

# Student Engagement and Final Year Project Achievement in the Peninsular Malaysia Agricultural Vocational College

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**Abstract** This study aims to determine the level of student involvement and its influence on the achievement of the final year project (PTA) at the Agricultural Vocational College (KV) in Peninsular Malaysia. The study used a descriptive correlational design, which involved a total of 136 students from 3 agricultural KVs using simple random sampling techniques. Survey questionnaires are used as study instruments. The respondents needed to answer 30 items divided into sub-constructs that were divided into emotional, behavioral, skills and cognitive items. The findings showed that overall, the involvement of Malaysian Vocational Diploma students in the implementation of final year projects was at a high level ( $M=3.95$  and  $SD=.421$ ). The achievement level of most students in PTA at agricultural KV in Peninsular Malaysia was found to be at an excellent level (grade A) of 69.1%. Correlation analysis shows that student involvement in emotional and behavioral dimensions has a significant relationship with student PTA achievement. However, for the cognitive dimension, there is no significant association with students' PTA achievement. Measures should be taken by various parties to enhance student's engagement as well as to improve agricultural students' achievements in vocational college for the betterment of this field of study.

**Keywords** Student Involvement, Emotions, Behavior, Cognitive, Achievement, Vocational

## 1. Introduction

In the Malaysian Vocational Diploma (DVM) program, the final year project module (PTA) is a learning subject that specifically gives students a space to gather knowledge, problem-solving skills, and teamwork in creativity and innovation. The implementation ranges from planning, commissioning and construction, up until prototype demonstrations. The PTA module is a compulsory course for this diploma program and must be implemented in the last year of study. This module is designed to inculcate knowledge and test the skills acquired in 4 years of study. The first two (2) years of students will be at the Malaysian Vocational Certificate (SVM) level and the next two (2) years will be at the Malaysian Vocational Diploma (DVM) level. The remaining six (6) months is for the On Job Training/Internship (OJT).

PTA is a subject that opens up space for learners to apply all information about past learning and make efforts exclusively or in groups in achieving new information in technological improvements such as green innovation and advancement, energy saving, simple establishment, versatility, reuse and recycle, customer demand, and others. The main purpose of this effort is to encourage learners to combine information and skills, report writing, and thus opening opportunities for learning and investigation processes [1].

Through the latest edition of the BLPTV Guidelines on PTA, this achievement refers to the extent of the achievement stage of PTA students in the Agricultural

Vocational College of Peninsular Malaysia. All students must meet each criterion assessed and get a minimum of 60% of the predetermined maximum mark. The finding of a study conducted by [2] shows that learning in PTV must be a form of continuous learning that meets mental and physical needs, and is not limited only to actual learning objectives. Supervisors and instructors appointed for PTA should look at the student's performance not only from the results alone, but should assess them more transparently considering the events throughout the learning cycle taking place such as coordinated efforts in many jobs and responsibilities. Project-based learning modules are cycles that start with directed questions, understanding ideas, and core learning standards [3]. Thus, it can be seen that project-based learning modules are learning interactions and should be built to achieve original goals. Instructors and students should be given support to ensure that the implementation of PTA is an exciting, open and more organized learning exercise.

According to the guidelines by Malaysian Ministry of Education, the program at the Malaysian Vocational Diploma level is aimed at fostering the active involvement of students and indirectly producing teamwork skills in order to collaborate with each other during the execution of learning [4]. The involvement of students will strengthen the fundamentals of learning and this will have a beneficial effect on the agricultural education. Students will practice what they learn with real-life situations to solve problems. Active involvement of students in PTA is the main indicator of the actual learning process in agricultural education. The learning experience in agricultural education provides unlimited opportunities for learners to pay attention to study and carry out learning activities based on the concepts and principles learned. The courses and subjects learned in the previous semester provide opportunities for learners to acquire and comprehend specific topics in agriculture. This

improves the knowledge and principles they will practice in solving the problems that arise while carrying out PTA.

## 2. Methodology

This study uses a quantitative approach in the form of descriptive correlation to explain the relationship and interaction between all the variables studied. The variables measured in this study are student engagement and achievement. Data collection using descriptive correlation is expected to provide explanations and can also determine the acquisition of changes that have a relationship between student involvement and their achievement in PTA.

The study involved a sample size of 136 respondents randomly selected from three Agricultural Vocational Colleges in Peninsular Malaysia. Random sampling procedures are easy to use to ensure that each unit or subject in the population has an equal chance of being selected as a respondent for the study conducted. The study used questionnaires to collect quantitative data on students at three Agricultural Vocational Colleges in Peninsular Malaysia. The engagement questionnaire was adapted from Yazzie-Mintz [5] but was modified and used in this study based on an instrument from Nur Yuzie [6] which also measured student engagement from behavioral, emotional and cognitive dimensions (Table 1).

