ISSN 0798 1015

REVISTA ESPACIOS

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EDUCACIÓN • EDUCAÇÃO • EDUCATION

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Development strategies for increasing agricultural teacher competency in rural Thai secondary schools

Estrategias de desarrollo para aumentar la competencia de los docentes agrícolas en las escuelas secundarias rurales de Tailandia

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Received: 04/09/2019 • Approved: 26/01/2020 • Published: 13/02/2020

Contents

ABSTRACT:

The purpose of the study was to assess the competencies of rural secondary school agricultural teachers in Thailand. The data for analysis were collected from 257 teachers who were teaching agriculture in 108 secondary schools across Thailand's largest province of Nakhon Ratchasima using stratified random sampling. The survey instrument consisted of an approved questionnaire whose content validity was assessed from input of ten educational and agricultural education experts. SPSS version 16 which was used for data analysis of descriptive statistics including frequency, the mean (x), and standard deviation (σ). The results showed that the educators functional competency were weakest in a student's development (= 3.32, σ=0.59) and curriculum and learning management (x = 3.33, σ=0.34). Additionally, the teacher's core competency was only diminished by their lack of self-development ability (x = 3.32, σ=0.34). Furthermore, 50% of the teachers surveyed reported that they had neither a degree in agricultural education nor any related experience in agriculture. However, from the expert developed L.A.S.T. model for developing the competency of agriculture teachers in Thai secondary schools, it was suggested that strategies which should be adopted included learning, attitude, skills, and technology (L.A.S.T.). It was the expert's consensus these strategies played the greatest roles in effective teaching.

Keywords: Agriculture education, learning management, rural secondary schools, technology.

RESUMEN:

El propósito del estudio fue evaluar las competencias de los profesores de secundaria agrícolas rurales en Tailandia. Los datos para el análisis se obtuvieron de 257 docentes que enseñaban agricultura en 82 escuelas secundarias de la provincia más grande de Tailandia, Nakhon Ratchasima, mediante muestreo aleatorio estratificado. El instrumento de la encuesta consistió en un cuestionario aprobado cuya validez se evaluó el contenido de la entrada de diez expertos en educación educativos y agrícolas. SPSS versión 16, que se utilizó para el análisis de datos de estadísticas descriptivas, incluida la frecuencia, la media (x), y la desviación estándar (σ). Los resultados mostraron que la competencia funcional de los educadores era más débil en el desarrollo (x = 3.32, σ=0.59) y la gestión del aprendizaje y el currículo de un estudiante (x = 3.33, σ=0.34). Además, la competencia central del maestro solo disminuyó por su falta de capacidad de autodesarrollo(= 3.32, σ=0.34). Además, el 50% de los maestros encuestados informaron que no tenían un título en educación agrícola ni ninguna experiencia relacionada en agricultura. Sin embargo, del experto desarrollado L.A.S.T. modelo para desarrollar la competencia de los maestros de agricultura en las escuelas secundarias tailandesas, se sugirió que las estrategias que deberían adoptarse incluían aprendizaje, actitud, habilidades y tecnología (L.A.S.T.). Fue el consenso de los expertos que estas estrategias jugaron los papeles más importantes en la enseñanza efectiva.

Palabras clave: Educación agrícola, gestión del aprendizaje, escuelas secundarias rurales, tecnología.

1. Introduction

Agricultural education is a constantly changing industry, which due to unpredictable climate change and the related impact to global food production, has reached a critically important stage (Dodd, 2011; Williams & Dollisso 1998). There will be impacts on the quantity, quality and location of the food we produce, with the need to rapidly increase food production to keep up with global demand (Cribb, 2010; Miller, 2017). Furthermore, due to the increasing demand of the world's projected 9.7 billion in 2050, the Food and Agriculture Organization of the United Nations [FAO] (2013) has reported that the world's population will need twice as much food, and 30% more drinking water by 2050. Additionally, some studies have also claimed that climate change will contribute to a 10-15% decrease in the world's agricultural production.

