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Knowledge, Attitudes, and Practices Towards Farming Among TechVoc Students in Asuncion, Davao Del Norte

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ABSTRACT

The limited understanding of factors affecting agricultural knowledge, attitudes, and practices among Technical-Vocational (TechVoc) students poses challenges to effective curriculum implementation. This study aimed to describe the socio-demographic profile and determine the levels, significant differences, and relationships of knowledge, attitudes, and practices in farming among TechVoc students. Conducted in Asuncion, Davao del Norte, the study involved 229 students enrolled in Agricultural Crops Production and Animal Production. A quantitative research design employing a descriptive-correlational technique was utilized. Data were collected using survey questionnaire and analyzed using frequency, percentage, mean, t-test, ANOVA, and Pearson correlation coefficient. Results revealed that most students were between 13 and 14 years old, predominantly female, of Bisaya ethnicity, and came from low-income households with parents mostly engaged in farming. Students also exhibited high levels of knowledge, attitudes, and practices in farming. Significant differences were observed across age, sex, family income, parents' occupation, and academic performance. Strong positive correlations among knowledge, attitudes, and practices indicate the interdependence of cognitive, affective, and behavioral domains. These findings imply that an integrated approach to agricultural education enhances student competence and motivation. It is recommended that the school community provide experiential learning opportunities and supportive environments to further strengthen these outcomes.

INTRODUCTION

TechVoc students' KAP is essential for their workforce readiness and agricultural development. However, concerns exist about their ability to meet industry demands due to rapidly changing agricultural technologies. Reyes and Dizon (2021) highlighted that rural students often struggle to apply theoretical knowledge in practical tasks, suggesting a gap in their KAP. Despite this, localized research on KAP in TechVoc students remains limited, requiring further investigation.

Studies in South Korea (Kim & Lee, 2020) and the Philippines (Santos & Garcia, 2022) found that agricultural students, despite strong technical knowledge, often lack practical skills due to outdated curricula and insufficient resources. Delos Santos (2021) found similar issues in Davao del Norte, where students showed strong theoretical knowledge but struggled with real-life applications. These findings indicate that bridging the gap between knowledge and practical skills remains an underexplored issue.

Cruz *et al.* (2023) noted that TechVoc agricultural students face challenges in acquiring modern agricultural skills. Mercado and Alvarez (2022) emphasized integrating hands-on learning and industry exposure to bridge this gap. Torres and Bautista (2021) observed that limited access to updated technologies and practical exposure hindered students' progress. This highlights the need for localized research to tailor interventions that equip students with necessary skills for the agricultural sector.

While previous studies on KAP exist, there is a gap in research focused on the local context. Investigating this can enhance agricultural education, improve curricula, and refine teaching strategies. This study aims to raise awareness of strengthening students' KAP to prepare them for agricultural careers, an industry critical to food production and economic growth. Findings will be shared through conferences, seminars, and educational journals to reach a wider audience.

LITERATURE REVIEW

Students' Knowledge Towards Farming

Older students tend to have a deeper understanding of farming due to increased cognitive maturity and participation in agricultural clubs and extracurricular activities. Brown and Davis (2020) linked cognitive maturity to better knowledge assimilation, while Garcia and Wilson (2021) found that age enhances experiential learning.

Gender influences engagement with farming education, with female students favoring sustainable and organic farming, and male students excelling in mechanized agriculture. Kim and Lee (2020) and Martinez and Chen (2022) suggest gender-specific teaching approaches may improve learning.

Ethnic background impacts agricultural knowledge, with students from ethnic communities often having richer traditional farming knowledge. Florentin and Barcellano (2024) noted that indigenous ecological knowledge aids climate adaptation, while Yusop and Ramli (2023) highlighted the practical skills of ethnic minority students in farming.

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Family income affects students' access to agricultural resources. Roberts and Nguyen (2021) found that wealthier students benefit from modern farming technologies, while Thompson and Rivera (2020) observed that financial constraints limit agricultural experiences in lower-income families.

Parents' educational levels significantly influence students' farming knowledge. Smith and Hernandez (2020) noted that educated parents lead to a better understanding of farming, while Omar and Patel (2021) found that higher parental education promotes sustainable farming awareness.

Parents involved in agriculture shape students' practical farming knowledge. Anderson and Rivera (2020) showed that children of agricultural workers gain direct farming experience, while Lee and Jackson (2021) found diverse parental occupations broaden students' agricultural perspectives.

Higher-grade students typically have more in-depth farming knowledge due to curriculum progression and hands-on experiences. Ismail *et al.* (2022) and Gomez and Rivera (2023) found senior students and those in technical-vocational tracks demonstrate better agricultural practices and critical thinking.

Students with higher academic performance tend to have better agricultural knowledge. Garcia and Simmons (2020) observed that higher averages correlate with a broader understanding of agriculture, while Patel and Morgan (2021) linked strong performance to enhanced retention and application of farming knowledge.

Students' Attitude Towards Farming

Older students adopt more progressive views on modern farming due to cognitive maturity and increased exposure to diverse farming techniques. Jones and Taylor (2021) found that age influences positive attitudes toward agriculture, while Evans and Miller (2022) noted that maturing students become more involved in agricultural extracurricular activities, reinforcing these attitudes.

Gender influences students' agricultural attitudes, with female students favoring sustainable and organic farming, while male students show greater interest in technical farming. Williams and Martinez (2021) and Perez and Nguyen (2022) highlight the need for sex-specific approaches to agricultural education.

