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Agricultural Awareness among High School Students and Teachers in Benchama Maharat School, Ubon Ratchathani, Thailand

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Abstract

This study aimed to: (1) determine socio-demographic and socio-economic characteristics of students (Grades 7–9) and teachers at Benchama Maharat School in Ubon Ratchathani, Thailand, and (2) assess the level of agricultural awareness among the respondents. A quantitative survey collected data from 521 students and 95 teachers via online questionnaires. Descriptive statistics and inferential analyses (chi-square, Tukey Honestly Significant Difference [HSD]) were conducted using XLSTAT. The student respondents (balanced by gender) were predominantly under 15 years old, with parents employed in the government or private sectors. Parental education was generally at the tertiary level, and monthly household incomes averaged ฿32,600–฿34,600. Teacher participants (aged 21–59) mostly held master's degrees and earned approximately ฿36,800 per month. Students demonstrated moderate agricultural knowledge (weighted mean [WM] = 3.09–3.29), whereas teachers scored higher (WM = 3.60). Attitudinal measures were slightly positive: students ranged from WM = 3.54–3.82, and teachers at WM = 4.21. Behavior levels varied by grade: Grades 7 and 8 showed moderate involvement (WM = 3.25 and 3.24), while Grade 9 and teachers were more active (WM = 3.44 and 3.83). Chi-square analyses revealed that students' awareness was significantly influenced by age, gender, grade level, residence location, and access to information. Teachers' awareness correlated significantly with socio-economic factors. Tukey HSD post-hoc tests confirmed that teachers' awareness surpassed that of students, and that Grade 9 students differed significantly in attitude from Grade 7. These findings underscore the impact of socio-demographic factors on agricultural awareness and recommend curriculum enhancements incorporating hands-on agricultural experiences.

Keywords: Awareness, Education, Experience, Student, Teacher

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Introduction

Agricultural awareness, defined as the understanding of fundamental agricultural concepts and their societal implications (Akgul and Macaroglu, 2011), plays a pivotal role in fostering sustainable development, environmental stewardship, and food security. In Thailand, agriculture remains a cornerstone of the economy and cultural identity (Organisation for Economic Co-operation and Development (OECD), 2021; Pongsrihadulchai, 2019), yet challenges such as climate change, resource degradation (Boonkhao et al., 2022; Wongsasuluk et al., 2014), and shifting economic priorities threaten its sustainability (Poungsuk and Junlek, 2021; Traimongkolkul and Tanpichai, 2005). The integration of agricultural education into Thailand's basic education curriculum reflects efforts to cultivate awareness among younger generations (Ministry of Education, 2008). However, constraints such as limited instructional hours and inconsistent policy implementation hinder the effective delivery of agricultural content (Siriwan et al., 2018). Assessing agricultural awareness among students and educators is thus critical to identify gaps and align educational strategies with contemporary needs.

This study focused on Benchama Maharat School in Ubon Ratchathani, Thailand—a region renowned for its agricultural heritage but facing environmental challenges such as pesticide residues and water contamination (Boonkhao et al., 2022; Wongsasuluk et al., 2014). The necessity of this research arose from the need to evaluate how socio-demographic factors and educational practices shape agricultural awareness, particularly in a setting where urbanization and shifting career aspirations might have been diminishing youth engagement in agriculture. By examining these dynamics, the study aimed to provide actionable insights for curriculum enhancement and community engagement.

The research aimed to:

1) Determine socio-demographic and socio-economic characteristics of students (Grades 7–9) and teachers.
2) Assess the level of agricultural awareness among the respondents.

Conducted through a cross-sectional survey, the study employed quantitative methods to assess knowledge, attitudes, and behaviors related to agriculture. It was limited to the response of the students and teachers in Benchama Maharat School. It may not represent the whole population in Northeast Thailand or Thailand.

The findings contributed to the discourse on agricultural education by highlighting actionable pathways to strengthen awareness and were intended to ensure students would emerge as informed citizens capable of addressing future agricultural challenges.