In Thailand, the agricultural sector is also of strategic importance to the Thai economy as 40% of the population is involved in agriculture (Thailand Board of Investment, 2018). Additionally, Win (2016) has reported that in Thailand, agriculture accounts for 50% of the nation's core economy, which according to the national policy, also plays a role in the social and economic development. Thailand's agricultural sector has always been a stable and prosperous component of the economy, which has been additionally blessed with an abundance of natural resources, and when combined with significant investments in technology, food safety, and research and development (R&D), have helped contribute to Thailand being labeled as "Kitchen of the World" (Wipatayotin, 2017; Yaklai, Suwunnamek, & Srinuan, 2018). There has never been a greater demand for sustainable food resources, nor has innovation and education ever been so important to safeguarding our food systems.

However, due to the dynamic nature of the agricultural industry, educators and their institutions face difficult challenges as they try to keep pace with future demands for knowledge and skilled workers (Hurlstone Enterprise Advisory Board, 2012; Reeve, 2016). For the agriculture and agri-business sectors to meet the challenges of sustainable food production, there is a need to view agriculture as a knowledge industry, one that requires "people of an especially high standard of education and training who can manage not only the basics of production, but also sophisticated technologies, the agro-ecological environment, the sociology and economics of their business" (Cribb, 2008).

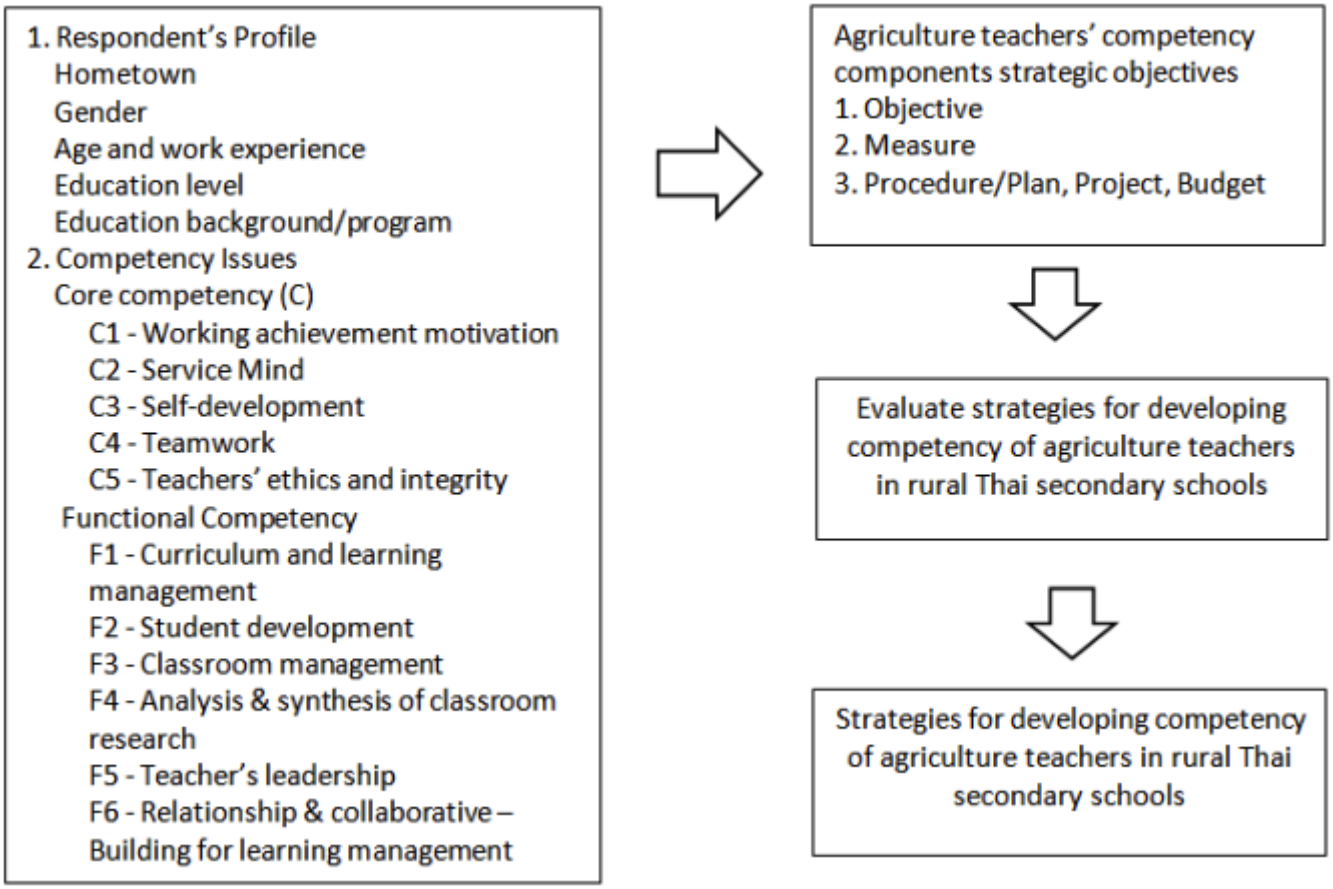
In Thailand, this vision for the future has been labeled 'Thailand 4.0', which finds in beginnings in Industry 4.0 and the Internet of Things (IoT). As such, how education plays a role in these new 21st-century knowledge workers is becoming a topic of great discussion, not only in Thailand but around the world (Lara, 2018; Reeve, 2016).