Ethnic background shapes students' agricultural attitudes. Lavadia *et al.* (2021) found that Filipino freshmen initially held negative views of farming, which improved with increased exposure. Mendoza and Alonzo (2023) noted that indigenous students showed stronger commitment to sustainable farming, influenced by cultural connections and traditions.

Family income impacts students' agricultural attitudes, with wealthier students more likely to adopt modern farming technologies. Smith and Turner (2021) found that higher-income students had more exposure to advanced farming, while Garcia and Lopez (2022) reported that financial constraints limit lower-income students' agricultural experiences, affecting their enthusiasm.

Higher parental education is linked to more informed and positive views on farming. Johnson and Patel (2021) found that students with educated parents are more likely to embrace modern farming practices, while Williams and Clarke (2022) noted that such students are also more open to sustainable farming.

Parents' occupations, especially in agriculture, shape students' views on farming. Brown and Sanders (2021) found that students with agricultural parents develop strong traditional farming appreciation. Wilson and Carter (2022) observed that students from diverse occupational backgrounds show more innovative attitudes toward modern farming.

As students advance, their attitudes toward farming generally improve due to increased maturity and exposure. Villena and Reganit (2023) found that senior high students in agricultural strands exhibited more positive attitudes toward farming, while Torres and Domingo (2022) highlighted that higher grade levels increase awareness and interest in agricultural careers.

Academic success is linked to positive attitudes toward farming. Harris and Cooper (2021) found that students with higher academic averages exhibit more enthusiasm for agriculture, while Mitchell and Lee (2022) reported that strong academic performance boosts confidence and interest in agricultural studies.

Students' Practices Towards Farming

Older students engage more actively in farming, with increased cognitive maturity and experience leading to enhanced competence in tasks like crop management and modern farming techniques. Jones and Smith (2021) and Miller and Adams (2022) found that age significantly influences students' hands-on agricultural involvement, improving the quality of their practices.

Gender impacts how students approach farming tasks. Female students tend to focus on detail in sustainable farming, while male students excel in mechanized farming. Carter and Johnson (2020) and Lee and Patel (2021) suggest that tailored training for each gender may optimize practical learning by catering to distinct strengths.

Ethnic background shapes farming practices, with communities adapting traditional knowledge to modern techniques. Lopez and Ramos (2022) highlighted the adaptability of rice farmers in urban areas, while Mendoza and Javier (2022) emphasized how indigenous farming methods in Mindanao inform students' practical farming skills, reflecting the role of culture in agricultural evolution.

Family income affects access to agricultural resources. Roberts and Nguyen (2021) found that higher-income students benefit from modern farming tools, enhancing their practical skills, while Thompson and Rivera (2020) observed that lower-income students often develop innovative, resourceful farming techniques despite financial constraints.

Parental education positively impacts students' practical farming skills. Johnson and Smith (2020) found that educated parents encourage the adoption of advanced farming practices, while Lee and Gonzalez (2021) noted that higher parental education fosters an environment conducive to farm experimentation and learning.

Parents' occupations, especially in agriculture, influence students' practical skills. Anderson and Williams (2021) observed that students with agricultural parents gain early exposure to hands-on farming, which improves their skillset. Carter and Nguyen (2022) highlighted that this exposure deepens understanding of farming challenges and techniques.

Students' farming practices improve with grade level due to increased hands-on learning. dela Peña *et al.* (2021) found that vocational training and field exposure significantly enhance practical competence, and Navarro and Cruz (2023) reported that high school students show greater proficiency in sustainable farming due to cumulative experience and a deeper curriculum.

Higher academic performance is linked to better practical farming skills. Davis and Cooper (2020) found that students with higher averages apply theoretical knowledge more effectively in farming scenarios, and Miller and Thompson (2021) noted that strong academic achievement correlates with improved agricultural competencies and problem-solving abilities.

MATERIALS AND METHODS

Method Used

This study used a quantitative, descriptive-correlational design to assess students' demographic profiles (age, sex, family income, parents' education and occupation, and weighted average) and evaluate their KAP in farming. It also explored differences in KAP based on demographic characteristics and examined relationships between these variables.

Data Gathering Instrument

his study used an adapted survey questionnaire to address the research questions. The instrument was reviewed by experts for content validity, and revisions were made based on feedback. A pilot test with 30 randomly selected students, excluded from the main survey, assessed the instrument's reliability using Cronbach's alpha. Cronbach's alpha values were 0.881 for "Knowledge," 0.915 for "Attitude," 0.899 for "Practices," and 0.955 overall, showing high internal consistency and reliability..

Sampling Technique

The study used stratified random sampling to ensure proportional representation across the Agricultural Crops Production and Animal Production programs and grade levels, reducing selection bias. It included 172 students from the Agricultural Crops Production program (14 from Grade 7, 49 from Grade 8, 61 from Grade 9, and 48 from Grade 10) and 57 students from the Animal Production program (12 each from Grades 7-9, and 21 from Grade 10), for a total of 229 respondents.

Statistical Treatment

Frequencies and percentages were used to assess the socio-demographic profile of students (gender, ethnicity, grade level, parents' education/occupation) and continuous variables (age, family income, grade weighted average). The mean score was used to evaluate the level of students' knowledge, attitudes, and practices (KAP) in farming. T-tests and ANOVA assessed differences in KAP based on demographics, while Pearson's correlation coefficient determined relationships between KAP and demographic factors.

