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A Detailed Study on Comparison of Teaching Strategy, Student Engagement and Social Support with Students' Persistence in Agricultural Program

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Abstract.

Students are noticeably struggling with many issues that led them to leave agricultural program. Among the reason include negative perception that views the agriculture field is less attracted, related with elderly, live in rural areas, lack of exposure of using technology in agriculture and lack of social support especially from family and peers. Therefore, this study conducted to compare teaching strategy, student engagement and social support with student persistence in pursuing in agricultural program. The study conducted at two different type of schools which are academic school and vocational college. In addition, the study also identified the level of student' s persistence to pursuing study in agricultural program in tertiary education. The total number of samples are 285 students. These respondents were selected using random sampling techniques from both academic school and vocational college. The result reveals student' s self-reported that they persistence to pursue study in Agricultural program. Furthermore, the finding also shows that there was a significant main effect only between student engagement level (emotions, out-of-class engagement and academic performance) on student persistence level in pursuing their studies in the agricultural program. Overall, the findings show that the were no interaction effects of teacher teaching strategies, student engagement and social support on student persistence level in pursuing their studies in the agricultural program. These findings develop a better understanding of student persistence in agriculture program. Based on the findings, several recommendations are made in enhancing student' s persistence in agricultural science.

Keywords: Agricultural education, Technical and Vocational Education and Training (TVET), Vocational college, Academic performance, Out-of-class engagement.

INTRODUCTION

More than 60 percent of world' s population depends on agricultural for survival including farmer, worker, trader, seller, restaurant business and others (The Food and Agriculture Organization, 2008). India imports most of its food from China, Thailand, Indonesia and New Zealand. However, some of imported fruits and vegetables can be planted and produced locally such as chilies, mushrooms, coconuts, mangoes and bananas. The needs to realign the country' s agriculture food sector as demand for food will increase as the population grows is emerging.

Alignment of the agriculture sectors must take into account factors such as the availability of suitable land, mechanization, participation of the younger generation in farming, new high-yield crops, disease-resistant crop variety and production of high- quality harvest throughout the food supply chain amongst other. On the other hands, despite younger generation are more educated with at least baccalaureate degree, unemployment rate among them is abnormally high in both develop and developing countries. In fact, the largest and fastest growing segment of the emerging technical workforce is occupations that do not require baccalaureate degree.

Richman (1994) stated since 1950 the number of technical workers has increased 300 percent and will represent one-fifth of all employment. In another perspective, Bosman et al. (2013) suggested promotion of entrepreneurship is becoming critical to stimulate job creation and can really enhance youth employment.

Younger generation in Agricultural sector

Agricultural sector is required not only to maximize natural resources including land, mechanization, high-yield crop, disease-resistant crop variety and production of high-quality harvest but also to manage human resources. The current condition of human resources in the agricultural sector becoming a threat against the improvement of performance since younger generation struggling with many issues that led them to leave the sector. The agricultural reliance on food production and food security at domestic, regional, and global level depends on younger generation. Perception of the young generation's on working in the agricultural

sector are varies. Among the reason include negative perception that views the agriculture field is less attracted, related with elderly, live in rural areas, lack of exposure of using technology in agricultural and lack of social support especially from family and peers. Therefore, younger generation not only need information about labor market and career, but according to Rashid, Bakar, Asimiran and Loh (2009) also need a guide to a direction for them to learn which workplace options can provide fulfilment and satisfaction.

The emerging challenge it requires an increase skilled labor and high enrollment of agriculture students with a strong agricultural background. Unfortunately, with low enrolment of agricultural students as well as their persistence in this field, seems to be constraints to the development of performance in agricultural sector. Studies have shown the lack of student persistence in agricultural sector due to negative perceptions. Amongst the negative perception includes the agriculture field is old-fashioned, suitable for elderly or people lives in rural areas (Nyoni, 2012) and unsustainability of current practices of land inheritance and farming (Berckmoes & White, 2007). Furthermore, younger generation who want to involve into farming face other obstacles as well, including the lack of exposure, information and knowledge about agricultural (Martin & Enns, 2010) and inadequate access to financial services (Graf & Valle, 2007). Sumberg et al. (2010) suggested four varieties of factor affecting people choice in choosing agriculture field which are locational issues including both the attraction of city an urban environment and the lack of services and facilities in rural areas, the existence of many other work options, perceptions that farmers working hard for little reward and people interest in modern jobs rather than farming.