Stephenson, Warnick and Tarpley (2008) have also stated that in order to achieve a higher agricultural educational [AE] standard, there needs to be a change in perception, as it is often tagged as non-academic and inferior. Furthermore, AE suffers from the negative perceptions of agriculture in the wider community (Peters, 2009). Agriculture needs to bury the 'hick' image of rural labor and seek a higher academic status (Cribb, 2008), because agricultural education programs are more than cows, plows and sows, as it fosters genuine, lifelong learning for all students, regardless of their background or future goals (Dodd, 2011). This is also connected to the educator's ability at lifelong learning; with Reeve (2016) reporting the importance of teacher competency by stating it is the key to vocational and educational training [VET]. Also, directives from the Council of the European Union and European Commission (2015) indicated that lifelong learning needs to teach relevant and high-quality knowledge, skills, and competencies, which focuses on learning outcomes for employability, innovation, active citizenship, and well-being.

This consistent with research from Russian in which Dudin, Lyasnikov, Makarov, Maslennikova, & Grebennikov (2017) stated that the availability of competent, well-educated, creative, and innovative agriculture specialists is a formula for success for any agricultural enterprise and the nation's agro-industrial complex as a whole. Furthermore, the key objective for almost every nation in the world is to prepare – through education – pools of innovative professionals capable and desirous of working and absorbing changes and innovations associated with technology, information, knowledge, and the very circumstances of life (Geiger, 2004).

Therefore, given the global impact of how agricultural education impacts the healthy well-being of the planet's population, the authors undertook a study to investigate what elements are involved in agricultural education teacher competency in rural Thailand (Figure 1).

Figure 1
Conceptual framework



1.1. Research objectives

1. To develop a model of the factors involved in Thai secondary school agricultural education competency based on a classroom-based management process.
2. To evaluate the strategies involved in developing Thai secondary school agricultural education competency.
3. To determine which strategies are least and most effective in developing Thai secondary school agricultural education competency.

2. Methodology

This section contains the study's model and detailed criteria for the elements within the model.

2.1. Population and sample

The population was secondary school agricultural education teachers who were educators in one of 108 secondary schools in the 2016 academic year in Nakhon Ratchasima Province (also known as Korat), which is the largest Thai province by total area which is located in Northeast Thailand. From the sampling process, 108 schools were selected for participation in the study, from which a sample of 257 teachers was eventually selected. Questionnaires were used for data collection. Both open and closed-ended questions were adapted to ensure that respondents have the liberty to express themselves outside the box. Assessment of strategy was done by using a five-level Likert type agreement scale.