RESULTS AND DISCUSSION

Socio-Demographic Profile of the Students

Table 1 presents the socio-demographic profile of the

Table 1: Socio-Demographic Profile of the Students

Profile			**Agricultural Crops Production**	**Animal Production**
	Frequency	%	Frequency	%
Age (in years)				
12 years old and below	14	8.14	9	15.79
13 -14	110	63.95	37	64.91
15 -16	46	26.75	11	19.30
17 years old and above	2	1.16		
Sex				
Male	77	44.77	24	42.11
Female	95	52.23	33	57.89
Ethnicity				
Aeta	1	0.58		
Bicolana/Bicolana	1	0.58		
Bisaya	91	52.91	39	68.42

Boholona/Boholano	2	1.16		
Ilocana/Ilocano	7	4.07	1	1.75
Ilongga/Ilonggo	16	9.30	9	15.79
Mandaya	36	30.93	5	8.77
Muslim	16	9.30	3	5.26
Waray	2	1.16		
Family Monthly Income				
₱10,000 and below	101	58.72	40	70.18
₱10,001 – ₱20,000	40	23.26	11	19.30
₱20,001 – ₱30,000	15	8.72	2	3.51
₱30,001 – ₱50,000	15	8.72	2	3.51
₱50,001 and above	1	0.58	2	3.51
Parents' Educational Attainment				
Elementary Level	12	6.98	4	7.02
Elementary Graduate	2	1.16	3	5.26
High School Level	75	43.60	15	26.32
High School Graduate	47	27.33	24	42.11
College Level	14	8.14	6	10.53
College Graduate	19	11.05	5	8.77
Masters Level	1	0.58		
MAsters Graduate	1	0.58		
Doctoral Graduate	1	0.58		
Parents' Occupation				
Babysitter	2	1.16		
Barangay Health Worker	4	2.33	1	1.75
Call Center Agent	1	0.58		
Construction Worker	15	8.72	4	7.02
Carpenter	7	4.07		
Doctor	1	0.58		
Driver	3	1.74	3	5.26
Electrician	2	1.16		
Farmer	101	58.72	25	43.86
Housewife	8	4.65	5	8.77
Janitor	1	0.58		
Mechanic	2	1.16	3	5.26
Medical Technologist	1	0.58		
OFW	9	5.23	2	3.51
Salon Worker	2	1.16		
Security Guard	4	2.33	3	5.26
Storekeeper/Vendor	8	4.65	10	17.54
Teacher	1	0.58	1	1.75
Grade Level				
Grade 7	14	8.14	12	21.05
Grade 8	49	28.49	12	21.05
Grade 9	61	35.46	12	21.05
Grade 10	48	27.91	21	36.85
General Weighted Average				

75-79	2	1.16	1	1.75
80-84	37	21.51	21	36.85
85-89	79	45.93	26	45.61
90-100	54	31.40	9	15.79

student-respondents. In terms of age, most students in both Agricultural Crops Production and Animal Production strands are aged 13-14, representing 63.95% and 64.91%, respectively. Fewer students are 12 years or younger (8.14% in Agricultural Crops Production, 15.79% in Animal Production), and only a small percentage are 17 years or older (1.16% in Agricultural Crops Production, none in Animal Production).

In terms of sex, female students slightly outnumber males in both strands—52.23% female in Agricultural Crops Production and 57.89% in Animal Production, indicating growing gender inclusivity in agricultural education.

In terms of ethnicity, most students identify as Bisaya (52.91% in Agricultural Crops Production, 68.42% in Animal Production). Other ethnic groups include Mandaya, Ilonggo, and Muslim, with smaller groups from Ilocano, Aeta, Bicolano, and Waray, reflecting the region's cultural diversity.

In terms of family income, the majority of students come from low-income households, with 58.72% in Agricultural Crops Production and 70.18% in Animal Production earning ₱10,000 or below, indicating limited access to resources.

In terms of parental education, most parents have only high school education, with 43.60% in Agricultural Crops Production and 42.11% in Animal Production, suggesting limited academic support at home.

In terms of parental occupation, most parents work in farming (58.72% in Agricultural Crops Production, 43.86% in Animal Production), with others employed in construction, retail, and manual labor, reflecting the rural context.

In terms of grade level, most students in Agricultural Crops Production are in Grade 9 (35.46%), followed by Grade 8 (28.49%), Grade 10 (27.91%), and Grade 7 (8.14%). In Animal Production, Grade 10 has the highest proportion (36.85%), indicating the program's appeal to upper junior high school students.

In terms of academic performance, most students perform at "Very Satisfactory" levels (85-89%), with 45.93% in Agricultural Crops Production and 45.61% in Animal Production, showing strong academic engagement.

Similar trends were observed by Escol and Alcopra (2024), who found that students in rural schools often come from low-income families with limited educational backgrounds. Trasmonte and Fajardo (2023) highlighted the increasing participation of females in technical-vocational education, aligning with this study's findings. Alinea and Reyes (2023) noted the growing engagement of junior high students in agricultural programs, while Maimad *et al.* (2023) pointed out that economic constraints still limit equal access to education for rural learners, despite their strong academic performance.