A variety of factors influence younger generation' s persistence to study agricultural. Among these influencers include social support from specific individuals such as parents (Powell, 2012), peers (Wildman & Torres, 2001) and teachers (Marx et al., 2007). Rashid (2012b) suggested for a teacher to challenges their student for responsible with their learning content and skills to at least at application level or higher of a cognitive level (Bloom taxonomy). In the meantime, teacher also need to utilize student centered learning to ensure integration of know why and know how among them through intrinsic motivation. In addition, support from education institution environment such as quality and adequacy of resources for instance physical facilities and equipment, the course content and teaching approach (Rayfield et al., 2013) as well as the quality of the facilities, prestige of the department, and university (Powell, 2012) also needed.

Teaching strategies

Integration of content knowledge and practical skills through careful, systematic and continuous planning of learning activities in teaching a subject will result student interest and drive their intrinsic motivation to learn (Rashid, 2012b). Gary et al. (1999) stated that most students attracted to agriculture science subject because of the different teaching strategies used by the teachers that involve practical session, hands on and outdoor activities. Koller (2007) stated that teachers who teach in technical and vocational subjects generally need to diverge in their teaching strategies compared to other teachers to diversify the teaching strategies. Meanwhile, Dole et al. (2009) mentioned that the teachers must learn to see and experience themselves of effective learning using both strategies that are teacher-centered and student-centered learning. A student-centered learning is designed so that students taking into consideration how they learn best. Furthermore, the environment facilitates a more collaborative way for them to take in charge of their learning. The teacher plays role as a facilitator to providing feedback and asking student with a driving question for more inquiry. Compare to teacher-centered environment, teacher plays dominant role in transfer of knowledge.

The result from a study by Tinto (2010) found that a good and effective teaching contribute to student' s involvement and enjoyment in a particular subject or course. Most students attracted to agricultural science subject because of different teaching strategies used by the teachers especially those that involve practical session, hands on and outdoor activities (Wingenbach, Gartin, & Lawrence, 1999). Thus, students will have persistence in the same field. In addition, Ogweno (2008) observes that, there are a great variety of materials around that can be used to make meaning more vivid and more exciting by being presented raw offer stimulating alternative to the conventional textbooks. Ogweno emphasizes that good teachers as they teach keep in mind both what they teach and what they teach with.

Student engagement

Student engagement is about student actively involve on learning activities that are meaningful, relevant, and motivating them to take in charge of their own learning. Engagement in learning can be drive with provide a supportive learning environment, feedback on student performance, an optimal level of challenge for the students' ability levels, opportunities for students to concentrate on tasks or have clear goals that are

meaningful and relevant. Furthermore, there are existing empirical evidence favor the use of technology to positively influence student engagement. Pace (1984) stated that quality of effort plays important role in student learning and development and called as product and processes. Product refers to what are obtained from the educational experience such as knowledge, skills, or new perspectives. While processes are the how student attain products or the quality of educational experience by a student.

Student engagement can also be improved by harmonizing the teaching style of instructors and the learning style of students. As such, higher education providers should emphasize and invest in research-led and experiential learning approaches, such as service learning, team-based learning, role playing, and cooperative learning.

According to Kuh (2009), student engagement through a variety of activities such as inside and outside of the classroom can enhance persistence in a particular field. There is the need for teachers to find method or technique on how to teach student use the information and materials effectively during teaching and learning (Rashid, Bakar, Asimiran & Loh, 2009).

Pascarella & Terenzi (1991) also mentioned that academic, emotions as well as out-of-class engagement has an impact on student academic achievement. However, the quality of academic, emotion and out-of-class engagement depends on the students' perception of whether they view their participation as only relevant to the classroom or whether it is meaningful (Thieman, Rosch & Suarez, 2009). Mansor and Rashid (2013) stated that students also need to feel empowered on how to construct and manage their own learning and well-being. Emotional engagement has the most impact on student engagement because it is more personal without pressure and student has a sense of belonging to the school in general (Fredricks et al., 2004).

