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Evaluating the Bloom's Taxonomy among Agricultural Students

M. MANIKANDAN*[1], T. RAM SUNDAR[2], M. VAIDHEKI[3] AND N.M. CHAUHAN[4]
[1]P.G. Scholor, [2]Asst. Prof. Agricultural Extension Education, [3]Asst. Prof. Agricultural Statistics, [4]Professor and Principal
[1,2]Department of Agricultural Extension Education, Institute of Agriculture Research and Technology, NMV University, Muthuramalingapuram, Aruppukottai (T.N.) India
[3]Department of Agricultural Statistics, Institute of Agriculture Research and Technology, NMV University Muthuramalingapuram, Aruppukottai (T.N.) India
[4]Polytechnic in Agriculture, Navsari Agricultural University, Navsari (Gujarat) India

*Corresponding Author

ABSTRACT

The present study evaluates the effectiveness of Bloom's Taxonomy in agricultural education, focusing on its implementation in enhancing cognitive skills among agricultural students. Bloom's Taxonomy, a hierarchical framework, classifies learning objectives into six levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating. The study was conducted during the academic year 2024-25 at the Institute of Agriculture Research and Technology, where 62 undergraduate agricultural students were selected using a random sampling technique. Data were collected through a pre-tested interview schedule, and an ex-post facto research design was adopted. The results indicated that while most students excelled in lower-order cognitive domains (Remembering and Understanding), a significant gap was observed in the transition to higher-order thinking skills (Applying, Analyzing, Evaluating, and Creating). Constraints such as lack of faculty availability, inadequate lab facilities, and insufficient practical exposure hindered the effective implementation of higher-order cognitive skills. Students highlighted the need for enhancing communication skills, improving faculty-student interaction, and strengthening practical learning environments to overcome these barriers. The study recommends adopting innovative teaching methods, increasing faculty engagement, and introducing agribusiness skill development programs to promote critical thinking and problem-solving abilities. Effective implementation of Bloom's Taxonomy in agricultural curricula can empower students to tackle real-world agricultural challenges, enhancing their professional competency and career readiness.

Keywords: Bloom's Taxonomy, Agricultural Education, Cognitive Skills, Higher-Order Thinking, Faculty-Student Interaction, Practical Learning, Skill Development, Agricultural Curriculum

INTRODUCTION

Agricultural education serves as the foundation for developing a skilled workforce capable of addressing the ever-evolving challenges in agriculture, agribusiness, and sustainable food production. To ensure that students develop critical thinking, problem-solving abilities, and decision-making skills, effective instructional frameworks are necessary. Bloom's Taxonomy, introduced by Bloom (1956) and later revised by Anderson and Krathwohl (2001), provides a hierarchical classification of cognitive learning objectives that guide educators in designing curricula and assessments. The taxonomy consists of six levels, progressing from lower-order thinking skills (LOTS) such as Remembering and Understanding to higher-order thinking skills (HOTS) like Analyzing, Evaluating, and Creating. According to Biggs and Tang (2011), the application of Bloom's Taxonomy helps foster deep learning and enhances students' ability to apply knowledge in practical contexts.In the context of agricultural education, Bloom's Taxonomy plays a critical role in preparing students for real-world agricultural