2.2. Input from the Experts

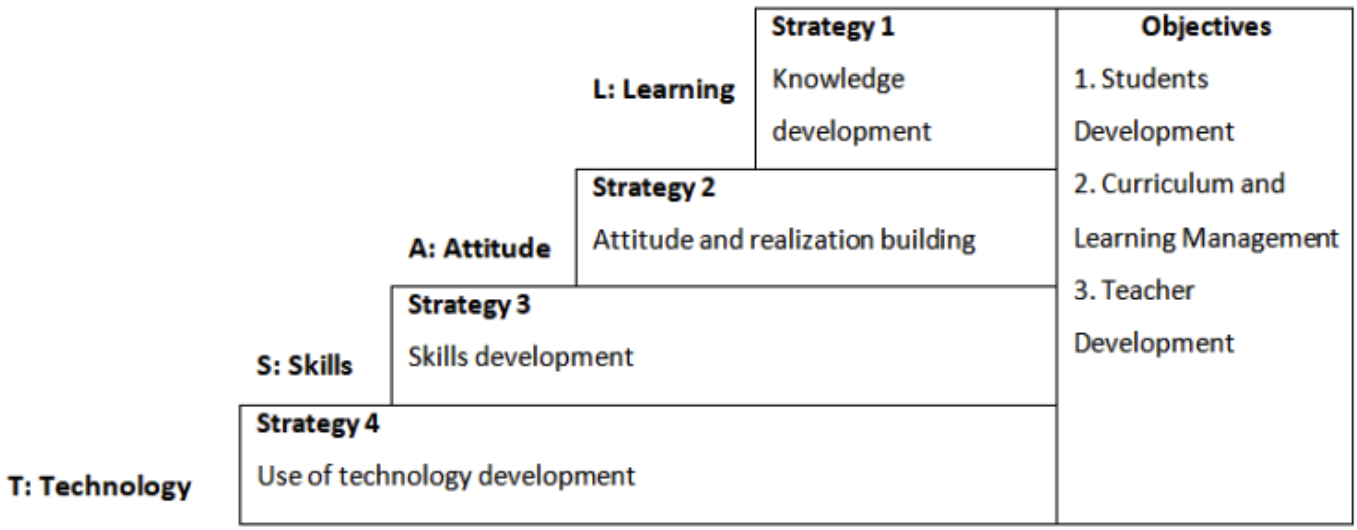
During January and February 2018 the researcher visited ten individuals who were experts in a related field to the study to elicit their input on their opinions concerning agricultural education in Thailand's Nakhon Ratchasima (Korat) Province. During this initial phase of expert interviews, three hours were allocated for each session with each expert. A second focus group was additionally convened at the Sabai Hotel in Nakhon Ratchasima on 9 March 2018 which lasted for

seven hours. The ten individuals participating in the study's input included 1. A strategy expert lecturer in Educational Administration at Nakhon Ratchasima Rajabhat University, 2. the Deputy Director of the District Office in Nakon Ratchasima Primary Education Office, Service Area 5, 3. the Group Director of District Office Nakon Ratchasima Primary Education Office, Service Area 5, 4. Director of Suranaree Wittaya School 2 in Nakhon Ratchasima, 5. Director of the Traim Udom Suksa Nomklao School in Nakhon Ratchasima, 6. Director of the Huaihinlap School in Phetchabun Provinece, 7. Deputy Director of the Northern Institute of Vocational Education in Agricultural (NIVEA), 8. Lecturer in Agricultural Education at the King Mongkut's Institute of Technology Ladkrabang (KMITL), 9. Agricultural teacher at the Prai Bueng Witthayakhom School, and 10. Agricultural teacher at the Siriraj Anusorn School.

2.3. Data collection

An official letter was later sent to the Director of the School District Office 31 and the Chief Executive of the Nakhon Ratchasima Provincial Administrative Organization [PAO] for data collection. Questionnaires were then administered in the sampled schools, which were qualified from the ten experts previously convened. The completed questionnaires were collected from the respondents with a response rate of 100%. The strategies for developing the competency of the agriculture teachers were designed with the help of ten experts who also shared their views on aspects involved in secondary school agricultural education competency, which led to the development of L.A.S.T. Model presented in Figure 2. The four main strategies synthesized from the experts' response included knowledge development (**L**earning), attitude and realization building (**A**ttitude), skills development (**S**kills), and finally, the development of technology (**T**echnology).

Figure 2
L.A.S.T. model for developing the competency
of agriculture teachers in secondary schools



2.4. Research development tools

The competency of the agricultural teachers was analyzed with frequency, percentage, mean ( ), and standard deviation (σ). The problems and factors concerning developing competency of the agriculture teachers were analyzed by using content analysis. The strategies for developing the competency of the agriculture teachers were then evaluated. The data were analyzed by using mean, and standard deviation (σ).