Student-centered strategies increase the student' s motivation and it is led to a deeper and more sustained learning (Dole, Bloom & Kowalske, 2009). Besides that, students throughout the learning process will develop the skills needed for the 21st century, such as the ability to solve problems and work effectively with others (Dole, Bloom & Kowalske, 2009). Other than that, the study by Tinto (2010) found that a good and effective teaching contribute to student' s engagement and enjoyment in a particular subject or course. Thus, students will have persistence in the same field. In addition, Ogweno (2008) observes that, there is great variety of materials around that can be used to make meaningful and more

exciting teaching and learning session compared than using conventional textbooks. It will make students eager to learn and motivated.

Social support

Besides teaching strategies and student engagement, social support also influences students' persistence to study agricultural science. Among these influencers included social support from specific individuals such as parents (Powell, 2012), peers (Wildman & Torres, 2001) and teachers (Marx, Simonsen & Kitchel, 2007). Parents are considered as the most influential individual on students' persistence to pursue in agriculture science, often followed by extended families or relatives. Parents with agriculture background, have more significant impact on a student' s choice in choosing the agriculture field (Wildman & Torres, 2001). In addition, according to Smith-Hollins, Elbert, Baggett, and Wallace (2008) having a family member involved in agriculture sector were most likely to influence students to enroll in agriculture.

Support from school environment such as quality and adequacy of resources also important. For example, an adequate physical facilities and equipment, the good course content and teaching approach (Rayfield, Murphey, Skaggs, & Shafer, 2013), quality of the facilities, prestige of the department, university or campus (Powell, 2012). Therefore, this study aims to identify teacher teaching strategy, student engagement and social support with student persistence in pursuing their studies in the agricultural science field on academic school and vocational college students. Furthermore, the study also examines for the main effect and interaction effect between teaching strategy, student engagement and social support on student persistent in pursuing studies in agricultural program.

METHODS

To answer the research questions, the researchers used a cross-sectional survey design in this study. The researchers utilized a cross-sectional survey design to determine beliefs and perceptions of respondents on teaching strategy by a teacher, their engagement to agriculture subject and social support they received to study in Agricultural program.

According to Creswell and Guetterman (2011), a cross-sectional survey design is suitable when the researchers collect data at one point in time and has the advantage of measuring current attitudes or practices of people. Furthermore, the design also provides advantage to the researchers since give opportunity gather data in a short amount of time.

RESULTS

The response rate for the study is 95 percent which 285 respondents return with valid respond. Table 1 shows result of percentage and frequency of gender, locational and type of schools of the respondent in the study.

Table 1: Frequency and percentage gender, location and type of school of respondent

Variable	N	(%)
Gender		
Male	126	44.2
Female	159	55.8
Locational		
Urban	194	68.1
Rural	91	31.9
Type of School		
Academic school	126	44.2
Vocational college	159	55.8

Meanwhile, Table 2 displays the mean and standard deviation for teaching strategy, student engagement, social support, and persistence to pursue study in agricultural program in the near future. The overall results indicate a positive respond from respondents. For pursue study in agricultural science program, respondent self- reported to continue study in agricultural program is toward agree (M=3.72, sd=.865). Meanwhile, respondent self-reported for other variables are also toward agree as shows in Table 2.

Table 2: Mean and standard deviation of teaching strategy, student engagement, social support and pursuing study in Agricultural program

Variable	M	SD
Teaching strategy	4.06	.559
Student engagement	3.79	.519
Social support	3.83	.616
Pursue study in agriculture program	3.72	.865

The researchers found that the respondents responded positively to all items covering the extent of the respondents' effort and ability to pursue their studies in agriculture science. This is a good sign of younger generation tend to be serious in this field. According to Rashid (2012a), career in agriculture give opportunity to all regardless had an academic qualification or without it. It is common understanding that among the strong factor that hinder young generation from involve in the agriculture sector is the negative perception such as views the agriculture field is less attracted, related with elderly and live-in rural areas. Learning from the result of this study, therefore, younger generation not only need information about labor market and career in agriculture sector, but also need a guidance to a channel them to the sectors (Rashid, Bakar, Asimiran & Loh, 2009). Negative perception of younger generation needs to fine-tune into positive such as give active income, using latest technology and be a boss. The respondent agrees that teacher use teaching strategy that engage them with the agriculture subject. Furthermore, respondent also reported they received social support from parent, friends and teachers.

Table 3 displays a comparison between two types of schools that offer agriculture program on teaching strategy, student engagement, and social support. Inspection of the two groups means indicate that the average teaching strategy for academic school l is significantly higher (M=1.62) than the score for vocational college (M=1.34).