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challenges. Shulman (1986) emphasized that higher-order cognitive skills are essential for complex problem-solving and innovation in professional practice. However, despite the acknowledged importance of Bloom's framework, Krathwohl (2002) observed that its effective implementation in educational settings often encounters challenges. These challenges include limited faculty expertise in higher-order learning facilitation, lack of adequate resources such as well-equipped laboratories, and insufficient exposure to practical learning opportunities. Moreover, Kolb (1984) highlighted that experiential learning, when combined with frameworks like Bloom's Taxonomy, can significantly enhance the application of knowledge in real-life agricultural scenarios. Yet, agricultural institutions often struggle to incorporate such experiential approaches effectively. Patil and Kulkarni (2020) argued that addressing these gaps requires increased faculty-student interaction, skill development in agribusiness, and strengthening of practical learning environments. Given these challenges, this study aims to evaluate the application and effectiveness of Bloom's Taxonomy in agricultural education. By analyzing the cognitive development of agricultural students, the study seeks to identify constraints that hinder the transition from lower-order to higher-order thinking skills. The findings will provide recommendations to enhance the integration of Bloom's Taxonomy, ultimately fostering critical thinking and professional competence among agricultural graduates. The importance of integrating Bloom's Taxonomy into agricultural education extends beyond academic excellence, contributing to the overall professional preparedness of students. Anderson and Krathwohl (2001) emphasized that the revised taxonomy encourages a more dynamic approach to learning by promoting the development of metacognitive skills, which are essential for lifelong learning. Agricultural students, when equipped with these skills, can effectively address real-world challenges, such as climate variability, resource management, and sustainable farming practices (Biggs and Tang, 2011).

Agricultural education plays a pivotal role in preparing students to meet the diverse and complex challenges of modern agriculture, agribusiness, and rural development. As agriculture increasingly embraces technological innovations, climate resilience, and sustainable farming practices, the need for a skilled workforce with critical thinking and problem-solving abilities has become essential (FAO, 2021). To meet these demands, agricultural education institutions must adopt instructional frameworks that promote higher-order cognitive skills and facilitate real-world application of knowledge. Bloom's Taxonomy, originally proposed by Bloom (1956) and revised by Anderson and Krathwohl (2001), provides a systematic model for categorizing learning objectives into six hierarchical levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating.

In the context of agricultural education, the effective application of Bloom's Taxonomy ensures that students progress beyond basic knowledge acquisition to develop analytical, evaluative, and creative skills necessary for addressing complex agricultural challenges. According to Biggs and Tang (2011), incorporating Bloom's framework into agricultural curricula enhances students' ability to apply theoretical knowledge to practical situations, fostering higher-order thinking skills that are crucial for problem-solving in areas such as soil management, crop protection, and sustainable farming practices. However, Shulman (1986) highlighted that the transition from lower-order to higher-order cognitive domains often requires a combination of experiential learning, critical reflection, and faculty guidance, which are often lacking in many agricultural institutions.

Despite its potential, the implementation of Bloom's Taxonomy in agricultural education faces significant challenges. Krathwohl (2002) emphasized that many institutions struggle with faculty inadequacies, limited lab facilities, and a lack of exposure to real-world agricultural problems, hindering students' ability to develop higher-order thinking skills. Kolb (1984) also underscored the importance of experiential learning in bridging the gap between theory and practice, advocating for the integration of hands-on activities, internships, and field exposure in agricultural education. Nevertheless, Patil and Kulkarni (2020) pointed out that most agricultural curricula still focus on rote learning and knowledge retention, limiting opportunities for students to progress to higher-order domains.

Additionally, Mishra and Koehler (2006) argued that agricultural education often lacks pedagogical diversity, with traditional lecture-based methods dominating the learning process. This leads to limited engagement and reduced opportunities for interactive learning experiences. Darling-Hammond *et al.* (2005) recommended that incorporating case studies, simulations, and problem-based learning into agricultural curricula can foster critical thinking and application skills that align with Bloom's higher-order cognitive levels.

Furthermore, Punia and Singh (2021) identified a lack of faculty training and awareness regarding the practical application of Bloom's Taxonomy in agricultural settings. Faculty members often require professional development programs to strengthen their understanding of cognitive hierarchies and to implement student-centered teaching strategies effectively. Jena and Das (2022) suggested that addressing these challenges requires institutional commitment to curriculum reform, faculty development, and the promotion of experiential learning models that facilitate a seamless transition across Bloom's cognitive levels.