2.5. Data collection

In the process to better understand Thai secondary school agriculture teachers' competency developmental strategies, four strategic steps were developed (Figure 2). Tables 1 -4 present these steps in more detail. These include:

2.5.1. Strategy 1: Learning development (L)

Learning development (L) focused on learning management with morality and ethics, national pride, and democratic principles (Table 1) (Subba, 2014). Additionally, in the learning

development phase there was also encouragement of new agricultural technologies, development of a harmonious core curriculum for local agriculture, encouragement of school networks, and participating in designing of learning management to meet the needs and skills of the students (Seehamat, Sarnrattana, Tungkasamit, & Srisawasdi, 2014). Finally, institutions are expected to encourage the development of teachers' knowledge about new technologies and new innovation, and encourage the application of knowledge of the teachers in principles of The King of Thailand's sufficiency economy philosophy [SEP] and new agricultural theories (Ministry of Foreign Affairs, 2017 Mongsawad, 2012). This philosophy highlights a balanced way of living around three core ideas of moderation, reasonableness, and self-immunity, along with the conditions of morality and knowledge, be it an individual or a country.

Table 1
Strategy 1: Learning
Development (L = Learning)

Objective	**1. Students Development**	**2 Curriculum and Learning Management**	**3. Teacher Development**
Measure	1. Encourage simultaneous morality and ethics learning management. 2. Encourage national pride learning management. 3. Encourage democratic learning management. 4. Encourage new agricultural technology learning management.	1. Development of a harmonious, local agriculture core curriculum. 2. Encourage learning management with other organizations participating in the design of the curriculum. 3. Exchange knowledge about agriculture with local agriculture organizations. 4. Encourage learning management that is appropriate to the needs and skills of the students	1. Development of teachers' knowledge about new technology and new innovation. 2. Encourage agriculture teachers to have knowledge in principles of sufficiency economy and new theory agriculture.
Procedure	1. Arrange morality and ethics activities for students every week. 2. Manage learning content concerned with democratic principles and pride in national activities. 3. Arrange field trips about local art and culture, and the history of Thailand. 4. Manage learning about new agricultural technology and principles of sufficiency economy.	1. Manage agriculture learning according to core curriculum and local agricultural problems. 2. Appoint a joint design curriculum committee of teachers and local organizations. 3. Build an agricultural learning center with local organizations. 4. Teachers arrange various learning activities to properly meet the needs and skills of individual students.	1. Obtaining school budget support for agricultural technology training. 2. Teachers are encouraged to apply sufficiency economy and new theories in agriculture in learning management.

2.5.2. Strategy 2: Attitude and realization (A)

Attitude and realization (A) building is focused on student development of creative and critical thinking skills, along with instilling in students concepts of democracy and national pride. For agriculture students to be successful in preparing themselves for challenging professional careers in agriculture, they need to have a high sense of self-efficacy (Tsojon, Ehiemere, & Bonjoru, 2013), which is the belief in ones' capabilities (Bandura, 1997).

Preparing students to be able to think critically is also a goal of many professionals in higher education, which is also a quality sought by most employers of university graduates (Sulaiman, Rahman, & Dzulkifli, 2008). Under Thailand 4.0, critical thinking skills are stated to be a key pillar in the goal for a new, knowledge-based economy (Changwong, Sukkamart, & Sisan, 2018). Additionally, agricultural teachers should show students how to be engrossed in agriculture

(Tsojon et al., 2013), assist with life learning management by following the SEP economy, and encourage students to participate in learning and activity design, both inside their schools and in their local communities. Teachers should also encourage a work collaboration culture, encouraging participation and assistance of co-workers, and encourage other teachers to comply with rules, regulations, and school culture.