The result shows that teaching strategies employed by teachers in academic school are more substantially different from teachers in vocational college, t(307)= 3.78, p = .001. The effect size d is approximately .42, which is small to medium according to Cohen' s (1988) guidelines. Meanwhile, the result shows that vocational college is significantly different for academic schools in student engagement, t(290)=-3.10, p=.002. An independent sample t-test indicates that vocational colleges students' engagement is significantly higher average than academic school students. The effect size, d is .37, which is small to medium (Cohen, 1988). Lastly, students at vocational college self-rated their social support as significantly different from academic school, t(322)=-2.79, p=.005, d= .31. The difference, although statistically significant, is also small to medium (Cohen, 1988).

Table 3: Comparison of academic school and vocational college students on teaching strategy, students engagement, and social support (n = 126 academic school and 159 vocational college)

Variable	M	sd	t	df	P
Teaching strategy			3.78	307	.001
Academic school	1.62	.60			
Vocational college	1.34	.72			
Student engagement			-3.10	290	.002
Academic school	2.41	.78			
Vocational college	2.67	.65			
Social support			-2.79	322	.005
Academic school	3.77	.61			
Vocational college	3.97	.66			

* p < .05; ** p < .01

The results show that all variables differ significantly between academic school and vocational college. Students at vocational colleges have statistically significant differences in student engagement and social support, which they self-report as being higher that their peers at academic schools. Students in academic school, on the other hand, self-reported higher scores in teaching strategy than their peers in vocational college. These results indicate that both institutions need to improve their teacher teaching strategy, student engagement, and social support. Teaching strategy is very important to ensure transfer of knowledge, skills, and instill of value which can occur at highest as possible for every student. As for academic school, vocational college prepares students for entry-level or higher jobs in specific workforce such as horticulture, beef cattle feedlot, welding, CNC machining, industrial electronic, car servicing, and domestic electrical wiring. In short, because their curriculum includes practical sessions, hand-on, and outdoor activities, vocational colleges should employ a variety of teaching strategies. As pointed out by Gary et al. (1999), most students are attracted to specific subjects because of the different teaching strategies used by the teachers. In addition, Rashid (2012b) suggested teachers in vocational college must continuously, through careful and systematic planning of learning activities (learning

experience) with the integration of content knowledge and practical skills will result in student interest and at the same time boost their intrinsic motivation with the subject.

Students in vocational college self-reported higher levels of engagement in and out of the classroom than students in academic school. This indicates that students in vocational college are actively participating in meaningful, relevant learning activities that motivate them to take charge of their learning and impact academic achievement. A supportive learning environment, feedback on student performance, an optimal level of challenge for the student' s ability, and opportunities for students to concentrate on tasks or have clear, meaningful, and relevant goals can all drive student engagement in learning. Thieman, Rosch, and Suarez (2009) stated that the quality of academic, emotional, and out-of-class engagement depends on whether student perception of their participation in the classroom is relevant or meaningful. Meanwhile, Mansor and Rashid (2013) stated that students need to feel empowered to construct and manage their learning in and out of the classroom. Furthermore, Tinto (2010) suggested that good and effective teaching contributes to students' engagement and enjoyment in a particular subject.

Although social support shows the effect size is small to medium, this does not mean both educational institutions feel comfortable with what they are doing. Both institutions need to increase their social support program, such as creating a more meaningful program with parents, peers, and teaching. According to Smith-Hollins, Elbert, Baggert, and Wallace (2008), having a family member involved in agriculture was most likely factor influencing students' decision to enroll in agriculture. Therefore, parents are considered as the most influential individual on students' persistence to pursue agriculture program and then often followed by extended families or relatives. Meanwhile, education institutions can play a vital role in creating an environment with adequate physical facilities and equipment, good course content, and a teaching approach to support the students' learning experience. Powell (2012) mentioned, the quality of the facilities and the prestige of the institutions count as one of the supporting factors for students to be persistent in pursuing studies in an agricultural program.