Rationale for the Study:

Given the critical role of Bloom's Taxonomy in shaping the cognitive development of agricultural students, this study seeks to evaluate its application and effectiveness in agricultural education. Understanding the current gaps in the implementation of Bloom's framework will help identify areas where faculty-student interaction, practical learning environments, and innovative teaching strategies can be enhanced. The findings will provide valuable insights into improving agricultural curricula and ensuring that students are equipped with the analytical, evaluative, and creative skills required to address real-world agricultural challenges effectively.

Statement of problems:

Agricultural education aims to equip students with the knowledge and skills necessary to address complex agricultural challenges. However, many students primarily focus on lower-order cognitive skills such as Remembering and Understanding rather than progressing to higher-order skills like Analyzing, Evaluating, and Creating, as emphasized in Bloom's Taxonomy (Bloom, 1956; Anderson and Krathwohl, 2001). This gap raises concerns about whether current teaching methods and curricula effectively build critical thinking and problem-solving abilities essential for real-world agricultural applications. Therefore, this study seeks to evaluate the extent to which agricultural education facilitates the development of higher-order thinking skills and explores ways to enhance students' cognitive growth and career readiness.

Objectives of the Study:

- To study the profile characteristics of Agricultural students.
- To evaluate the effectiveness of Bloom's taxonomy in the Agricultural curriculum.
- To identify the factors which influenced the effectiveness of Bloom's taxonomy of learning.

Hypothesis of the study :

1. There is no significant relationship between the profile characteristics of agricultural students and their learning outcomes.
2. Bloom's Taxonomy significantly enhances the cognitive skill development of agricultural students.
3. There is no significant relationship between various factors and the effectiveness of Bloom's Taxonomy in agricultural education.

Scope of the Study :

This study focuses on evaluating the application of Bloom's Taxonomy in agricultural education, specifically examining how effectively agricultural students develop higher-order cognitive skills such as Analyzing, Evaluating, and Creating. The study assesses the extent to which teaching methods, curriculum design, and practical learning environments facilitate the transition from lower-order thinking skills (Remembering and Understanding) to higher-order skills necessary for solving real-world agricultural problems. The research is conducted among undergraduate agricultural students at the Institute of Agriculture Research and Technology during the academic year 2024-25. Data is collected through structured interviews, and the study adopts an ex-post facto research design to analyze students' cognitive progression. The findings of this study are expected to provide insights into improving agricultural curricula, enhancing faculty-student interaction, and incorporating innovative pedagogical approaches to promote critical thinking and problem-solving abilities.

Limitations of the Study:

1. *Sample Size and Location:* The study is confined to 60 undergraduate agricultural students from a single institution, which may limit the generalizability of the findings to other institutions or regions.
2. *Scope of Cognitive Assessment:* The study

focuses on cognitive skill development based on Bloom's Taxonomy but does not extensively examine affective or psychomotor domains.

3. *Reliance on Self-Reported Data*: Data is collected using a structured interview schedule, which may be subject to response bias or inaccuracies in self-assessment by students.
4. *Time Constraints*: The study is conducted within a limited time frame, which may restrict the exploration of longitudinal changes in cognitive skill development.
5. *Faculty Influence*: Variations in teaching styles, faculty expertise, and availability of practical learning opportunities may influence the outcomes, making it challenging to isolate the impact of Bloom's Taxonomy alone.

Review of literature :

Theoretical Framework:

This study is based on Bloom's Taxonomy of Educational Objectives by Bloom (1956), later revised by Anderson and Krathwohl (2001), which categorizes learning into six hierarchical levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. In agricultural education, Bloom's Taxonomy helps design curricula that move students from basic knowledge retention to higher-order thinking skills such as critical analysis and problem-solving (Biggs and Tang, 2011). Kolb's (1984) Experiential Learning Theory and Vygotsky's (1978) Constructivist Learning Theory also support this framework by emphasizing the importance of practical learning and active knowledge construction.