Table 2
Strategy 2: Attitude and realization building (A = Attitude)

Objective	**1. Students Development**	**2 Curriculum and Learning Management**	**3. Teacher Development**
Measure	1. Develop students to have better creative and critical thinking skills. 2. Encourage student democratic ideas and national pride. 3. Encourage the students to be engrossed in agriculture.	1. Integrate principles of democracy and national pride in learning management curriculum. 2. Encourage learning management in living by following principles of sufficiency economy. 3. Encourage the students to participate in learning design.	1. Teachers should encourage a work collaboration culture within the teachers' professional organizations. 2. Encourage participation and assistance of co-workers. 3. Encourage other teachers to comply with rules, regulations, and school culture.
Procedure	1. Arrange group student activities that encourage creative and critical thinking skills. 2. Plan activities which allow students to participate in classroom activities. 3. Create an environment in which students learn democratic ideas and national pride. 4. Arrange practical activities for developing agricultural skills which encourage students to seek an agricultural profession.	1. Organize student learning activities which encourage democratic ideas and national pride. 2. Create learning activities for the students to practice the principles of sufficiency economy in their daily life.	1. Implement a project in which teachers network with each other and share knowledge across school districts. 2. Develop activities for developing learning management, organization and the agricultural teaching profession. 3. Develop an activity to advise, suggest and pass on knowledge of teaching profession to others. 4. The teachers should behave based on professional standard and professional ethics.

2.5.3. Strategy 3: Skills development (S)

Skills development (S) is focused on encouraging students to obtain basic agricultural skills useful for everyday life (Table 3). In Thailand, this also includes students SEP learning principals, with educators involved in the planning and lesson development of SEP. Sufficiency Economy Philosophy [SEP] principles were introduced by His Majesty King Bhumibol Adulyadej of Thailand as a guide for the recovery after the 1997 economic crisis (Mongsawad, 2012; Nacaskul, 2015). The framework puts emphasis on psychological wellbeing or the happiness aspect of quality of life, and has become a guideline for many Thais (Nacaskul, 2015). Additionally, teachers have a responsibility to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Ministry of Education, 2017).

Agricultural educators are also encouraged to help students participate in practical applications. Support for this comes from Cannon, Broyles, Siebel, and Anderson (2006) who suggested that primary schools students who participate in gardening programs develops positive attitudes towards agriculture which later encourages students towards high school courses and careers within the food and agricultural industries.

Furthermore, critical thinking skill development along with a curriculum focused on basic practical agricultural skills by applying technology in learning management is also encouraged.

Table 3
Strategy 3: Skills development (S = Skills)

Objective	1. Students Development	2 Curriculum and Learning Management	3. Teacher Development
Measure	1. Inspire students to obtain basic agricultural skills for application in their daily life. 2. Reassure students about SEP. 3. Create training exercised for critical thinking, decision making, and finding to solutions to problems.	1. Develop curriculum focused on practical skills in basic agriculture by following SEP principles. 2. Develop curriculum by applying technology in learning management. 3. Inspire the students to participate in practical training design. 4. Encourage learning management in thinking, decision making, and finding to solutions to problems.	1. Encourage teachers to attend new agriculture and SEP principles training. 2. Encourage agriculture teachers' network in exchanging knowledge and agricultural skills. 3. Encourage various hands-on agricultural activities.
Procedure	1. Arrange practical activities in basic agriculture such as backyard gardening, basic plant breeding, raising animals and basic rice farming. 2. Organize activities for the students to learn and apply SEP in daily life. 3. Plan management activities which entail student critical thinking, planning, decision making, and problem/ solution exercises. 4. Arrange activities for student self-learning and hands-on agricultural workshops.	1. Plan practical agriculture activities. 2. Coordinate with local agricultural organizations to provide hands-on study tours which allow a better appreciation of SEP style programs. 3. Determine budget requirements for using technology in agricultural learning management and hands-on activities. 4. Arrange learning- management activities for the design of student activities which allows them the flexibility to determine their own assignments, deadlines and work evaluation.	1. Development of new agricultural teaching skills and SEP principles focusing on the students. 2. Innovation development for exchanging knowledge with others in self-development and work-development projects. 3. Activity development of the students participating in agricultural activity design.