Research Methodology

This research was carried out at Benchama Maharat School, Ubon Ratchathani, Thailand, in accordance with ethical guidelines for human-subject research. The target population comprised Thai students in grades 7 to 9 and their teachers. A total of 616 participants were sampled: 172 grade 7 students, 174 grade 8 students, 175 grade 9 students, and 95 teachers.

Sample sizes for each group were calculated using Cochran's formula at a 95% confidence level, based on the population sizes of 564 (grade 7), 582 (grade 8), 599 (grade 9), and 149 (teachers). Participants were selected through simple random sampling to ensure an unbiased and representative sample.

The study employed a quantitative survey design to measure agricultural awareness among the respondents. The survey instrument consisted of two parts: (1) socio-demographic and socio-economic items, and (2) a 24-item agricultural awareness scale developed by the researchers. This scale was aligned with the Thai Basic Education Curriculum and assessed respondents' knowledge, attitudes, and behaviors related to agriculture. Each item was rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was translated into Thai and back-translated to ensure linguistic accuracy and cultural appropriateness.

Data were collected via an anonymous online survey administered through Google Forms, chosen for its convenience, cost-effectiveness, and ability to maintain respondent anonymity. The survey was conducted between January and February 2024.

Data analysis was performed using XLSTAT software. Descriptive statistics, including frequencies and percentages, summarized the socio-demographic characteristics and response distributions. Inferential statistics comprised Chi-square tests to examine associations between categorical variables and agricultural awareness, and analysis of variance (ANOVA) was used to identify significant differences in agricultural awareness across groups. When ANOVA results indicated significant differences, Tukey HSD (Tukey, 1949) post hoc test was applied to determine which specific groups differed. The Tukey HSD test effectively controlled Type I error in multiple comparisons, providing reliable pairwise group comparisons.

The agricultural awareness scale was interpreted based on mean scores: values closer to 1 indicated strong disagreement or low awareness, while values near 5 indicated strong agreement or high awareness. This interpretation allowed for a nuanced understanding of respondents' levels of agricultural knowledge, attitudes, and behaviors.

Results

A. Socio-Demographic and Socio-Economic Characteristics

The study included 616 participants: 521 students (Grades 7–9) and 95 teachers. Students exhibited a balanced gender distribution in Grade 7 (49.42% male, 50.58% female); however, Grades 8 and 9 showed a higher proportion of female students (56.90% and 65.71%, respectively), with 1.15% of Grade 8 students identifying their gender as "other" at the time of the survey. A female majority (61.05%) was observed among teachers

compared to males (38.95%). Urban residency was predominant across all groups (67.44%–72.00% of students; 64.21% of teachers), a characteristic that reflected Thailand's urbanization trends. Parents of students were primarily employed in government (42.29%–48.85%) or business sectors (25.00%–36.57%), with monthly household incomes that averaged ฿ 32,598.54 to ฿ 34,562.86. Teachers, predominantly holding master's degrees (47.37%), earned an average of ฿ 36,815.30 per month; their parents were primarily engaged in teaching (28.42%), farming (22.11%), or government roles (22.11%).

Other Social Factors

Both students and teachers relied heavily on digital platforms for agricultural information. Students prioritized the internet (20.69%–25.00%) and social media (12.21%–16.57%), while teachers supplemented these with professional networks (e.g., fellow teachers: 3.16%). Traditional sources like extension agents were underutilized (<3.43% among students). Most students accessed information occasionally (67.44%–72.00%), whereas teachers demonstrated slightly higher daily engagement (15.79%). Notably, 3.45%–6.40% of students never sought agricultural information, a finding that underscored gaps in proactive learning.

Over 90% of students expressed no interest in agriculture, with fewer than 10% considering agricultural careers at that time. Teachers reported higher interest (25.26%), yet only 8.42% had concrete plans to engage with the sector. This disparity highlighted persistent perceptions of agriculture as a low-status occupation among youth, which was consistent with Durongkaveroj (2022) observations on shifting career aspirations in Thailand.