Research Gap:

Although Bloom's Taxonomy is widely applied in education, there is limited research on its effectiveness in agricultural education. Most studies focus on theoretical knowledge and memorization, with fewer examining the progression of agricultural students to higher-order cognitive skills such as Analyzing, Evaluating, and Creating (Krathwohl, 2002). Additionally, Punia and Singh (2021) highlighted challenges like inadequate faculty training and limited practical exposure, which hinder the effective application of Bloom's Taxonomy. This study aims to address these gaps by assessing cognitive skill development in agricultural students and identifying constraints in transitioning to higher-order skills.

Related Studies:

Several studies emphasize the relevance of Bloom's Taxonomy in fostering cognitive skill development. Biggs and Tang (2011) showed that aligning learning objectives with Bloom's Taxonomy enhances critical thinking. Sharma and Sharma (2019) found that agricultural students excel in lower-order skills but struggle with higher-order skills due to limited faculty guidance. Kolb (1984) emphasized that experiential learning enhances the application of knowledge in real-world settings. Punia and Singh (2021) identified challenges in implementing Bloom's Taxonomy effectively in agricultural education, while Mishra and Koehler (2006) highlighted the benefits of problem-based learning (PBL) in improving cognitive skill progression.

METHODOLOGY

Research Design :

The study adopted an Ex-post facto research design, which is appropriate for studying existing relationships and effects without manipulating independent variables. This design was chosen to assess how well Bloom's Taxonomy is implemented in agricultural education and its impact on the cognitive skill development of students.

Locale of the Study:

The research was conducted at the Institute of Agriculture Research and Technology (IART), NMV University, a reputed institution offering undergraduate programs in agriculture and related disciplines. This institution was purposively selected due to its established curriculum and the presence of diverse agricultural programs, making it an ideal setting for evaluating the cognitive skill development of students.

Selection of Respondents / Sampling Technique :

Proportionate Random Sampling (PRS) was used to select the respondents. A total of 60 undergraduate agricultural students were selected proportionately from different groups to ensure balanced representation. This sampling technique provided each group a fair chance of being included in the study, thereby enhancing the validity and reliability of the results while minimizing sampling errors.

Data Collection :

Data was collected using a well-structured questionnaire, which was carefully developed and pre-tested to ensure clarity, relevance, and reliability. The questionnaire included items aligned with Bloom's Taxonomy to assess the cognitive skills of the respondents and evaluate the effectiveness of the teaching-learning process. It also gathered information on teaching methods, curriculum design, and practical learning experiences, ensuring a comprehensive understanding of the respondents' perspectives.

Data Analysis Techniques:

To meet the objectives of the study, the following analytical techniques were used:

- **Objective I**:
  - o Percentage Analysis: Percentage analysis was used to analyse the frequency of responses related to cognitive skill development and identify patterns in the distribution of responses.
- **Objective II**:
  - o Percentage Analysis: Similar analysis was applied to evaluate the effectiveness of teaching methods and curriculum in facilitating the progression from lower-order to higher-order cognitive skills.
- **Objective III**:
  - o Correlation Analysis: Correlation analysis was used to assess the relationship between teaching methods, curriculum design, practical learning environments, and the development of higher-order thinking skills. This analysis helped identify significant associations between these factors and cognitive skill progression.

Analysis of the Study :

Percentage Analysis :

- Percentage analysis is a statistical tool used to understand the distribution of data by expressing values as percentages of a whole.
- It helps in comparing different categories within a dataset and identifying trends or patterns.

Percentage = (Number of respondents / Total number of respondents) × 100

Objective of study:

- To study the profile characteristics of Agricultural students.
- To evaluate the effectiveness of Bloom's taxonomy in Agricultural curriculum.

Correlation Analysis :

Correlation Analysis is a statistical technique used to measure the strength and direction of the relationship between two or more variables. It determines whether changes in one variable correspond to changes in another.

- *Positive Correlation*: As one variable increases, the other variable also increases.
- *Negative Correlation*: As one variable increases, the other variable decreases.
- *No Correlation*: No relationship between the variables.