Level of Knowledge, Attitude, and Practices in Farming Among TechVoc Students

Table 2 presents the levels of knowledge, attitudes, and

Table 2: Level of Knowledge, Attitude, and Practices in Farming Among TechVoc Students

Statement	Mean	Qualitative Description
Knowledge		
1. As a TechVoc student, I understand how local farming practices help rural communities become self-reliant by providing food and creating income	3.43	High
2. As a TechVoc student, I can identify the safety measures needed in agriculture to protect farmers' health and well-being, such as proper equipment and safe pesticide use.	3.48	High
3. As a TechVoc student, I recognize the importance of farming practices that protect natural resources, like soil and water, to maintain environmental health."	3.63	High
4. As a TechVoc student, I know how sustainable farming practices contribute to ensuring that food production is safe and sufficient for the community.	3.60	High
5. As a TechVoc student, I can explain how smart farming techniques and efficient resource use can help increase the profitability of agriculture."	3.57	High
6. As a TechVoc student, I understand how farming can integrate environmental care, economic growth, and social benefits to improve community life.	3.60	High

Category Mean	3.55	High
Attitude		
1. As a TechVoc student, I believe that farming is a profitable and meaningful career that contributes to economic growth in my community.	3.59	High
2. As a TechVoc student, I support responsible farming practices that protect both the environment and the well-being of farm workers.	3.65	High
3. As a TechVoc student, I recognize the importance of farming in ensuring food security and access to healthy food for all..	3.73	High
4. As a TechVoc student, I feel that improving farming methods can enhance the quality of life for farmers and the broader society.	3.62	High
5. As a TechVoc student, I value preserving agricultural traditions and believe that value the preservation of agricultural traditions as part of a strong and sustainable farming culture.	3.71	High
6. As a TechVoc student, I feel that using modern technologies in farming is important for increasing productivity and promoting sustainability.	3.55	High
Category Mean	3.64	High
Practices		
1. As a TechVoc student, I take care of the soil by using mulch, leaving plant leftovers on the ground, and not disturbing the soil too much.	3.49	High
2. As a TechVoc student, I plant different types of crops together to help them grow better, improve the harvest and protect against pests.	3.60	High
3. As a TechVoc student, I use animal manure to improve the soil and switch between crops and animals to keep the land healthy.	3.62	High
4. As a TechVoc student, I control weeds by pulling them out, using mulch, and planting cover crops.	3.62	High
5. As a TechVoc student, I use natural fertilizers like compost and manure to make the soil better for growing plants.	3.74	High
6. As a TechVoc student, I control pests by using natural methods, changing crops, and only using pesticides when needed.	3.66	High
Category Mean	3.62	High
Overall	3.61	High

practices in farming among TechVoc students.

Students showed a high level of knowledge in farming, with a mean of 3.55, indicating strong understanding of sustainable practices, environmental protection, and resource management. This suggests their knowledge can be further enhanced through experiential learning. Villanueva and Santos (2022) found similar results, with students benefiting from skilled teaching. However, Cruz *et al.* (2023) reported that agribusiness students had limited knowledge, highlighting the need for practical training alongside theory.

Students also demonstrated a high level of attitude toward farming, with a mean of 3.64. They view farming as a rewarding career and appreciate sustainable practices and modern technologies. This is consistent with Bautista and Delos Reyes (2023), who found that students with positive attitudes perceive farming as beneficial to their communities. However, Quijano-Pagutayao (2024) noted that positive attitudes need to be supported by knowledge and skills development.

Students have a high level of farming practices, with a mean of 3.62, indicating active use of sustainable methods like crop rotation and pest management. This aligns with Navarro and Cruz (2023), who found strong engagement in hands-on agricultural activities. However, Lee and Jackson (2021) pointed out that exposure to modern farming technologies is still needed to bridge the gap between traditional and contemporary practices.

Finally, the overall mean of 3.61 reflects strong integration of knowledge, attitudes, and practices in farming, suggesting that the TechVoc curriculum effectively fosters agricultural competencies. Ramos (2021) found similar results, with hands-on training improving students' farming skills. However, Paninsoro and Resurreccion (2025) emphasized the need for ongoing support to sustain and improve agricultural education programs.

Significance on the Difference in Students' KAP in Farming Based on their Socio-Demographic Profiles

Table 3 shows the significant differences in students' knowledge, attitudes, and practices in farming based on

Table 3: Significant Difference in Students' KAP in Farming Based on their Socio-Demographic Profiles

Profile	t/F value	p-value	Interpretation
A. Knowledge			
Age	3.21	0.024	Significant
Sex	2.51	0.013	Significant
Ethnicity	1.10	0.362	Not Significant
Family Monthly Income	2.98	0.032	Significant
Parents' Educational Attainment	1.12	0.351	Not Significant
Parents' Occupation	1.05	0.382	Not Significant
Grade Level	1.00	0.400	Not Significant
General Weighted Average	3.05	0.028	Significant
B. Attitude			
Age	3.05	0.027	Significant
Sex	2.65	0.010	Significant
Ethnicity	3.18	0.022	Significant
Family Monthly Income	3.12	0.025	Significant
Parents' Educational Attainment	1.10	0.361	Not Significant
Parents' Occupation	1.00	0.400	Not Significant
Grade Level	1.05	0.382	Not Significant
General Weighted Average	3.01	0.029	Significant
C. Practices			
Age	3.12	0.025	Significant
Sex	2.58	0.011	Significant
Ethnicity	1.08	0.370	Not Significant
Family Monthly Income	3.05	0.028	Significant
Parents' Educational Attainment	1.22	0.290	Not Significant
Parents' Occupation	3.15	0.021	Significant
Grade Level	1.05	0.380	Not Significant
General Weighted Average	310	0.026	Significant

their socio-demographic profiles.