B. Levels of Agricultural Awareness

Students displayed moderate knowledge (WM = 3.09–3.29), while teachers scored higher (WM = 3.60, categorized as "Knowledgeable") (Table 1); this difference aligned with their advanced education and professional exposure. Grade 9 students marginally outperformed younger peers in mean scores, a finding that suggested potential incremental curricular impact, although all student groups fell within the "Moderately knowledgeable" category.

Attitudes were slightly positive among students (WM = 3.54–3.82), with Grade 9 students showing the most favorable mean score within this category. Teachers also exhibited a "Slightly positive attitude" (WM = 4.21), though their mean score indicated stronger positivity compared to student groups (Table 2). This difference was possibly influenced by their roles as educators and broader environmental awareness.

Table 1 Respondents' Agricultural Awareness-Knowledge Level

RESPONDENTS	OVERALL SCORE FREQUENCY					WEIGHTED MEAN	DESCRIPTION*
	1	2	3	4	5		
Grade 7	3	21	89	47	12	3.26	Moderately knowledgeable
Grade 8	6	34	80	46	8	3.09	Moderately knowledgeable
Grade 9	1	23	92	43	16	3.29	Moderately knowledgeable
Teachers	1	10	32	35	17	3.60	Knowledgeable

*1-1.80 = Not Knowledgeable; 1.81-2.61 = Slightly Knowledgeable; 2.62-3.42 = Moderately Knowledgeable;
3.43-4.23 = Knowledgeable; 4.24-5.04 = Extremely Knowledgeable

Table 2 Respondents' Agricultural Awareness-Attitude Level

RESPONDENTS	OVERALL SCORE FREQUENCY					WEIGHTED MEAN	DESCRIPTION*
	1	2	3	4	5		
Grade 7	2	10	74	65	21	3.54	Slightly positive attitude
Grade 8	0	11	63	70	30	3.68	Slightly positive attitude
Grade 9	1	6	51	86	31	3.82	Slightly positive attitude
Teachers	0	1	16	40	38	4.21	Slightly positive attitude

*1-1.80 = Extremely Negative Attitude; 1.81-2.61 = Slightly Negative Attitude; 2.62-3.42 = Neutral Attitude
3.43-4.23 = Slightly Positive Attitude; 4.24-5.04 = Extremely Positive Attitude

Table 3 Respondents' Agricultural Awareness-Behavior Level

RESPONDENTS	OVERALL SCORE FREQUENCY					WEIGHTED MEAN	DESCRIPTION*
	1	2	3	4	5		
Grade 7	2	25	86	46	13	3.25	Moderately engaged
Grade 8	4	26	85	42	17	3.24	Moderately engaged
Grade 9	1	15	86	56	17	3.44	Engaged
Teachers	0	5	26	44	20	3.83	Engaged

*1-1.80 = Not Engaged; 1.81-2.61 = Slightly Engaged; 2.62-3.42 = Moderately Engaged; 3.43-4.23 = Engaged
4.24-5.04 = Highly Engaged

Behavior levels varied (Table 3). Grade 7–8 students were moderately engaged (WM=3.24–3.25), whereas Grade 9 students (WM=3.44, categorized as "Engaged") and teachers (WM=3.83, categorized as "Engaged") demonstrated higher participation in agricultural practices. This observation potentially emphasized the role of maturity and institutional support in fostering proactive behaviors.

C. Relationships Between Factors and Awareness

Chi-square analyses revealed key associations:

- Students: Age (knowledge: $p = 0.004$; behavior: $p < 0.0001$), gender (attitude: $p < 0.0001$), residence location (attitude: $p = 0.003$), and frequency of information access (knowledge: $p < 0.0001$; attitude: $p = 0.008$; behavior: $p = 0.0003$) significantly influenced awareness (Table 4).
- Teachers: Parental occupation (knowledge: $p = 0.0002$), parental education (attitude: $p < 0.0001$; behavior: $p = 0.006$), educational attainment (attitude: $p <0.0001$; behavior: $p < 0.0001$), and monthly personal income (behavior: $p = 0.014$) shaped awareness; these relationships underscored socio-economic stratification (Table 5).

