

## Impact of Self-Efficacy on Interest and Self Esteem in Agricultural Science Among Senior Secondary Students in Kogi State, Nigeria

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### Abstract

*This study investigated the impact of self-efficacy on interest and self-esteem in Agricultural Science among senior secondary school students in Kogi State, Nigeria. Six objectives, six research questions, and six null hypotheses guided the study. The study was anchored on Albert Bandura's Social Cognitive Theory, and Sheldon Stryker's Identity Theory of Self-Esteem. The study adopted a correlational survey research design. The population of the study comprised 8,569 senior secondary school students offering Agricultural Science in public secondary schools in Okene Educational Zone of the state, while a sample size of 235 students was selected for the study. Three standardized instruments - General Self-Efficacy Scale (GSES), Interest Scale, and Rosenberg Self-Esteem Scale (RSES) - were adapted and used for data collection. The instruments were validated by experts in science education, while reliability coefficients of 0.833, 0.799, and 0.797 were obtained respectively using Cronbach Alpha. Data collected were analyzed using descriptive statistics, independent samples t-test, Analysis of Variance (ANOVA), and Pearson Product Moment Correlation (PPMC). The findings revealed that there was no significant gender difference in students' self-efficacy, interest, and self-esteem in Agricultural Science. The study further revealed that students with high self-efficacy demonstrated significantly higher levels of interest and self-esteem than students with moderate and low self-efficacy. In addition, a strong positive and statistically significant relationship was found among self-efficacy, interest, and self-esteem in Agricultural Science. The study concluded that self-efficacy plays a significant role in shaping students' interest and self-esteem in Agricultural Science. It was therefore recommended among others that Agricultural Science teachers should adopt learner-centered and supportive teaching strategies capable of improving students' confidence, interest, and positive self-perception toward Agricultural Science.*

**Keywords:** Self-efficacy, Interest, Self-esteem, Agricultural Science.

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### Introduction

Agriculture remains a fundamental pillar of human development, providing food, fibre, medicinal resources, industrial raw materials, employment, and contributing to environmental conservation and national economic stability. Its broad scope encompasses crop production, animal husbandry, soil science, agricultural economics, agricultural engineering, forestry, agroforestry, and agricultural education, each contributing to sustainable livelihoods and national development (Uchola, 2016; Almorox, 2022; Gitan, 2025). Agricultural education is particularly important because it equips learners with relevant knowledge, practical skills, attitudes, and competencies

required for agricultural productivity and career development (Amadi & Solomon, 2020). Students' engagement and success in Agricultural Science may, however, depend considerably on psychological factors such as self-efficacy, interest, and self-esteem (Daniel et al., 2024).

Self-efficacy, rooted in Bandura's Social Cognitive Theory, refers to an individual's belief in his or her capability to organize and execute actions required to achieve specific goals (Kevin et al., 2020). In educational settings, students with high self-efficacy are generally more willing to undertake challenging tasks, persist when difficulties arise, and demonstrate greater resilience, whereas those with low self-efficacy may avoid demanding tasks and experience reduced academic confidence (Anshu, 2020; Celcima et al., 2024). This construct is especially relevant to Agricultural Science because the subject combines theoretical learning with practical activities such as planting, experimentation, livestock management, and farm operations. Consequently, students' confidence in their ability to perform these tasks may substantially influence their participation, interest, and academic development (Ahmadi, 2020; Vergara, 2024).

Interest is similarly important because it determines the degree of attention, curiosity, enjoyment, and engagement students demonstrate toward a learning activity or subject (Achi et al., 2020). It may be situational, arising from instructional methods and classroom experiences, or individual, developing progressively through sustained engagement with a subject (Du et al., 2021). In Agricultural Science, interested students are more likely to participate actively in practical activities, experiments, and classroom discussions, thereby improving their understanding and skill acquisition (Neroni et al., 2022). Conversely, low interest may reduce participation and negatively affect learning outcomes (Schweder & Raufelder, 2022).