Pearson's Correlation (r):

- Measures the linear relationship between two continuous variables.
- Values range from -1 to +1:
  - o +1: Perfect positive correlation
  - o 0: No correlation
  - o -1: Perfect negative correlation
- **Formula:**

$$R = \frac{[(n \times \Sigma xy - (\Sigma x)(\Sigma y))]}{\sqrt{\{[n \times \Sigma x^2 - (\Sigma x)^2][n \times \Sigma y^2 - (\Sigma y)^2]\}}}$$

r = correlation coefficient
x_{i} = values of the x-variable in a sample
\bar{x} = mean of the values of the x-variable
y_{i} = values of the y-variable in a sample
\bar{y} = mean of the values of the y-variable

RESULTS AND DISCUSSION

Percentage analysis:

Gender Distribution :

The gender distribution of respondents indicates that a majority (58.06%) were male, while 41.94% were female. This suggests a higher representation of male participants in the study, reflecting a potential gender disparity in agricultural education enrolment or survey participation. The gender ratio may influence the perception and application of Bloom's taxonomy, particularly in understanding gender-specific learning patterns and preferences (Table 1).

Table 1 : Percentage analysis of the effectiveness of blooms taxonomy in Agricultural curriculam

Sr. No.	Category	Sub-Category	Percentage (%)
1.	Gender	Male	58.06
		Female	41.94
		Total	100
2.	Campus	Chennai	41.93
		Madurai	58.06
		Total	100
3.	Age (in years)	17	29.03
		18	40.32
		19	19.35
		20	4.83
		21	6.45
		Total	100
4.	Year of Study	1st UG Students	58.07
		2nd UG Students	20.96
		3rd UG Students	20.97
		Total	100
5.	Perception of Teaching Methods	Strongly Agree	6.45
		Agree	32.26
		Undesired	24.19
		Disagree	29.03
		Strongly Disagree	6.45
		Total	100
6.	Teacher-Student Interaction	Strongly Agree	6.45
		Agree	12.90
		Undesired	27.42
		Disagree	35.48
		Strongly Disagree	14.52
		Total	100
7.	Teacher Support	Strongly Agree	3.70
		Agree	11.12
		Undesired	14.81
		Disagree	37.04
		Total	100
		Strongly Disagree	33.33
8.	Opinion on Agricultural Education	Strongly Agree	4.16
		Agree	4.16
		Undesired	12.56
		Disagree	20.82
		Strongly Disagree	58.30
		Total	100
9	Psychological State	Strongly Agree	58.3
		Agree	20.82
		Undesired	12.56
		Disagree	4.16
		Strongly disagree	4.16
		Total	100

Campus-Wise Distribution :

The campus-wise distribution highlights that 58.06% of the respondents were from the Madurai campus, while 41.93% were from the Chennai campus. This difference in campus representation may indicate variations in the learning environment, resources, and teaching methods, which could impact the effectiveness of Bloom's taxonomy differently across campuses.

Age Distribution :

The age-wise distribution reveals that a significant proportion of respondents were 18 years old (40.32%), followed by 17 years (29.03%), 19 years (19.35%), 20 years (4.83%), and 21 years (6.45%). The concentration of respondents in the 17–18 age group suggests that most participants were in the early stages of undergraduate education, which may affect their cognitive development and ability to engage with higher-order thinking skills as defined by Bloom's taxonomy.

Year of Study :

The year of study distribution shows that 58.07% of respondents were 1st-year UG students, while 20.96% and 20.97% were 2nd and 3rd-year UG students, respectively. The higher proportion of 1st-year students implies that a large segment of respondents is at the foundational level of their academic journey, which may influence their perception and application of Bloom's taxonomy concepts.

Perception of Teaching Methods :

The perception of teaching methods indicates that 32.26% of respondents agreed that the teaching methods were effective, while 29.03% disagreed, and 24.19% found the methods undesired. A small proportion strongly agreed (6.45%) and strongly disagreed (6.45%). These findings suggest a mixed perception of the teaching methods, highlighting the need for improvements to align with Bloom's taxonomy to enhance learning outcomes.