2.5.4. Strategy 4: Technology development (T)

Under the study's L.A.S.T. Model, '**T**' represented the use and development of technology skills (Table 4). Recent support for technology's importance in education comes from the 2018 British Educational Training and Technology[*BETT] show in London in which* technology use in the classroom was stated to help free up time for teacher lesson planning and encourage student collaboration. Furthermore, of the 1,200 educators surveyed, 82% agreed that technology is a valuable tool for modern workplace skill development (Lara, 2018). Technology can best support teaching strategies by promoting interaction, engagement and communication. Therefore, agricultural educators need to embrace technologies based on platforms that use social media, the Internet, and smartphones. More formal and structured platforms such as a school running learning management systems [LMS] and teachers using flipped classrooms are also excellent tools (Santhuenkeaw,Tontiwongwanich, & Pimdee, 2019).

In the study's L.A.S.T. Model, students are encouraged by their teachers to gain practical skills in agricultural technology, with teachers encouraged to use *Science, Technology, Engineering, and Mathematics [STEM]* principles in agricultural learning management. According to a range of U.S. universities, agriculture — ag technology in particular — is becoming one of the biggest

components of STEM-focused departments and disciplines, with many agriculture programs adding 'Arts' to STEM (Manning, 2016). In some ways, agriculture acts as an umbrella that all the STEM fields fall under as the study of agriculture, food, and natural resources involves a multitude of other scientific fields.

Table 4
Strategy 4: Use of technology development (T = Technology).

Objective	1. Students Development	2 Curriculum and Learning Management	3. Teacher Development
Measure	1. Encourage students to participate agricultural technology learning management. 2. Encourage students to obtain practical and hands-on skills in agricultural technology.	1. Develop learning management from the use of computer technology combined with innovation in agricultural learning skills. 2. Encourage agricultural learning management using Thailand 4.0 principals. 3. Encourage STEAM principles by apply it in agricultural learning management.	1. Encourage the use of innovation and technology in learning management.
Procedure	1. Organize agricultural technology learning management activities with a focus on student participation in assignment plans, deadlines, and evaluation. 2. Arrange learning activity for agricultural technology in practical skill by using multi-media 3D innovation learning for agricultural technology topics.	1. Support 3D innovation in learning management. 2. Use 'Smart Farmer' principles in agricultural learning management 3. Integrate STEM Education principles into agricultural learning management.	1. Support media and technology material in learning management. 2. Apply technology in agricultural learning management training projects. 3. Innovation for agricultural learning management project

2.5. Data Analysis

2.5.1. Expert analysis

The agricultural education authorities' opinions and areas were analyzed by content analysis. Furthermore, the appropriateness of the digital media model based on classroom learning techniques was analyzed by use of SPSS version16 which analyzed both mean ( ) and standard deviation (σ). Finally, the experts' opinions from their discussion session were taped and analyzed to further review and revise the model.

2.5.2. Teacher analysis

Additionally, an analysis was conducted by use of descriptive statistics, including frequency, percentage, mean ( ) and standard deviation (σ) (Keengwe & Onchwari, 2015).

3. Results

3.1. Core competency

The results revealed in Table 5 revealed that the average means of most core competencies were rated as highly effective; however, self-development (C3) was determined to be only 'effective'. Similarly, the standard deviations (σ) did not differ significantly except for C3. This can be interpreted as a Thai agriculture teacher's core competency is only diminished by their lack of self-development ability (= 3.32).

3.2. Functional competency

Results for functional competency are also presented in Table 5. Results show that Thai secondary school agricultural teachers were weakest in a student's development (F2) and the (= 3.22) and curriculum and learning management (F1) (= 3.23).

Concerning the low effectiveness ratings of agricultural teachers for F2, a reason speculated by the experts and study's authors was the fact that most of the Nakhon Ratchasima province teachers did not graduate in agriculture programs, and therefore lacked practical agricultural knowledge. When initially asked about this issue, 100% of the nine experts thought that the agriculture teachers did not graduate in agricultural programs and lacked knowledge in agriculture.

Concerning the low effectiveness ratings of agricultural teachers for F3, this potentially comes from the fact that the schools surveyed were in rural locations whose access to technology and Internet infrastructure is limited and slow. This could be one reason to adopt newer mobile technologies such as 3g/4g to leapfrog over limited school bandwidth limitations. However, cost might be a limiting option to both students and teachers.