Self-esteem, which reflects an individual's general sense of self-worth and personal value, is also associated with students' academic engagement. Students with positive self-esteem are more likely to participate confidently, take initiative, and persist in learning activities, while low self-esteem may contribute to withdrawal, reduced motivation, and poor academic engagement (Acosta-Gonzaga, 2023). Self-efficacy, interest, and self-esteem are therefore closely interconnected. Students who believe in their ability to perform agricultural tasks may become more interested in the subject, and successful participation may subsequently strengthen their self-esteem. In contrast, low self-efficacy may contribute to weak interest, reduced engagement, and diminished self-esteem (Blotnick et al., 2018). Gender may further influence these relationships. Studies suggest that male and female students sometimes differ in reported self-efficacy in science and technical subjects because of differences in social expectations, learning experiences, and exposure rather than inherent ability (Huang et al., 2019; Daniel et al., 2024). In fields traditionally perceived as male-dominated, including agriculture, female students may underestimate their competence despite possessing comparable abilities. Evidence nevertheless indicates that supportive learning environments, mentorship, and equitable opportunities can minimize such differences and enable female students to perform as effectively as their male counterparts (Adeyemo & Ojo, 2021).

The issue is particularly important in Kogi State, where agriculture constitutes a major economic activity and Agricultural Science is expected to prepare young people for further education, employment, entrepreneurship, and participation in the agricultural sector. Despite its relevance, concerns persist regarding students' declining confidence, interest, and engagement in the subject. Reports have indicated relatively low credit-level performance in Agricultural Science among secondary school candidates in the state, suggesting possible weaknesses in students' motivation and psychological disposition toward the subject (Okokon et al., 2023).

Although previous studies have established the importance of self-efficacy in students' academic development (Ignatius & Mythili, 2020; Sharma, 2024), limited empirical attention has been given

to how self-efficacy relates specifically to students' interest and self-esteem in Agricultural Science, particularly among senior secondary school students in Kogi State. Furthermore, the extent to which these relationships vary by gender remains insufficiently documented. Addressing this gap is important for developing instructional and psychological interventions capable of improving students' engagement with Agricultural Science. Therefore, this study investigated the influence of self-efficacy on students' interest and self-esteem in Agricultural Science among senior secondary school students in Kogi State, with particular attention to gender differences.

### **Objectives of the Study**

The goal of this study is to investigate the influence of self-efficacy on interest and self-esteem in Agricultural Science among senior secondary school students in Kogi State. The specific objectives of the study are as follows:

1. To ascertain the mean self-efficacy scores of Agricultural Science students in senior secondary schools based on gender in Kogi State.
2. To ascertain the mean interest scores of Agricultural Science students in senior secondary schools based on gender in Kogi State.
3. To examine the mean self-esteem scores of Agricultural Science students in senior secondary schools based on gender in Kogi State.
4. To ascertain the difference in the mean interest scores of Agricultural Science students in senior secondary schools based on their levels of self-efficacy in Kogi State.
5. To examine the difference in the mean self-esteem scores of Agricultural Science students in senior secondary schools based on their levels of self-efficacy in Kogi State.
6. To find out the relationship among students' self-efficacy, interest and self-esteem in Agricultural Science in senior secondary schools in Kogi State.

### **Research Questions**

The following research questions are derived from the stated objectives to guide the study:

- i. What is the mean self-efficacy score of Agricultural Science students in senior secondary schools based on gender in Kogi State?
- ii. What is the mean interest score of Agricultural Science students in senior secondary schools based on gender in Kogi State?
- iii. What is the mean self-esteem score of Agricultural Science students in senior secondary schools based on gender in Kogi State?
- iv. What is the difference in the mean interest scores of Agricultural Science students based on their levels of self-efficacy in Kogi State?
- v. What is the difference in the mean self-esteem scores of Agricultural Science students based on their levels of self-efficacy in Kogi State?
- vi. What is the relationship among students' self-efficacy, interest, and self-esteem in Agricultural Science in Kogi State?

### **Hypotheses**

The following hypotheses were formulated and tested at 0.05 level of significance.

H<sub>01</sub>: There is no significant difference in the mean self-efficacy score of male and female Agricultural Science students.

H<sub>02</sub>: There is no significant difference in the mean interest score of male and female Agricultural Science students.

H<sub>03</sub>: There is no significant difference in the mean self-esteem score of male and female Agricultural Science students.