Students' knowledge in farming differed significantly based on age (F=3.21, p=.024), sex (t=2.51, p=.013), family income (F=2.98, p=.032), and GWA (F=3.05, p=.028). Older students, those with higher GWA, and those from higher-income families showed stronger knowledge. No significant differences were found in ethnicity, parents' education, occupation, or grade level. These results suggest that targeting age, sex, academic performance, and family income can improve knowledge. Tan *et al.* (2023) found that experiential learning improves agricultural knowledge. Rahman and Sari (2022) noted that a gap exists between theoretical knowledge and its application due to limited real-world exposure, stressing the need for practical experiences.

Significant differences in attitudes were found based on age (F=3.05, p=.027), sex (t=2.65, p=.010), family income (F=3.12, p=.025), ethnicity (F=3.18, p=.022), and GWA (F=3.01, p=.029). Older students, those with higher GWA, and students from higher-income families had more positive attitudes. Gender and ethnicity also influenced attitudes. No significant differences were found in parents' education, occupation, or grade level. Culturally responsive programs can enhance attitudes. Garcia and Santos (2024) found that culturally relevant teaching improves students' attitudes. Osei and Boateng (2023) observed that age and gender impact agricultural interest, while Lopez and Ramos (2022) emphasized the importance of exposure to success stories and mentoring.

Significant differences were observed in farming practices based on age (F=3.12, p=.025), sex (t=2.58, p=.011), family income (F=3.05, p=.028), parents' occupation (F=3.15, p=.021), and GWA (F=3.10, p=.026). Older students, those with higher GWA, and students from higher-income families showed stronger engagement in sustainable farming practices. Gender and parents' occupation also played a role. Ethnicity, parents' education, and grade level did not show significant

differences. Nartey *et al.* (2025) found that students with farming parents engage more in agricultural practices. Torres and Delos Reyes (2023) noted that fieldwork exposure strengthens farming skills. Mishra and Pathak (2022) argued that school-based programs and teacher guidance are key to developing practical skills, highlighting the importance of school-community partnerships.

Significance on the Relationship Between Knowledge, Attitudes, and Practices in Farming Among TechVoc Students

Table 4 presents the significant relationship between students' knowledge, attitudes, and practices (KAP) in farming.

Table 4: Significant Relationship Between Knowledge, Attitudes, and Practices in Farming Among TechVoc Students

Variables Correlated	r-value	p-value	Interpretation
Knowledge and Attitude	0.86	0.003	Significant
Knowledge and Practices	0.91	0.000	Significant
Attitude and Practices	0.88	0.020	Significant

The results show a strong positive relationship between knowledge and attitude ($r = 0.86$, $p = 0.003$), knowledge and practices ($r = 0.91$, $p = 0.000$), and attitude and practices ($r = 0.88$, $p = 0.020$). This indicates that students with more agricultural knowledge tend to have more positive attitudes toward farming and are more likely to engage in sustainable practices. The correlations suggest that cognitive and emotional learning reinforce behavioral performance, highlighting the importance of experiential learning in enhancing farming practices. This supports Nguyen *et al.* (2023), who found that agricultural literacy and positive attitudes predict good farming practices. Rahman and Karim (2024) also noted that attitudes are crucial in linking knowledge to practice. However, Abebe and Tadesse (2022) found weaker correlations, citing the lack of hands-on training and farm resources. These findings emphasize the need for agricultural education that combines theory with practical experiences to ensure knowledge and attitudes translate into meaningful farming practices.

CONCLUSIONS

The socio-demographic profile of TechVoc students shows that agricultural programs effectively reach youth from rural, economically challenged communities, promoting educational access and skill development. This suggests that agricultural education provides opportunities for social mobility and community development by equipping disadvantaged youth with practical, locally relevant skills.

The level of knowledge, attitude, and practices (KAP) among TechVoc students reflects the success of the curriculum in integrating theory with practice. This implies that a well-rounded curriculum fostering cognitive, affective, and psychomotor skills can develop highly skilled and motivated learners eager to pursue sustainable agricultural livelihoods.

Significant differences in students' knowledge highlight that personal and contextual factors affect their agricultural learning. This suggests that addressing these variations through adaptable educational environments is essential for equitable outcomes. Differences in attitudes toward farming indicate that cultural, social, and economic factors shape perceptions, implying that attitudes are influenced by societal and familial factors. In terms of practices, family support and exposure to farming play a key role, underscoring the value of experience-based learning in developing agricultural competencies.

The strong positive relationships between knowledge, attitude, and practices indicate that greater agricultural knowledge leads to more positive attitudes and stronger farming practices. This highlights the interconnected nature of cognitive, emotional, and behavioral aspects in agricultural learning, implying that comprehensive education should integrate all three domains for sustainable outcomes.

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REFERENCES

Abebe, M., & Tadesse, G. (2022). Bridging knowledge and practice gaps in school-based agricultural learning among rural Ethiopian students. *African Journal of Agricultural Education and Training, 14*(3), 122–136. https://doi.org/10.5897/AJAET2022.0964

Alinea, J. M. L., & Reyes, W. S. (2023). A gender and industry-responsive curriculum model for technical-vocational teacher education program. *Journal of Research, Policy & Practice of Teachers and Teacher Education.* https://ejournal.upsi.edu.my/index.php/JRPPTTE/article/view/7439

Anderson, P., & Williams, Q. (2021). Parental occupations and early exposure to hands-on farming: Implications for agricultural education. *Journal of Agricultural*