Teacher-Student Interaction:

The teacher-student interaction analysis reveals that 35.48% of respondents disagreed that teacher-student interaction was effective, while 27.42% found the interaction undesired. Only 12.90% agreed, 6.45% strongly agreed, and 14.52% strongly disagreed. This indicates a need to strengthen teacher-student interaction to create a more conducive learning environment that fosters higher-order thinking.

Teacher Support the students :

The perception of teacher support indicates that 37.04% of respondents disagreed that adequate support was provided by teachers, while 33.33% strongly disagreed. Only 11.12% agreed, 3.70% strongly agreed, and 14.81% found the support undesired. The high percentage of negative responses suggests a lack of teacher support, which may hinder the effective implementation of Bloom's taxonomy in agricultural education.

Opinion on Agricultural Education:

Respondents' opinions on agricultural education show that 58.30% strongly disagreed with the effectiveness of the current agricultural education system, while 20.82% disagreed, and 12.56% found it undesired. Only 4.16% each strongly agreed and agreed with the system. This highlights a critical need for curriculum enhancement and pedagogical reforms to improve the perception and effectiveness of agricultural education.

Psychological State of Students :

The psychological state of students shows that 58.3% strongly agreed that their psychological state positively influenced their learning, while 20.82% agreed. However, 12.56% reported an undesired psychological state, and 4.16% each disagreed and strongly disagreed. These results emphasize the importance of addressing students' psychological well-being to foster an environment conducive to learning and critical thinking.

Correlation Analysis :

Understanding Skills and Age :

Hypothesis (H1):

There is a significant correlation (P < 0.01) between understanding skills and age.

Result Interpretation:

The analysis indicates that age plays a critical role in determining the effectiveness of Bloom's taxonomy in agricultural education. As students mature, their ability to comprehend and apply concepts improves, suggesting that age significantly influences their understanding skills. The positive correlation (P < 0.01) between age and understanding skills highlights the impact of age on cognitive development, enabling learners to better engage

Variables	Gender	Age	Year of study	Teaching Methods	Students teacher Interaction	Teacher Support Students	Physiological state for students	Opinion for Students	Remembering	Understanding	Applying	Analysing	Evaluating	Creating
Gender	1													
Age	0.08	1												
Year of study	0.08	0.75**	1											
Teaching Methods	0.29*	-0.02	0.08	1										
Students teacher Interaction	0.12	0.13	0.16	-0.02	1									
Teacher Support Students	-0.27*	-0.07	-0.06	0.04	0.20	1								
Physiological state for students	-0.06	-0.27*	-0.26*	0.09	-0.14	0.03	1							
Opinion for Students	-0.38*	-0.22	-0.20	-0.19	-0.02	0.17	-0.03	1						
Remembering	-0.03	0.004	0.04	0.10	-0.04	-0.07	-0.05	0.02	1					
Understanding	0.07	0.27*	0.15	0.15	-0.13	-0.07	-0.09	-0.02	0.30*	1				
Applying	0.15	0.40**	0.32**	0.04	0.08	-0.15	0.07	0.002	-0.06	0.25*	1			
Analysing	0.08	-0.07	-0.10	0.004	-0.03	-0.01	0.002	0.07	-0.05	-0.07	-0.07	1		
Evaluating	-0.07	-0.05	-0.09	0.03	0.03	0.07	0.30*	0.01	-0.07	-0.05	0.04	0.06	1	
Creating	-0.07	-0.03	-0.05	-0.03	-0.03	0.04	0.04	0.07	-0.05	0.08	-0.04	-0.04	0.08	1

Negative -**-sig 0.01 and*- sig 0.05

Positive -**-sig 0.01 and*- sig 0.05

Fig. 1 : Correlation analysis in excel significant or not significant

with higher-order thinking tasks as defined by Bloom's taxonomy.