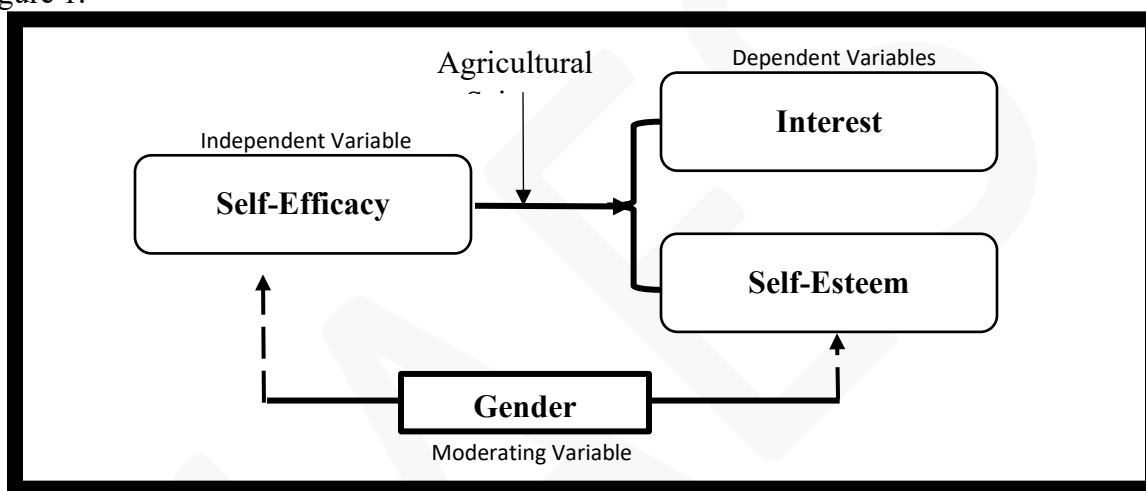
H<sub>04</sub>: There is no significant difference in the mean interest scores of Agricultural Science students based on their levels of self-efficacy.

H<sub>05</sub>: There is no significant difference in the mean self-esteem and self-efficacy score of male and female Agricultural Science students.

H<sub>06</sub>: There is no significant relationship among students' self-efficacy, interest, and self-esteem in Agricultural Science.

### Conceptual Framework

The conceptual framework of this study illustrates the relationship among the key variables in the study. It also provides a visual explanation of how these constructs interact. This is present on Figure 1.



**Figure 1: Conceptual Framework**

The conceptual framework positions self-efficacy as the central variable influencing students' interest and self-esteem in Agricultural Science. It assumes that students who have stronger confidence in their ability to perform Agricultural Science tasks are more likely to develop greater interest in the subject and a more positive sense of self-worth. Interest and self-esteem are also viewed as interrelated, as active engagement in learning may strengthen self-esteem, while positive self-esteem may encourage continued participation and interest.

Gender is incorporated as a moderating variable, recognizing that male and female students may differ in self-efficacy, interest, and self-esteem due to variations in social expectations, exposure, and learning experiences. However, gender is not assumed to directly determine these outcomes. Overall, the framework explains self-efficacy as a key psychological factor associated with students' interest, self-esteem, and engagement in Agricultural Science.

### Conceptual Review

#### Self-Efficacy in Agricultural Science

Self-efficacy is seen as individuals' beliefs in their capability to organize and execute actions required to achieve desired outcomes. It influences effort, persistence, motivation, resilience, and performance rather than merely reflecting the skills a person possesses (Anshu, 2020; Schunk & DiBenedetto, 2020). Students with high self-efficacy are more likely to approach difficult tasks

confidently, persist despite setbacks, and remain actively engaged, whereas those with low self-efficacy may avoid challenging tasks and withdraw easily when difficulties arise.

Self-efficacy develops primarily through four sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological or emotional states. Successful task performance strengthens efficacy beliefs, observation of successful peers can enhance confidence, constructive feedback can encourage persistence, while positive emotional states can support perceptions of competence. Conversely, repeated failure, discouragement, and excessive anxiety may weaken self-efficacy (Schunk & DiBenedetto, 2020; Usher & Schunk, 2018). Self-efficacy further operates through cognitive, motivational, affective, and selection processes. It influences the goals students set, the effort they invest, their emotional responses to academic challenges, and the learning activities they choose to pursue. Consequently, strong self-efficacy is particularly important in Agricultural Science, where students must combine theoretical understanding with practical activities and problem-solving tasks.