Table 5
Secondary school agriculture teachers' competency (*n = 257*)

Agriculture teachers competency			
	X	**σ**	**Level**
Core Competency			
Competency C1 Working Achievement Motivation	4.07	0.54	Highly Effective
Competency C2 Service Mind	4.11	0.57	Highly Effective
Competency C3 Self- Development	3.32	0.34	Effective
Competency C4 Teamwork	4.26	0.57	Highly Effective
Competency C5 Teachers' Ethics and Integrity	4.45	0.56	Highly Effective
Average Mean	4.02	0.51	Highly Effective
Functional Competency			
Competency F1 - Curriculum and Learning Management	3.23	0.34	Effective
Competency F2 - Students Development	3.22	0.59	Effective
Competency F3 - Classroom Management	4.19	0.59	Highly Effective
Competency F4 - Analysis & Synthesis & Classroom Research	3.96	0.64	Highly Effective
Competency F5 - Teachers Leadership	4.21	0.58	Highly Effective
Competency F6 - Relationship & Collaborative – Building for Learning Management	4.17	0.80	Highly Effective
Averages	3.83	0.59	Highly Effective

3.3. Expert's input

From the results one-on-one interviews and a focus group session, the ten agricultural educational authorities contributed these thoughts:

1. Concerning the issue of student motivation for agricultural education, 80% of experts thought that the students were not engrossed in agriculture, and 60% of the experts thought that the lack of agricultural materials and demonstration farms in some schools had a negative impact on the students' performance.
2. Concerning developing competency of agriculture teachers, it was found that 100% of the experts thought that the school directors should encourage the teachers to learn more about agriculture and provide support budgets for agricultural technology training and new technology training
3. Furthermore, 90% of the experts thought that the teachers should teach about value and utility of agriculture and the benefits of an agricultural career.
4. Furthermore, the experts felt that learning management should be used for practical, hands-on study, with 80% voicing their opinion that learning management in schools should be coordinated with local agricultural organizations to provide study tours and agricultural practice. Schools should also support the construction of areas and facilities for hands-on experience.

Furthermore, results also revealed that agriculture teachers in some schools did not graduate from an agricultural program and lacked proficiency. This was later confirmed in the survey in which almost 50% of the teachers surveyed who were teaching agriculture, do not have degrees or experience in this field.

4. Conclusions

This study brings to the light some of the hidden reasons why young people in rural Thailand have little to no passion for education or careers in agriculture, though agriculture plays a major role in Thailand's socioeconomic development. One of the most serious problems identified that the development of the performance of agricultural teachers in secondary schools showed that many teachers did not graduate in agriculture who were assigned to teach the subject. Additionally, not only did they lack academic knowledge, they also lacked practical, hands-on skills as well. While the Thai basic education institution curriculum requires students to study agricultural subject matter for basic occupational work, the teachers assigned lack learning management skills, which also contributes to not meeting the objectives.

One factor which can help promote the development of agricultural teacher performance is for school administrators to encourage teachers to study more agricultural related knowledge while also giving the teachers agricultural practice training. Furthermore, use of the study's four L.A.S.T. strategies should be implemented. These include knowledge development (L: Learning), focusing on the development of agricultural teacher knowledge in technology, modern innovation, promotion of the King of Thailand's sufficiency economy philosophy [SEP], and the new theory of agriculture. Teachers should also use strategy 2 to create an attitude and awareness (A: Attitude) which focuses on creating teamwork in agricultural professional organizations. The Thai government's concept of 'Smart Farmers' is one real-world implementation of this step in the L.A.S.T. Model. Strategy 3 (S: Skills) is skill development which focuses on encouraging teachers to be trained in modern agricultural skills and SEP. Educators also need to create a network of agricultural teachers to exchange knowledge, while also designing a variety of agricultural practice activities. Strategy 4 involved the development in the use of technology (T: Technology) which focuses on the use of innovation and technology in teaching and learning management.

Finally, most agricultural educators were determined to lack the practical know-how and what it takes to motivate students to pursue careers in agriculture. To sustain students' interest in agriculture, teachers with practical knowledge in agriculture need to be hired to teach in rural schools. These should be teachers college graduates in agriculture programs. Current agriculture teachers without college degrees should be provided with the needed support to upgrade themselves in agriculture programs to make them more effective as teachers.

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Revista ESPACIOS. ISSN 0798 1015
Vol. 41 (Nº 04) Year 2020

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