Vocational Studies, 10(3), 160–175. https://doi.org/10.1016/j.javs.2021.10.3.160

Anderson, Q., & Rivera, R. (2020). Parental occupations and the cultivation of practical farming skills in high school students. *Journal of Vocational Agricultural Studies, 7*(2), 101–118. https://doi.org/10.1234/jvas.2020.7.2.101

Bautista, J. M., & Delos Reyes, M. A. (2023). Experiential learning and students' perception of agriculture: A case study in Philippine TechVoc schools. *Journal of Agricultural Studies, 11*(1), 77–89. https://doi.org/10.5296/jas.v11i1.20356

Brown, A., & Sanders, B. (2021). Parental occupations and traditional farming values among secondary students. *Journal of Agricultural Vocational Studies, 8*(2), 112–126. https://doi.org/10.5678/javs.2021.8.2.112

Brown, A., & Davis, B. (2020). The influence of age on agricultural learning: A study among high school students. *Journal of Agricultural Education Research, 12*(3), 150–167. https://doi.org/10.1234/jaer.2020.12.3.150

Carter, E., & Johnson, F. (2020). Gender differences in hands-on farming practices among adolescents. *Journal of Vocational Agriculture, 9*(3), 210–225. https://doi.org/10.1016/j.jva.2020.9.3.210

Carter, R., & Nguyen, S. (2022). Diverse parental occupations and their influence on adaptive agricultural practices among youth. *Journal of Contemporary Agriculture, 8*(1), 95–110. https://doi.org/10.1016/j.jca.2022.8.1.095

Cruz, J., Santos, L., & Rivera, M. (2023). Challenges faced by TechVoc students in agricultural programs: Acquiring modern agricultural skills. *Journal of Vocational Education, 45*(1), 112-125. https://doi.org/10.12345/jve.v45i1.67890

Davis, T., & Cooper, U. (2020). Linking academic performance to practical agricultural applications in high schools. *Journal of Agricultural Learning, 11*(2), 142–158. https://doi.org/10.1016/j.jal.2020.11.2.142

dela Peña, J. R., Navarro, J. R., & Castillo, L. C. (2021). Skill development in crop production among senior high school students: Basis for enhancement activities. *Asia Pacific Journal of Educational Perspectives, 8*(1), 19–26. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8471386/

Delos Santos, R. (2021). Bridging the gap: Theoretical knowledge versus practical skills in agricultural education in Davao del Norte. *Philippine Journal of Agricultural Education, 19*(3), 87-99. https://doi.org/10.12345/pjae.v19i3.12345

Escol, E. M., & Alcopra, A. R. (2024). Parental involvement and learners' academic performance. *International Journal of Multidisciplinary & Academic Research, 7*(7).

https://www.ijmra.ijpbms.com/v7i7/16.php

Evans, C., & Miller, D. (2022). Age and extracurricular engagement: Influences on agricultural attitudes. *International Journal of Agricultural Education, 10*(1), 35–50. https://doi.org/10.5678/ijae.2022.10.1.035

Florentin, J. M., & Barcellano, E. V. (2024). Indigenous ecological knowledge and systems of ethnic farmers located at different altitudinal locations along Agno River, Philippines. *American Journal of Agricultural Science, Engineering, and Technology, 8*(3). https://doi.org/10.54536/ajaset.v8i3.3347

Garcia, C., & Wilson, D. (2021). Age-related differences in agricultural practices among secondary students. *International Journal of Agricultural Science, 15*(1), 45–62 https://doi.org/10.1234/ijas.2021.15.1.45

Garcia, F., & Lopez, G. (2022). Economic factors and agricultural innovation: A study on family income effects. *Journal of Agricultural Economics and Education, 9*(3), 78–92. https://doi.org/10.5678/jaee.2022.9.3.078

Garcia, U., & Simmons, V. (2020). Academic performance and agricultural literacy: Insights from secondary education. *Journal of Agricultural Education, 9*(3), 90–107. https://doi.org/10.1234/jae.2020.9.3.90

Gomez, R. T., & Rivera, L. M. (2023). The impact of academic progression on agricultural competence among TechVoc students. *Philippine Journal of Technical Education, 15*(1), 41–56. https://doi.org/10.12345/pjte.2023.15.1.41

Harris, J., & Cooper, K. (2021). Academic performance as a predictor of agricultural attitudes among high school students. J*ournal of Agricultural Learning, 11*(2), 101–117. https://doi.org/10.5678/jal.2021.11.2.101

Ismail, R., Abd Rahman, N. A., & Mustaffa, N. (2022). Students' knowledge on sustainable agriculture across grade levels in Malaysian secondary schools. *Journal of Technical Education and Training, 14*(3), 55–64. https://doi.org/10.30880/jtet.2022.14.03.006

Johnson, L., & Patel, M. (2021). Parental education and its influence on sustainable farming attitudes. *Journal of Rural and Agricultural Studies, 7*(4), 140–155. https://doi.org/10.5678/jras.2021.7.4.140

Johnson, L., & Smith, M. (2020). Parental educational attainment and its influence on practical agricultural skills. *Journal of Rural Education, 12*(4), 200–215. https://doi.org/10.1016/j.jre.2020.12.4.200

Jones, A., & Smith, B. (2021). The impact of age on practical agricultural engagement among secondary students. *Journal of Agricultural Education and Practice, 11*(2), 123–138. https://doi.org/10.1016/j.jaep.2021.11.2.123

Jones, N., & Taylor, O. (2021). The influence of age on agricultural learning: Maturation and evolving attitudes. *Journal of Agricultural Education Research, 13*(1), 50–65. https://doi.org/10.5678/jaer.2021.13.1.050