### **Self-Esteem in Agricultural Science**

Self-esteem represents an individual's overall evaluation of personal worth, competence, and value. It reflects how positively or negatively individuals perceive themselves and may influence confidence, motivation, emotional stability, and academic participation (Orth et al., 2018). High self-esteem is associated with self-respect, competence, resilience, and positive engagement, whereas low self-esteem may contribute to insecurity, withdrawal, and reduced motivation.

Self-esteem may be global or domain-specific and can be understood in terms of competence and self-worth. It develops progressively through personal experiences, family relationships, social interactions, and educational experiences, particularly during adolescence. Supportive relationships and successful learning experiences can therefore strengthen students' self-esteem and psychological adjustment.

### **Interest in Agricultural Science**

Interest refers to learners' curiosity, enjoyment, enthusiasm, attention, and personal value attached to a subject or learning activity. It promotes active participation, persistence, deeper cognitive engagement, and improved learning outcomes, while low interest may result in boredom, weak concentration, and reduced participation (Athirathan, 2025; Etodike, 2022). Interest may be situational or individual. Situational interest is temporarily stimulated by instructional methods, learning materials, and classroom experiences, whereas individual interest develops gradually through repeated positive engagement. Hidi and Renninger's model describe interest development through triggered situational interest, maintained situational interest, emerging individual interest, and well-developed individual interest (Etodike, 2022). In Agricultural Science, interest is particularly important because the subject involves practical activities, experimentation, problem-solving, and career-oriented skills. Students who are interested in the subject are more likely to participate in practical exercises, complete assignments, engage in classroom discussions, and consider agriculture-related careers.

### **Empirical Review**

Empirical evidence generally demonstrates that self-efficacy is closely associated with students' self-esteem, interest, motivation, engagement, and academic outcomes. Fuentes-Tauber (2018) reported a strong positive relationship between students' general self-efficacy and college-going self-efficacy, while Bhatt and Bahadur (2018) found a strong positive relationship between self-

efficacy and self-esteem among college students. Similarly, Kevin et al. (2020) established that self-efficacy significantly predicted self-esteem, suggesting that students who are confident in their abilities tend to possess higher perceptions of self-worth.

Studies involving secondary school students have also highlighted the interrelationships among these psychological constructs. Achi et al. (2020) found that students' interest in extracurricular activities significantly influenced different dimensions of self-efficacy, while Ahmadi (2020) established that academic self-efficacy mediated the relationship between academic self-esteem and achievement. Ignatius and Mythili (2020) similarly reported positive relationships among self-esteem, self-efficacy, and academic performance, although significant gender differences were observed in favour of female students. Further evidence indicates that self-efficacy is strongly related to students' interest and engagement. Zhao et al. (2021) found that academic self-efficacy substantially mediated the relationship between self-esteem and academic engagement, while Schweder and Raufelder (2022) reported that self-efficacy and interest developed positively and interactively within supportive and self-directed learning environments. Etodike (2022) also established significant differences in students' interest according to levels of self-efficacy and self-esteem, including a significant interaction effect between both variables. However, findings regarding the influence of self-efficacy are not entirely consistent across educational contexts. Neroni et al. (2022) found that self-efficacy and self-esteem did not directly predict academic performance in online higher education, whereas Luo et al. (2022) reported a significant positive relationship between self-esteem and academic self-efficacy. Similarly, Okokon et al. (2023) found no significant influence of self-efficacy on students' interest and achievement in Physics under a flipped-classroom approach. These divergent results suggest that the effect of self-efficacy may depend on subject area, instructional strategy, learner characteristics, and educational context. More recent studies have continued to establish the importance of self-efficacy in students' motivational and academic development. Basileo et al. (2024) found self-efficacy to be strongly associated with academic achievement and to mediate the relationship between motivation and performance. Celcima et al. (2024) similarly reported significant effects of self-efficacy on intrinsic and extrinsic motivation, while Vergara (2024) found that self-efficacy and self-esteem positively predicted Mathematics performance. Athirathan (2025) further established a strong positive relationship between students' self-confidence and learning interest, demonstrating the importance of positive self-beliefs in sustaining academic engagement. Regarding gender, empirical findings remain mixed. Ignatius and Mythili (2020) reported significant gender differences in self-efficacy and self-esteem, while Sharma (2024) similarly found a significant gender difference in self-efficacy. Conversely, other evidence suggests that gender-related variations may depend on educational level and context; Luo et al. (2022), for instance, observed changing gender patterns in academic self-efficacy across different years of university study.