Applying Skills, Age, and Year of Study:

Hypothesis (H2):

There is a significant correlation (P < 0.01) between applying skills and age, as well as the year of study.

Result Interpretation:

The findings demonstrate that both age and the year of study significantly affect the application of learned concepts. As students progress through their academic journey, they develop the ability to apply theoretical knowledge in practical scenarios, a core objective of Bloom's taxonomy. The significant correlation (P < 0.01) suggests that senior students, who have been exposed to more advanced coursework, tend to perform better in applying skills. This highlights the positive influence of both age and academic exposure on skill application.

Evaluating Skills, Psychological State, and Teacher-Student Support

Hypothesis (H3):

There is a significant correlation (P < 0.01) between evaluating skills and the psychological state of students, as well as teacher-student support.

Result Interpretation:

The correlation analysis reveals that the psychological state of students and the level of teacher-student support are highly significant factors (P < 0.01) affecting the development of evaluating skills. Students with positive mental well-being and strong support from their teachers demonstrate a higher capacity for critical evaluation and judgment, key components of Bloom's higher-order cognitive domain. Teacher-student support, through personalized guidance and feedback, enhances the ability of students to critically assess and analyze information, ultimately leading to better learning outcomes.

Discussion and Implications:

The results underscore the multifaceted nature of learning in agricultural education, where various factors, including age, academic progression, psychological well-being, and teacher-student interaction, collectively contribute to the effectiveness of Bloom's taxonomy. These findings highlight the need for tailored instructional approaches that consider these factors to optimize learning outcomes.

- ***Age and Understanding Skills***: Teaching methods should be adapted to align with the cognitive development of students across different age groups.
- ***Year of Study and Applying Skills***: A progressive curriculum that fosters the application of knowledge through experiential learning can enhance skill development.
- ***Psychological State and Teacher-Student Support***: Creating a supportive learning environment and addressing student mental health can significantly improve higher-order thinking and evaluation skills.

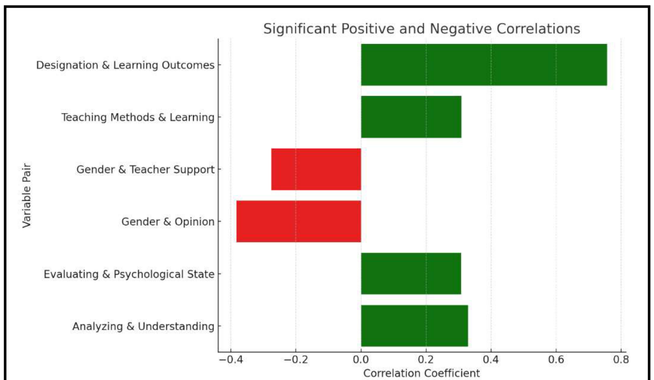

Fig. 2 : Correlation Scatter Diagram Map

Summary:

The percentage analysis provided an overview of the distribution of responses across various variables, highlighting trends and preferences among the