Table 4 shows the main effect between teacher teaching strategy, student engagement and social support on student persistence to further their studies in the Agricultural program. The result shows no significant main effect between teacher teaching strategies on student persistence level in pursuing their studies in agricultural science

(F1,282=2.672, p=0.071). Although there was no significant difference, however, the eta-squared value for teacher teaching strategies is η^2=0.124. This indicates that teaching strategies implemented by the teachers, either teacher-centered or student- centered have a medium effect on student persistence in pursuing their studies in agricultural science. According to Dole et al. (2009), teachers must learn and experience effective ways by using both teacher-centered and student-centered strategies. Different approaches are required because the field of agriculture relate to hands-on knowledge and skills. Saari and Rashid (2013) found that the program of study, training mode, and type of company trainee attached in the training program were significantly different in getting a job offer. According to Köpsén (2007), teachers who teach in technical and vocational subjects generally need to differ in terms of teaching compared to teachers who teach other subjects.

Table 4: Main effect between teacher teaching strategy, student engagement and social support on student persistence in pursuing studies in Agricultural program

Item	Sum-of-Squares	df	Mean Square	F	Sig
Teacher teaching strategies	3.95	1	1.98	2.67	.071
Student engagement	27.64	2	9.21	15.10	.001
Error	157.40	258	.61		
Social support	.41	1	.41	.55	.460
Error	157.40	276	.61		

The result also shows no significant main effect of social support on student persistence level in pursuing their studies in agricultural science (F1,276=0.547, p= 0.460). The eta-squared value for social support is η^2=0.013. These findings indicate that social support, either individual support or environmental support, has a small effect on student persistence in pursuing their agricultural science studies. Individual support in the context of this study refers to the cooperation and trust given by adults such as parents (Powell, 2012), peers (Wildman & Torres, 2001) and teachers (Marx et al., 2007).

According to Rashid (2012b), teachers must be competent to establish a smooth learning environment. In addition, support from the school environment such as quality and adequacy of resources, for instance, physical facilities and equipment, the course content and

teaching approach (Rayfield et al., 2013) as well as the quality of the facilities, prestige of the department, and university and campus (Powell, 2012) also needed. Parents are the most influential individual on students' persistence in agriculture science, often followed by extended families or relatives. Parents with agricultural backgrounds often, significantly impact a student' s choice in choosing the agriculture field (Wildman & Torres, 2001). Likewise, Smith-Hollins et al. (2008) found that people with a family member involved in an agriculture career or lifestyle were most likely to be influenced by those closest to them when choosing to enroll in the agriculture program.

Table 5 shows no interaction effects of teacher teaching strategies, student engagement, and social support on student persistence in pursuing their studies in the agricultural field. This indicates that the students' persistence to continue their studies in the agricultural science field does not depend on teacher teaching strategies, student engagement and social support.

Table 5: Interaction Effects of Teacher Teaching Strategies, Student Engagement and Social Support on Student Persistence in Pursuing Studies in Agricultural Program

Item	Sum-of-Squares	df	Mean Square	F	Sig
Teacher teaching strategies	1.21	1	.602	.998	.370
Student engagement	13.79	2	4.59	7.62	.001
Social support	.01	1	.010	.016	.889
Teacher teaching strategies * Student engagement * Social support	.69	2	.346	.571	.566
Error	146.06	242	.604		

Overall, the finding showed that there was a significant main effect only between student engagement level (emotions, out-of-class engagement and academic) on student persistence level in pursuing their studies in the agricultural science field, and there were no interaction effects of teacher teaching strategies, student engagement and social support on student persistence level in pursuing their studies in the agricultural field. Student persistence level in pursuing their studies in agricultural science can be further enhanced through direct exposure by teachers in learning and teaching sessions. Other than that, motivational words and a positive environment can also help students to be positive with agriculture field and make it the reason to continue their studies. Schools also need to play a role in

determining the flow of students when entering the upper secondary level, especially academic schools. Awareness campaigns on the importance of agriculture and career briefings need to be improved in schools as schools are the basis to produce human resources.

CONCLUSION

This Teachers' teaching strategies, students' engagement and social support do not affect the student persistence to pursue their studies in agricultural program. To increase the student' s persistence to pursue their studies in agricultural program, support from the school environment such as quality and adequate resources, for instance, physical facilities and equipment, the course content and teaching approaches, are needed. Other than that, most students are attracted to agriculture subjects because of the different teaching strategies used by the teachers that involve practical sessions, hands-on and outdoor activities. Besides that, students' engagement through a variety of activities such as inside and outside of the classroom can enhance persistence in the field.

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