### **Theoretical Framework**

This study is anchored on Bandura's Social Cognitive Theory and Stryker's Identity Theory of Self-Esteem. Social Cognitive Theory explains that self-efficacy, or students' belief in their ability to perform tasks successfully, influences motivation, persistence, participation, and learning behavior. In Agricultural Science, students with high self-efficacy are more likely to engage actively in classroom and practical activities, sustain interest, and develop confidence in their abilities. Stryker's Identity Theory explains that self-esteem develops through identity verification and social feedback. Positive academic experiences, encouragement, and successful task

performance strengthen students' sense of competence and self-worth, while repeated failure or negative feedback may weaken self-esteem and interest.

Together, the theories explain the relationship among self-efficacy, interest, and self-esteem. Self-efficacy shapes students' engagement and motivation, while successful learning experiences and positive social feedback reinforce self-esteem and sustained interest in Agricultural Science.

## Methodology

The study adopted a correlational survey research design to examine the relationships among students' self-efficacy, interest, and self-esteem in Agricultural Science without manipulating the variables. The population comprised 8,569 senior secondary school students offering Agricultural Science in public secondary schools across the Okene Educational Zone of Kogi State. A sample of 235 students was selected using a multistage sampling procedure.

Data were collected using three standardized instruments compiled into the Self-Efficacy, Interest and Self-Esteem in Agricultural Science Questionnaire (SEISEASQ): the General Self-Efficacy Scale (GSES), Interest Scale adapted from Hidi and Renninger's framework, and Rosenberg Self-Esteem Scale (RSES). The instruments were structured on a four-point Likert scale ranging from Strongly Agree (4) to Strongly Disagree (1). The instruments were validated by supervisors and experts in science education. Reliability was established through a pilot study involving 25 Agricultural Science students outside the study area. Cronbach's alpha coefficients of .833, .799, and .797 were obtained for the GSES, Interest Scale, and RSES, respectively, indicating acceptable internal consistency. Data were analyzed using SPSS.

Mean and standard deviation were used to answer the research questions, while independent-samples *t* test, one-way ANOVA, and Pearson Product-Moment Correlation were used to test the hypotheses at the .05 level of significance. Self-efficacy scores were classified as low (1.00–1.99), moderate (2.00–2.99), and high (3.00–4.00). Hypotheses were rejected where  $p \leq 0.05$  and retained where  $p > 0.05$ .

## Data Analysis and Results

### Analysis of Research Questions

This sub-section presents the analysis of the research questions raised for the study.

**Research Question One:** What is the mean self-efficacy score of Agricultural Science students in senior secondary schools based on gender in Kogi State?

**Table 1: Difference in Respondents Mean Self-Efficacy Scores Based on Gender**

| Gender | No  | Mean | SD   | Mean Diff. |
|--------|-----|------|------|------------|
| Male   | 126 | 2.67 | 0.73 | 0.07       |
| Female | 109 | 2.74 | 0.78 |            |

Table 1 presents the mean self-efficacy scores of male and female Agricultural Science students in senior secondary schools in Kogi State. The results showed that male students ( $n = 126$ ) had a mean self-efficacy score of  $M = 2.67$  ( $SD = 0.73$ ), while female students ( $n = 109$ ) recorded a slightly higher mean score of  $M = 2.74$  ( $SD = 0.78$ ). The mean difference between the two groups was 0.07 in favour of the female students.

**Research Question Two:** What is the mean interest score of Agricultural Science students in senior secondary schools based on gender in Kogi State?

**Table 2: Difference in Respondents Mean Interest Scores Based on Gender**

| Gender | No  | Mean | SD   | Mean Diff. |
|--------|-----|------|------|------------|
| Male   | 126 | 2.51 | 0.82 | 0.03       |
| Female | 109 | 2.48 | 0.85 |            |

Table 2 presents the mean interest scores of male and female Agricultural Science students in senior secondary schools in Kogi State. The results showed that male students ( $n = 126$ ) had a mean interest score of  $M = 2.51$  ( $SD = 0.82$ ), while female students ( $n = 109$ ) recorded a mean score of  $M = 2.48$  ( $SD = 0.85$ ). The mean difference between the two groups was 0.03 in favour of the male students.