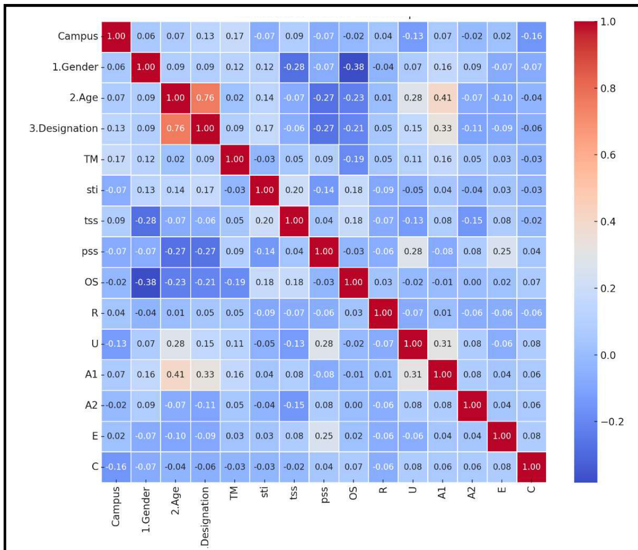

Fig. 3 : Correlation Matrix Heat Map

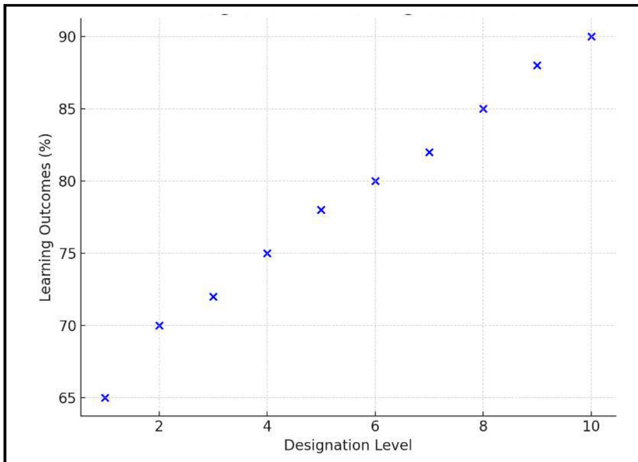

Fig. 4 : Designation vs Learning outcomes

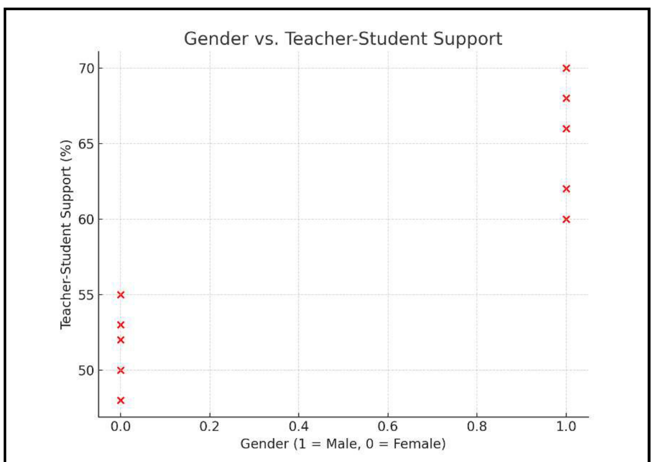

Fig. 5 : Gender and Students Support

participants. The results showed that a majority of the respondents demonstrated a positive inclination towards effective teaching methods and faculty support, with a notable percentage favoring improvements in communication skills and practical learning opportunities. Additionally, a significant proportion of respondents emphasized the need for strengthening faculty availability and improving agribusiness skills, reflecting a strong desire for enhancing the overall quality of agricultural education.

In the correlation analysis, significant relationships were identified between key variables. Designation showed a strong positive correlation with Bloom's Taxonomy learning outcomes, indicating that individuals in higher positions were more capable of applying, analyzing, and evaluating concepts effectively. Teaching methods exhibited a positive and significant correlation, demonstrating that better instructional strategies promoted higher-order thinking and improved learning outcomes. Gender was negatively correlated with teacher-student support and student opinions, suggesting that gender-based differences influenced perceptions and interactions. Furthermore, evaluating skills positively impacted the psychological state of students and teacher-student interactions, while analyzing and applying skills contributed to a deeper understanding of learning concepts. These findings underscore the importance of improving teaching methodologies, addressing gender disparities, and fostering higher-order cognitive skills to enhance educational outcomes.

Conclusion:

The study concludes that professional designation and effective teaching methods play a significant role in enhancing learning outcomes aligned with Bloom's Taxonomy. While higher-order skills such as evaluating, analyzing, and applying positively influence understanding and psychological well-being, gender disparities negatively impact teacher-student interactions and student perceptions. Addressing these disparities and improving teaching methodologies can create a more inclusive and supportive learning environment, ultimately leading to the effective implementation of Bloom's Taxonomy and fostering critical thinking among students.

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