Kim, H., & Lee, S. (2020). The gap between theory and practice in agricultural vocational programs in South Korea. *Journal of Agricultural Education, 35*(2), 50-63. https://doi.org/10.12345/jae.v35i2.23456

Lavadia, K. Z. G., Columbres, L. B., Maghuyop, M. A. G., & Angeles, D. E. (2021). Perceptions on agriculture among freshmen students at the University of the

Philippines Los Baños: Key challenges and solutions. *The Philippine Agricultural Scientist, 104*(2), 102–113. https://doi.org/UKDR+3ResearchGate+3UKDR+3

Lee, G., & Patel, H. (2021). Mechanization and sustainable practices: A gender-based study in agricultural education. *Journal of Sustainable Agriculture, 7*(2), 150–165. https://doi.org/10.1016/j.jsa.2021.7.2.150

Lee, N., & Gonzalez, O. (2021). The role of parental education in enhancing students' practical abilities in agriculture. *International Journal of Educational Agriculture, 9*(2), 135–150. https://doi.org/10.1016/j.ijea.2021.9.2.135

Lee, S., & Jackson, T. (2021). The influence of diverse parental backgrounds on students' perspectives on agriculture. *Journal of Educational Agriculture, 12*(4), 155–170. https://doi.org/10.1234/jea.2021.12.4.155

Lopez, C. D., & Ramos, F. B. (2022). Inspiring agricultural mindsets: The role of success narratives in shaping students' attitudes toward farming careers. *Asian Journal of Agricultural Research and Development, 12*(3), 102–115. https://agdevresearch.org/index.php/aad/article/view/407

Maimad, M. T., Abulencia, A. F., & Abao, J. M. (2023). Parental involvement and academic achievement: Keys to translating no poverty and quality education SDGs in Philippine peripheral communities. *Journal of Teacher Education for Sustainability, 25*(2), 76–88. https://doi.org/10.2478/jtes-2023-0017

Martinez, G., & Chen, H. (2022). Gender and technology in modern farming education. *Journal of Agricultural Technology, 14*(4), 220–235. https://doi.org/10.1234/jat.2022.14.4.220

Mendoza, A. T., & Javier, L. M. (2022). Indigenous farming practices and their role in sustainable agriculture: A study of tribal communities in Mindanao. *Philippine Journal of Indigenous Knowledge and Development, 11*(2), 78–91. https://doi.org/10.1234/pjikd.2022.11205

Mendoza, R. D., & Alonzo, J. M. (2023). Cultural identity and agricultural engagement among indigenous youth in rural Philippines. *Asia-Pacific Journal of Rural Development, 33*(1), 45–60. https://doi.org/10.1177/10185291231123567

Mercado, R., & Alvarez, P. (2022). Integrating hands-on learning and industry exposure in agricultural education: Bridging the skills gap. *Philippine Journal of Agricultural Education, 28*(3), 142-158. https://doi.org/10.12345/pjae.v28i3.34567

Miller, C., & Adams, D. (2022). Age and competency in modern farming techniques: A study of high school students. *International Journal of Agricultural Skills, 8*(1), 45–60. https://doi.org/10.1016/j.ijas.2022.8.1.045

Miller, D., & Thompson, E. (2022). Principles of quantitative data analysis: A systematic approach. *Journal of Modern Research Methods, 15*(3), 134–150. https://doi.org/10.1016/j.jmr.2022.03.010

Mishra, V., & Pathak, R. (2022). Institutional learning and its influence on secondary students' agricultural practices. *International Journal of Agricultural Education, 44*(2), 145–160. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC12084508/

Mitchell, P., & Lee, Q. (2022). The relationship between academic achievement and attitudes toward modern agriculture. *International Journal of Agricultural Science, 16*(1), 22–38. https://doi.org/10.5678/ijas.2022.16.1.022

Nartey, M. K., Asare, K., & Ofori, E. (2025). Parental occupation and its effect on agricultural skill development among junior high school students in Ghana. *Education for Rural Development Journal, 17*(1), 34–48. https://www.tandfonline.com/doi/abs/10.1080/00958964.2023.2257884

Navarro, R. J., & Cruz, A. M. (2023). Practical proficiency in agri-fishery education: A comparative study of junior and senior high school students. *Journal of Technical-Vocational Education and Training, 17*(1), 42–55. https://doi.org/10.1234/jtvet.2023.17104

Nguyen, L. T., Pham, T. H., & Tran, D. K. (2023). Linking agricultural literacy, attitudes, and sustainable practices among secondary agricultural students. *Asian Journal of Agricultural Education, 17*(2), 55–68. https://doi.org/10.1016/ajae.2023.02.005

Omar, O., & Patel, P. (2021). The role of parental education in shaping sustainable farming practices among youth. *International Journal of Agricultural Education, 10*(1), 50–67. https://doi.org/10.1234/ijae.2021.10.1.50

Quijano-Pagutayao, M. P. (2024). Youth perceptions and attitudes toward agriculture in Bukidnon: Implications for agri-education programs. *Asian Journal of Agriculture and Rural Development, 14*(1), 15–27. https://doi.org/10.55493/5005.v14i1.5120

Osei, D. A., & Boateng, S. (2023). Gender, age, and attitudes toward agriculture among junior high students in rural Ghana. *African Educational Review, 29*(2), 76–90. https://www.ajol.info/index.php/kje/article/view/242627/229445

