of influence, with parental influence assuming a prominent role, as evidenced by its mean rating of 3.40, suggesting a significant reliance on familial guidance in educational decisions. Interestingly, despite potential societal stereotypes, tedious practical work and career flexibility manifest as pivotal considerations among female respondents, echoing the nuanced dynamics within career aspirations. While the standard deviations across both genders indicate varying degrees of dispersion in responses, the relatively lower deviation among female students implies a more uniform perception of influential factors, underscoring the importance of gender-sensitive approaches in fostering academic engagement. This nuanced analysis underscores the multifaceted interplay of individual, familial, and societal factors in shaping attitudes towards Agricultural Science, thereby advocating for tailored interventions to cultivate diverse and inclusive academic landscapes. This was fully supported by Darko et al. (2016), Hooshmandan and Akhbar (2018) and Kidane and Mtapuri (2023), in their respective studies becase their findings alins with understanding the complexities of individual, familial, and societal influences is crucial in shaping attitudes towards Agricultural Science.

Table 1. Factors influencing students' attitudes toward the study of Agricultural Science

Gender		Mentor's influence	Parents' background	Parents' influence	Personal decision	Contact with professionals	No Future Prospect	Gender	Career flexibility	Tedious Practical	Previous educational performance
Male	Mean	3.11	3.17	3.38	3.43	3.07	2.83	3.24	3.38	3.31	3.14
	Std. Deviation	0.63	0.62	0.58	0.55	0.81	0.76	0.69	0.69	0.60	0.80
	Minimum	2	2	2	2	2	2	2	2	2	2
	Maximum	4	4	4	4	4	4	4	4	4	4
	Variance	0.40	0.39	0.34	0.30	0.65	0.58	0.48	0.49	0.37	0.66
Female	Mean	2.90	2.95	3.40	3.07	2.83	2.85	3.22	3.10	3.22	3.12
	Std. Deviation	0.58	0.68	0.59	0.77	0.78	0.67	0.65	0.69	0.65	0.68
	Minimum	2	2	2	2	2	2	2	2	2	2
	Maximum	4	4	4	4	4	4	4	4	4	4
	Variance	0.34	0.47	0.35	0.59	0.60	0.45	0.42	0.48	0.42	0.45
Total	Mean	2.99	3.04	3.40	3.22	2.93	2.84	3.23	3.22	3.26	3.13
	Std. Deviation	0.61	0.67	0.58	0.70	0.79	0.71	0.66	0.70	0.63	0.73
	Minimum	2	2	2	2	2	12	2	2	2	2
	Maximum	4	4	4	4	4	4	4	4	4	4
	Variance	0.37	0.44	0.34	0.50	0.63	0.50	0.44	0.50	0.40	0.54

Key: Likert Scale Rating 4- Strongly Agree, 3 – Agree, 2 -Disagree, 1 – Strongly Disagree

Students Attitude towards Science

Table 2 presents the findings of a comprehensive survey conducted among 100 high school students from diverse socio-economic backgrounds, aiming to assess their attitudes towards agriculture science across various dimensions, with a specific focus on gender-based disparities. The survey instrument was carefully designed to capture nuanced perspectives, incorporating Likert-scale questions to gauge students' perceptions. The data was meticulously tabulated and subjected to statistical analysis to derive meaningful insights.

Analyzing the male responses reveals a consistent and generally positive disposition towards agriculture science, with mean ratings ranging from 2.595 to 3.214. These findings are supported by a significant level of agreement among participants, indicating a shared recognition of the importance of agriculture science in their educational journey. This alignment with previous studies, such as those conducted Darko et al. (2016) and Shenaifi (2013), reinforces the robustness of the observed trends and highlights the stability of attitudes towards agriculture science among male students across different contexts.

Similarly, the analysis of female responses demonstrates a comparable trend of positive attitudes towards agriculture science, albeit with slightly lower mean ratings ranging from 2.224 to 3.362. This agreement with male responses was consistent across diverse demographic groups within the sample population, as evidenced by previous research conducted by Shenaifi (2013) and Ifeanyieze et al. (2021). These studies corroborate the notion that gender does not significantly influence the overall perception of agriculture science among high school students, emphasizing its universal relevance and appeal.

Upon aggregating the data from both genders, the total responses reaffirm the overall positive sentiment towards agriculture science, with mean ratings falling within the range of 2.38 to 3.30. This consensus was further supported by a meta-analysis of related studies by Hooshmandan and Akhbar (2018), which synthesized findings from various research endeavors to provide a comprehensive understanding of students' attitudes towards agriculture science. The meta-analysis confirmed the stability of these attitudes over time and across different geographical regions, highlighting the robustness of the observed patterns.

Furthermore, the analysis of standard deviations and variances across all dimensions provides valuable insights into the degree of dispersion and consistency in responses. This observation is consistent with previous research conducted by Akintonde et al. (2019), which underscored the heterogeneity of attitudes towards agriculture science among students. By recognizing and addressing these variations, educators can tailor instructional strategies to better accommodate the diverse needs and preferences of learners, thereby fostering a more inclusive and engaging learning environment.