**Research Question Three:** What is the mean self-esteem score of Agricultural Science students in senior secondary schools based on gender in Kogi State?

**Table 3: Difference in Respondents Mean Self-Esteem Scores Based on Gender**

| Gender | No  | Mean | SD   | Mean Diff. |
|--------|-----|------|------|------------|
| Male   | 126 | 2.53 | 0.82 | 0.02       |
| Female | 109 | 2.51 | 0.83 |            |

Table 3 presents the mean self-esteem scores of male and female Agricultural Science students in senior secondary schools in Kogi State. The results showed that male students ( $n = 126$ ) had a mean self-esteem score of  $M = 2.53$  ( $SD = 0.82$ ), while female students ( $n = 109$ ) recorded a mean score of  $M = 2.51$  ( $SD = 0.83$ ). The mean difference between the two groups was 0.02 in favour of the male students.

**Research Question Four:** What is the difference in the mean interest scores of Agricultural Science students based on their levels of self-efficacy in Kogi State?

**Table 4: Difference in Respondents Mean Interest Scores Based on Levels of Self-Efficacy**

| Self-Efficacy | No | Mean | SD   | Mean Diff. |
|---------------|----|------|------|------------|
| Low           | 48 | 1.51 | 0.17 | 0          |
| Medim         | 88 | 2.23 | 0.42 | 0.72       |
| High          | 99 | 3.22 | 0.65 | 0.99       |

Table 4 presents the mean interest scores of Agricultural Science students according to their levels of self-efficacy. Students with low self-efficacy ( $n = 48$ ) had the lowest mean interest score of  $M = 1.51$  ( $SD = 0.17$ ). Those with medium self-efficacy ( $n = 88$ ) recorded a higher mean interest score of  $M = 2.23$  ( $SD = 0.42$ ), representing a mean increase of 0.72 over students with low self-efficacy. Students with high self-efficacy ( $n = 99$ ) had the highest mean interest score of  $M = 3.22$  ( $SD = 0.65$ ), which was 0.99 higher than the mean score of students with medium self-efficacy.

**Research Question Five:** What is the difference in the mean self-esteem scores of Agricultural Science students based on their levels of self-efficacy in Kogi State?

**Table 5: Difference in Mean Self-Esteem Scores Based on Levels of Self-Efficacy**

| Self-Efficacy | No | Mean | SD   | Mean Diff. |
|---------------|----|------|------|------------|
| Low           | 48 | 1.55 | 0.14 | 0          |
| Medium        | 88 | 2.28 | 0.48 | 0.73       |
| High          | 99 | 3.21 | 0.65 | 0.93       |

Table 5 presents the mean self-esteem scores of Agricultural Science students according to their levels of self-efficacy. Students with low self-efficacy ( $n = 48$ ) recorded the lowest mean self-esteem score of  $M = 1.55$  ( $SD = 0.14$ ). Students with medium self-efficacy ( $n = 88$ ) had a higher mean self-esteem score of  $M = 2.28$  ( $SD = 0.48$ ), representing a mean increase of 0.73 over those with low self-efficacy. Students with high self-efficacy ( $n = 99$ ) recorded the highest mean self-esteem score of  $M = 3.21$  ( $SD = 0.65$ ), which was 0.93 higher than the mean score of students with medium self-efficacy.

**Research Question Six:** What is the relationship among students' self-efficacy, interest, and self-esteem in Agricultural Science in Kogi State?

**Table 6: Difference in Respondents Mean Self-Efficacy, Interest, and Self-Esteem Scores**

| Variable      | No  | Mean | SD   | Mean Diff. |
|---------------|-----|------|------|------------|
| Self-Efficacy | 235 | 2.71 | 0.75 | 0          |
| Interest      | 235 | 2.50 | 0.84 | 0.21       |
| Self-Esteem   | 235 | 2.52 | 0.82 | 0.02       |

Table 6 presents the descriptive statistics for students' self-efficacy, interest, and self-esteem in Agricultural Science. The results showed that self-efficacy recorded the highest mean score ( $M = 2.71$ ,  $SD = 0.75$ ), followed by self-esteem ( $M = 2.52$ ,  $SD = 0.82$ ), while interest had a mean score of  $M = 2.50$  ( $SD = 0.84$ ). The mean difference between self-efficacy and interest was 0.21, while the difference between interest and self-esteem was 0.02.