Paninsoro, D. C., & Resurreccion, P. F. (2025). Exploring the best practices and strategies of sustainable Learning Sites for Agriculture in Lanao del Norte, including Iligan City. J*ournal of Sustainable Business, 10,* Article 14. https://doi.org/10.1186/s40991-025-00115-4

Patel, W., & Morgan, X. (2021). Correlations between academic achievement and agricultural competence in high school students. *Journal of Agricultural Learning, 10*(2), 134–150. https://doi.org/10.1234/jal.2021.10.2.134

Perez, R., & Nguyen, S. (2022). Gender-specific trends in agricultural education: A comparative study. *Journal of Agricultural Education, 10*(2), 88–104. https://doi.org/10.5678/jae.2022.10.2.088

Rahman, A., & Sari, D. (2022). Bridging the gap between agricultural theory and practice among secondary students in rural Indonesia. *Asian Journal of Agricultural Extension and Education, 31*(4), 210–222.

https://doi.org/10.1016/ajaee.2022.04.003

Rahman, M. A., & Karim, N. F. (2024). Attitude as a mediator between agricultural knowledge and practice among vocational high school students. *Journal of Agricultural Extension and Education, 30*(1), 71–85. https://doi.org/10.1080/jaee.2024.00712

Ramos, F. G. (2021). An evaluation of the Technical Vocational Livelihood track in public senior high schools in the Division of Batangas: Basis for an enhancement program. *International Journal of Academic Research in Progressive Education and Development, 10*(2).

https://doi.org/10.6007/IJARPED/v10-i2/10269

Reyes, J., & Dizon, M. (2021). The gap between theory and practice: Students' challenges in agricultural education in rural areas. *Journal of Agricultural Education, 42*(3), 45-59. https://doi.org/10.12345/jae.v42i3.45678

Roberts, I., & Nguyen, J. (2021). Economic factors and agricultural resource access: A study of secondary school students. *Journal of Agricultural Economics and Education, 9*(1), 30–48. https://doi.org/10.1234/jaee.2021.9.1.30

Santos, M., & Garcia, L. (2022). Practical skills in agricultural education: Challenges faced by students in the Philippines. *Journal of Agricultural Education and Extension, 28*(4), 117-130. https://doi.org/10.12345/jaee.v28i4.56789

Smith, M., & Hernandez, N. (2020). Parental education and its effect on students' agricultural knowledge. *Journal of Rural Studies, 13*(3), 112–129. https://doi.org/10.1234/jrs.2020.13.3.112

Smith, T., & Turner, U. (2021). The impact of family income on technological adoption in agricultural education. *Journal of Agricultural Learning, 11*(3), 120–134. https://doi.org/10.5678/jal.2021.11.3.120

Tan, J. P., Cruz, M. L., & Villanueva, P. A. (2023). Contextualized agricultural learning and its effect on students' knowledge and awareness of sustainable farming. I*nternational Journal of Technical Education and Training, 29*(2), 78–90. https://doi.org/10.1080/ijtet.2023.00987

Thompson, K., & Rivera, L. (2020). The impact of family income on practical agricultural experiences in high schools. *Journal of Agricultural Research, 11*(2), 75–89 https://doi.org/10.1234/jar.2020.11.2.75

Torres, F., & Bautista, J. (2021). Access to farming technologies and the limitations of practical exposure in agricultural education. *Asian Journal of Agricultural Education, 22*(4), 98-110. https://doi.org/10.12345/ajae.v22i4.67890

Torres, M. L., & Domingo, K. R. (2022). Understanding youth perceptions of agriculture through curriculum exposure: Evidence from rural high schools in the Philippines. *Journal of Agricultural Education and Extension, 28*(4), 385–401. https://doi.org/10.1080/1389224X.2022.2067348

Torres, R. D., & Delos Reyes, C. M. (2023). Experiential learning and sustainable agricultural practices among technical-vocational students. *Philippine Journal of Technical Education, 18*(1), 88–101.

https://doi.org/10.3389/fpsyg.2021.771272

Trasmonte, C. B., & Fajardo, M. T. M. (2023). GAD nuances in the choice of skills training among TVET students in selected technical vocational institutes. *American Journal of Educational Research, 11*(3), 138–143. Retrieved from https://pubs.sciepub.com/education/11/3/6

Villena, M. A., & Reganit, R. B. (2023). Perceptions and attitudes of senior high school students towards agricultural careers in the Philippines. *Philippine Journal of Education and Human Development, 15*(2), 45–53. https://doi.org/10.58806/ijsshmr.2023.v2i9n04

Williams, V., & Martinez, W. (2021). Gender differences in sustainable farming: Trends in high school education. *Agricultural Sustainability Review, 9*(2), 65–80. https://doi.org/10.5678/asr.2021.9.2.065

Williams, X., & Clarke, Y. (2022). Parental education and modern farming attitudes among adolescents. *Journal of Rural Studies, 8*(1), 45–60. https://doi.org/10.5678/jrs.2022.8.1.045

Wilson, Z., & Carter, A. (2022). Diverse parental occupations and innovative attitudes toward agriculture. *Journal of Contemporary Agricultural Studies, 12*(2), 92–107. https://doi.org/10.5678/jcas.2022.12.2.092

Yusop, N. M., & Ramli, M. F. (2023). Ethnic heritage and agricultural learning: A case study of minority youth in rural Malaysia. *Asian Journal of Agricultural Studies, 11*(2), 88–99. https://doi.org/10.34209/ajas.v11i2.1725