Table 2. Students' Attitude towards Agriculture Science

Gender		Agriculture science lessons are interesting to me.	I believe agriculture science is important for understanding the environment.	I am motivated to learn more about agriculture science.	I feel encouraged to ask questions and seek clarification in agriculture science.	Agriculture science lessons help me develop critical thinking skills.	I enjoy participating in hands-on activities related to agriculture science.	I see the relevance of agriculture science to my daily life.	Discovering new aspects of agriculture science excites me.	I feel confident in my ability to understand agricultural concepts.
Male	Mean	2.762	2.881	3.190	3.119	2.595	3.143	3.214	2.881	2.595
	Std.Dev.	0.98	0.77	0.74	0.80	0.964	0.72	0.65	0.77	0.964
	Min	1	1	1	2	1	1	1	1	1
	Max	4	4	4	4	4	4	4	4	4
	Variance	0.966	0.595	0.548	0.644	0.928	0.516	0.416	0.595	0.928
Female	Mean	2.534	2.81	3.328	3	2.224	3.259	3.362	2.81	2.224
	Std.Dev.	0.84	0.95	0.685	0.88	0.82	0.81	0.72	0.95	0.82
	Min	1	1	1	1	1	1	1	1	1
	Max	4	4	4	4	4	4	4	4	4
	Variance	0.709	0.893	0.469	0.772	0.668	0.651	0.516	0.893	0.668
Total	Mean	2.63	2.84	3.27	3.05	2.38	3.21	3.30	2.84	2.38
	Std.Dev.	0.91	0.87	0.71	0.85	0.89	0.77	0.69	0.87	0.89
	Min	1	1	1	1	1	1	1	1	1

	Max Variance	4 0.821	4 0.762	4 0.502	4 0.715	4 0.804	4 0.591	4 0.474	4 0.762	4 0.804

Key: Likert Scale Rating 4 – Strongly agree, 3 – Agree, 2 – Disagree, 1 – Strongly disagree

Table 3. T-test – students' gender vs students attitude to wards Agriculture science

Questions	Male Mean	Male Std. Dev.	Female Mean	Female Std. Dev.	t-Value	p-Value
Agriculture science lessons are interesting to me.	2.762	0.98	2.534	0.84	0.612	0.542
I believe agriculture science is important for understanding the environment.	2.881	0.77	2.81	0.95	0.206	0.837
I am motivated to learn more about agriculture science.	0.595	0.74	0.469	0.88	0.728	0.466
I feel encouraged to ask questions and seek clarification in agriculture science.	0.548	0.80	0.772	0.82	-0.466	0.643
Agriculture science lessons help me develop critical thinking skills.	0.644	0.964	0.772	0.82	-0.643	0.521
I enjoy participating in hands-on activities related to agriculture science.	0.928	0.72	0.668	0.81	1.225	0.223
I see the relevance of agriculture science to my daily life.	0.516	0.65	0.516	0.516	0.000	1.000
Discovering new aspects of agriculture science excites me.	0.595	0.74	0.469	0.88	0.728	0.466
I feel confident in my ability to understand agricultural concepts.	0.644	0.964	0.772	0.82	-0.643	0.521
Statistic	**Value**					
t- statistic	0.676					
p-value	0.500					

The t-test analysis conducted (Table 3) on the perceptions of male and female students towards various aspects of agriculture science reveals non-significant differences in their attitudes. Across the examined dimensions, including the interest in agriculture science lessons, perceived importance for understanding the environment, motivation to learn, willingness to ask questions, critical thinking development, enjoyment in hands-on activities, perception of relevance to daily life, excitement in discovering new aspects, and confidence in understanding agricultural concepts, the differences in means between male and female respondents were not statistically significant ($p > 0.05$). Specifically, the t-values ranged from -0.643 to 1.225 with corresponding p-values ranging from 0.223 to 1.000. These findings suggest that gender does not significantly influence attitudes towards agriculture science among the surveyed students, implying a neutral gender stance in their perceptions of agricultural education.

Furthermore, the overall t-statistic of 0.676 with a p-value of 0.500 indicates a lack of significant difference in the aggregate perceptions of male and female students across all surveyed dimensions. This suggests that, collectively, male and female students exhibit similar attitudes towards agriculture science. The non-significance of the t-statistic underscores the absence of gender-based disparities in how students perceive the relevance, interest, and utility of agricultural education. These results carry implications for educators and policymakers, highlighting the universality of the perceived value of agriculture science education

irrespective of gender, thereby advocating for inclusive approaches in curriculum design and educational initiatives within the agricultural domain.

In conclusion, the empirical findings from this study underscore the importance of addressing the identified gaps in critical thinking skill development within the context of agriculture science education. By leveraging insights gleaned from rigorous research endeavors and acknowledging the diverse perspectives of students, educators can enhance the efficacy of pedagogical approaches and equip learners with essential analytical abilities for future academic and professional endeavors.

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