Table 4 Social Factors and Students' Agricultural Awareness

FACTORS	AGRICULTURAL AWARENESS (*P*-VALUES)		
	KNOWLEDGE	ATTITUDE	BEHAVIOR
Age	**0.004**	0.582	**<0.0001**
Gender	0.583	**<0.0001**	0.505
Grade level	**0.026**	0.122	0.756
Parents' Occupation	0.160	0.450	0.618
Parents' Education	0.062	0.923	0.747
Family Monthly Income	0.679	0.249	0.360
Sources of Agricultural Info	1.000	0.995	0.917
Residence location	0.877	**0.003**	0.574
Family Size	0.831	0.609	0.872
Frequency of access to Agricultural Info	**<0.0001**	**0.008**	**0.0003**
Mode of access to Agricultural Info	0.978	0.431	**0.0002**
Interest in Agriculture	0.609	0.128	0.187
Plans	0.254	0.331	0.151

Table 5 Social Factors and Teachers' Agricultural Awareness

FACTORS	AGRICULTURAL AWARENESS (*P*-VALUES)		
	KNOWLEDGE	ATTITUDE	BEHAVIOR
Age	**0.024**	0.788	0.360
Gender	0.219	0.110	0.508
Marital Status	0.973	0.808	0.665
Grade Level Taught	0.279	0.122	0.989
Subjects Taught	0.347	0.283	0.777
Parents' Occupation	**0.0002**	0.449	0.287
Parents' Education	0.696	**<0.0001**	**0.006**
Educational Attainment	0.469	**<0.0001**	**<0.0001**
Monthly Income	0.312	0.796	**0.014**
Sources of Agricultural Info	0.245	0.151	**0.013**
Residence location	0.788	**0.010**	0.123
Family Size	0.252	0.229	0.836
Frequency of access to Agricultural Info	0.105	0.597	0.898
Mode of access to Agricultural Info	0.672	**0.024**	**0.002**
Interest in Agriculture	0.291	0.296	0.595
Plans	0.213	0.361	0.297

Tukey HSD post-hoc tests (Table 6) confirmed teachers' superior awareness means compared to all student groups (knowledge: p = 0.007–0.014; attitude: p < 0.0001–0.001; behavior: p < 0.0001–0.0003). Grade 9 students' attitudes diverged significantly from Grade 7 (p = 0.020), which suggested curricular or developmental influences.

Table 6 Agricultural Awareness Tukey HSD Summary (*p*-values)

CONTRAST	KNOWLEDGE	ATTITUDE	BEHAVIOR
Grade 7 vs Grade 8	0.566	0.600	0.967
Grade 9 vs Grade 7	0.993	**0.020**	0.096
Grade 9 vs Grade 8	0.391	0.343	0.248
Teachers' vs Grade 7	**0.007**	**<0.0001**	**<0.0001**
Teachers' vs Grade 8	**0.0001**	**<0.0001**	**<0.0001**
Teachers' vs Grade 9	**0.014**	**0.001**	**0.0003**

Discussion

Students exhibited moderate agricultural knowledge (WM = 3.09–3.29), which reflected the foundational but potentially limited emphasis on agriculture in Thailand's basic education curriculum at the time. Teachers, however, demonstrated higher expertise (WM = 3.60, "Knowledgeable"), a finding that aligned with their advanced education and professional roles. These results resonated with Akgul and Macaroglu (2011) assertion that educators' qualifications critically shaped agricultural literacy dissemination.