### Test of Hypotheses

This sub-section presents the test of hypotheses formulated for the study.

**Hypothesis One:** There is no significant difference in the mean self-efficacy scores of Agricultural Science students based on gender.

**Table 7: Independent Samples t-test Results for Hypothesis One**

| Gender | No  | Mean | SD   | df  | t     | Sig.  | Decision            |
|--------|-----|------|------|-----|-------|-------|---------------------|
| Male   | 126 | 2.67 | 0.73 | 233 | 0.703 | 0.483 | Not<br>Significance |
| Female | 109 | 2.74 | 0.78 |     |       |       |                     |

An independent-samples t test showed no significant gender difference in students' self-efficacy scores,  $t(233) = 0.70$ ,  $p = .483$ . Although female students ( $M = 2.74$ ,  $SD = 0.78$ ) scored slightly higher than male students ( $M = 2.67$ ,  $SD = 0.73$ ), the difference was not statistically significant. Therefore, the null hypothesis one was not rejected.

**Hypothesis Two:** There is no significant difference in the mean interest scores of Agricultural Science students based on gender.

**Table 8: Independent Samples t-test Results for Hypothesis Two**

| Gender | No  | Mean | SD   | df  | t     | Sig.  | Decision            |
|--------|-----|------|------|-----|-------|-------|---------------------|
| Male   | 126 | 2.51 | 0.82 | 233 | 0.274 | 0.784 | Not<br>Significance |
| Female | 109 | 2.48 | 0.85 |     |       |       |                     |

An independent-samples t test showed no significant gender difference in students' interest scores,  $t(233) = 0.27$ ,  $p = .784$ . Male students ( $M = 2.51$ ,  $SD = 0.82$ ) scored slightly higher than female

students ( $M = 2.48$ ,  $SD = 0.85$ ), but the difference was not statistically significant. Therefore, the null hypothesis two was not rejected.

**Hypothesis Three:** There is no significant difference in the mean self-esteem scores of Agricultural Science students based on gender.

**Table 9: Independent Samples t-test Results for Hypothesis Three**

| Gender | No  | Mean   | SD   | df  | t     | Sig.  | Decision            |
|--------|-----|--------|------|-----|-------|-------|---------------------|
| Male   | 126 | 2.5262 | 0.82 | 233 | 0.106 | 0.915 | Not<br>Significance |
| Female | 109 | 2.5147 | 0.83 |     |       |       |                     |

An independent-samples t test showed no significant gender difference in students' self-esteem scores,  $t(233) = 0.11$ ,  $p = .915$ . Male students ( $M = 2.53$ ,  $SD = 0.82$ ) scored slightly higher than female students ( $M = 2.51$ ,  $SD = 0.83$ ), but the difference was not statistically significant. Therefore, the null hypothesis three was not rejected.

**Hypothesis Four:** There is no significant difference in the mean interest scores of Agricultural Science students based on their levels of self-efficacy.

**Table 10: Analysis of Variance (ANOVA) Results for Hypothesis Four**

| Source of Variation | Sum of Squares | df         | Mean Square | F       | Sig.  | Decision     |
|---------------------|----------------|------------|-------------|---------|-------|--------------|
| Between Groups      | 104.740        | 2          | 52.370      | 206.596 | 0.001 | Significance |
| Within Groups       | 58.810         | 232        | 0.253       |         |       |              |
| <b>Total</b>        | <b>163.550</b> | <b>234</b> |             |         |       |              |

A one-way ANOVA showed a statistically significant difference in students' interest scores across the three levels of self-efficacy,  $F(2, 232) = 206.60$ ,  $p = .001$ . Since the p value was less than .05, the null hypothesis four was rejected.

**Hypothesis Five:** There is no significant difference in the mean self-esteem scores of Agricultural Science students based on their levels of self-efficacy.