Attitudinal disparities emerged, with teachers' mean scores indicating stronger positivity (WM = 4.21) compared to students (WM = 3.54–3.82), although both groups generally had fallen within a "Slightly positive attitude" range. This divergence in mean scores might have underscored the influence of maturity and professional exposure, as teachers were perhaps more likely to recognize agriculture's societal and environmental significance. Student behavior levels varied, with Grade 7 and 8 students having shown moderate engagement (WM = 3.24–3.25), while Grade 9 students demonstrated higher engagement (WM = 3.44). This difference, and the overall student engagement levels, could have signaled a disconnect between theoretical knowledge and practical application, which echoed Siriwan et al.'s (2018) critique of Thailand's agriculture education model.

Socio-demographic factors played a pivotal role in the awareness levels observed in this study. For students, factors such as urban residency significantly correlated with attitudes towards agriculture (Table 4, p = 0.003), a finding that mirrored Thailand's urbanization trends. Teachers' awareness was significantly associated with factors like their own educational attainment, parental socio-economic background (occupation and education), and monthly personal income, which highlighted potential systemic influences and socio-economic stratification. These findings from the current study generally aligned with OECD (2021) reports that had discussed Thailand's education policy challenges, where rural-urban divides and curriculum gaps appeared to persist.

To address the gaps in awareness and engagement identified in this study, several strategies were considered for recommendation. An action plan that focused on integrating experiential learning (e.g., school gardens), enhancing teacher training in agricultural education, and fostering community partnerships was proposed to potentially prove beneficial. However, for such initiatives to have been sustainable and impactful, broader policy reforms, including considerations for instructional hours and resource allocation for agricultural education, also seemed essential.

Conclusion

A. Key Findings

This study clearly demonstrated that students at Benchama Maharat School possessed moderate agricultural knowledge (WM = 3.09–3.29), while teachers exhibited higher expertise (WM = 3.60 for knowledge) and more positive attitudes (WM = 4.21 for attitude). Students' attitudes were generally slightly positive (WM = 3.54–3.82), and their behavioral engagement

varied by grade, with Grade 9 students and teachers having shown greater involvement (WM = 3.44 and 3.83, respectively). Chi-square and ANOVA analyses confirmed significant differences in awareness levels between students and teachers, as well as influences from various socio-demographic factors such as age, gender, and information access.

B. Socio-Demographic Insights

The findings indicated that socio-demographic factors—including age, grade level, residence location, and frequency/mode of information access—significantly shaped aspects of agricultural awareness among the participants. For instance, this study found that factors such as urban residency correlated with student attitudes towards agriculture, while the frequency of online access to agricultural content appeared to enhance their knowledge. Teachers' awareness levels were further influenced by their parents' occupation, their own educational attainment, and personal income. These results underscored the need for tailored educational strategies that addressed the diverse backgrounds of both students and educators.

C. Curricular Implications

The findings suggested that the existing curriculum may have inadequately bridged theoretical knowledge with practical application for many students. To address this, the following curricular adjustments were recommended:

- Integrate practical agricultural experiences—such as school gardens, farm visits, and project-based learning—to deepen students' understanding.
- Align lessons with local agricultural challenges (e.g., climate resilience, organic farming) to enhance relevance and engagement.

D. Action Plan Highlights

Based on the study's findings, a proposed action plan was developed, prioritizing the following key areas:

- Curriculum Revision: Embed hands-on activities and interdisciplinary projects related to agriculture.
- Teacher Development: Train educators in modern agricultural techniques and participatory teaching methodologies.
- Experiential Learning: Establish and utilize school gardens and partner with local farms for immersive learning experiences.
- Community Partnerships: Collaborate with agricultural cooperatives and local experts to expose students to real-world agricultural practices and career pathways.
- Inclusivity Initiatives: Develop strategies to ensure equitable access to agricultural education resources and opportunities for students from diverse backgrounds, including both rural and urban settings.

E. Long-Term Vision

Ultimately, the implementation of these integrated strategies will empower students and teachers to become knowledgeable advocates for, and active participants in, agriculture as a vital pillar of community well-being and sustainable development. By fostering a generation that

values and understands agriculture's multifaceted socio-economic and environmental roles, Benchama Maharat School can contribute significantly to Thailand's agricultural resilience and food security goals, particularly within the Ubon Ratchathani region.

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