**Table 11: Analysis of Variance (ANOVA) Results for Hypothesis Five**

| Source of Variation | Sum of Squares | df         | Mean Square | F       | Sig.  | Decision     |
|---------------------|----------------|------------|-------------|---------|-------|--------------|
| Between Groups      | 97.366         | 2          | 48.683      | 182.750 | 0.001 | Significance |
| Within Groups       | 61.802         | 232        | 0.266       |         |       |              |
| <b>Total</b>        | <b>159.168</b> | <b>234</b> |             |         |       |              |

A one-way ANOVA showed a statistically significant difference in students' self-esteem scores across the three levels of self-efficacy,  $F(2, 232) = 182.75$ ,  $p = .001$ . Since the p value was less than .05, the null hypothesis five was rejected.

**Hypothesis Six:** There is no significant relationship among students' self-efficacy, interest, and self-esteem in Agricultural Science.

**Table 12: Correlation Matrix of Self-Efficacy, Interest and Self-Esteem**

| Variables     | Mean | SD   | Self-Efficacy | Interest | Self-Esteem | Decision     |
|---------------|------|------|---------------|----------|-------------|--------------|
| Self-Efficacy | 2.71 | 0.75 | 1             |          |             |              |
| Interest      | 2.50 | 0.84 | 0.817**       | 1        |             | Significance |
| Self-Esteem   | 2.52 | 0.82 | 0.802**       | 0.965**  | 1           |              |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Pearson correlation analysis showed significant positive relationships among students' self-efficacy, interest, and self-esteem. Self-efficacy was strongly related to interest,  $r = .817$ ,  $p < .01$ , and self-esteem,  $r = .802$ ,  $p < 0.01$ . Interest also had a very strong positive relationship with self-esteem,  $r = .965$ ,  $p < .01$ . Therefore, the null hypothesis six was rejected, indicating significant positive relationships among self-efficacy, interest, and self-esteem in Agricultural Science.

### Discussion of Findings

The study found no significant gender differences in students' self-efficacy, interest, and self-esteem in Agricultural Science. Although female students recorded slightly higher self-efficacy, while male students had marginally higher interest and self-esteem, the differences were not statistically significant. This suggests that male and female students possessed generally comparable levels of confidence, engagement, and self-worth in Agricultural Science. The findings are consistent with Ignatius and Mythili (2020), Sharma (2024), Schweder and Raufelder (2022), and Asma (2023), who reported that gender differences in psychological and academic variables may be minimal when students are exposed to similar learning opportunities.

The study further revealed significant differences in students' interest based on their levels of self-efficacy. Students with high self-efficacy demonstrated greater interest in Agricultural Science than those with moderate and low self-efficacy. This indicates that students who believe strongly in their ability to succeed are more likely to demonstrate curiosity, enthusiasm, and active engagement in Agricultural Science. This finding agrees with Etodike (2022), Okafor et al. (2023), and Achi et al. (2020), who established positive associations between self-efficacy, academic interest, and participation in learning activities. Similarly, students with high self-efficacy recorded significantly higher self-esteem than those with moderate and low self-efficacy. This suggests that confidence in one's academic capabilities is associated with a more positive perception of self and greater personal worth. The finding corroborates Bhatt and Bahadur (2018), Kevin et al. (2020), and Luo et al. (2022), who reported positive relationships between self-efficacy and self-esteem. Furthermore, the study established strong positive and statistically significant relationships among self-efficacy, interest, and self-esteem. Thus, higher self-efficacy was associated with greater interest and self-esteem in Agricultural Science. This finding aligns with Zhao et al. (2021), Celcima et al. (2024), and Basileo et al. (2024), who identified self-efficacy as an important predictor of academic motivation, engagement, and positive psychological outcomes.

### Conclusion and Recommendations

The study concluded that gender did not significantly influence students' self-efficacy, interest, and self-esteem in Agricultural Science. However, higher self-efficacy was significantly associated with greater interest and self-esteem, indicating that students' confidence in their abilities plays an important role in their engagement and positive self-perception toward the subject. Based on these findings, Agricultural Science teaching should emphasize learner-centred, practical, and activity-based approaches that promote successful learning experiences and strengthen students' self-efficacy. Schools should provide adequate instructional materials, school

farms, and practical resources to encourage active participation. Teachers should provide equal opportunities, encouragement, and support to male and female students, while parents should reinforce students' confidence and positive attitudes toward Agricultural Science. Students should also be encouraged to participate in practical activities, agricultural clubs, competitions, and project-based learning to enhance their interest, confidence, and self-esteem.

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