The questionnaires of parts B and C are related to the level of student engagement. Researchers measured the reliability of the study instrument by obtaining the Cronbach alpha value for each construct of items in the instrument (Table 2). Five-point Likert scale was used to measure the degree of agreement from the respondents, which include 'strongly disagree' (STS), 'disagree' (TS), 'somewhat disagree' (KS), 'agree' (S), and 'strongly agree' (SS).

**Table 1.** The number of items in study instrument

Part	Variables	Item No.	Total	References
A	Demography	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	10	-
B	Emotional dimension	1, 2, 3, 4, 5, 6	6	National Survey of Student Engagement (2006)
	Behavioral dimension	7, 8, 9, 10, 11, 12, 13, 14, 5, 16, 17	11	High School Survey Student Engagements (HSSSE)
C	Cognitive dimension	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	13	National Survey of Student Engagement (2006)
Total No. of Item			40	

**Table 2.** Reliability by *Cronbach Alpha* value

Constructs	<i>Cronbach Alpha</i> (a)
Emotion	.638
Behavior	.808
Cognitive	.849

### 3. Results and Discussion

Table 3 shows the demographic distribution of respondents based on study program, gender, and race.

**Table 3.** Demographic information of respondents (n=115)

Demographic info		n	(%)
Program	Agroindustri Ternakan Ruminan	29	21.3
	Akuakultur	14	10.3
	Agroindustri Ternakan Poltri	7	5.1
	Mekanisasi Agro	8	5.9
	Landskap	9	6.6
	Agroindustri Tanaman	34	25.0
	Pemrosesan Makanan	24	17.6
	Bioteknologi	11	8.1
	Sex	Male	84
	Female	52	38.2
Race	Malay	135	99.3
	Chinese		
	India	1	0.7

#### 3.1. The Level of Students' Engagement in PTA

Table 4 shows the percentage, mean score and standard deviation of student engagement items based on three aspects, namely emotional, behavioral and cognitive. Overall the findings showed that the mean score level of student engagement was high (M=3.95 and SD=.421). Based on the findings, mean value score obtained through the emotional construct is M=3.93 and SD=.543, with the highest score of M=4.29 and SD=.751. High mean recorded items are items BB\_S5 'I make sure my relationship is always good with friends and lecturers'. The findings showed that almost 44.9% (61 people) of respondents agreed with this statement. Through this percentage, the majority of respondents have responded positively to good relationships with friends and

lecturers who teach PTA1. The lowest mean value is from items BB\_S3 'I like to learn about the field taken' which derives a medium mean value (M=3.21 and SD=1.207). A total of 38 respondents (27.9%) agreed that they would like to study in the field taken.

Based on the provisions for the behavioral substructures, it is also the lowest min score among the aspects of student involvement, namely (M= 3.91 and SD=.532). Through the 9 items given, the high min score value is from the item BB\_S16 'I always attend the Final Year Project 1 (PTA) class' which is with a grade (M=4.51 and SD=.688). The item that has the second highest value is from the item BB\_S15 'I'm running PTA seriously' (M=4.19 and SD=.705). Whereas, the lowest min value of the behavioral aspect is recorded from the item BB\_S7 'I answered the questions questioned by the counselor during the teaching process' which is as many as (M=3.54 and SD=.787). As many as 59 respondents (43.4%) agreed with their statements answering questions during the teaching session, 43 people (39.7%) respondents also expressed neutral feelings or disagreed, 13 respondents (9.6%) expressed strong agreement and the remaining 1 respondent (1%) strongly disagreed with the statement of the item.

For aspects of student engagement through cognitive sub constructs showed the highest mean score finding between the three sub-constructs of engagement (M=4.01 and SD=.382). From the sub construct, the items that get the highest mean value are the items BC\_S13 'I'm trying to take the time to run the project (PTA1)' i.e. (M=4.23 and SD=.574). These findings showed a positive response of respondents to the cognitive sub constructs obtained during their time in learning based on the programmes taken at the Vocational College. Through this cognitive aspect, the findings show that the lowest mean score value is from items BC\_S9 'I will ask the lecturer a question if I do not understand what is being taught' (M=3.90 and SD=.569). However, the mean score on the item is still at a high level based on the mean score scale. A total of 100 respondents (73.5%) agreed with a statement indicating the commitment to ask questions to lecturers if they do not understand the topic being taught. The remaining 20 people (14.7%) expressed disapproval, 13 (9.6%) expressed disapproval and 3 (2.2%) respondents expressed disapproval of the statement.

**Table 4.** Mean Score and Standard Deviation of Student Engagement in PTA

Item	No. of respondents (%)					Min	SD
	STS	TS	KS	S	SS		
Emotion						3.93	.543
BB_S1	-	6 (4.4)	46(33.8)	65(47.8)	18(13.2)	3.72	.776
BB_S2	-	11(8.1)	41(30.1)	57(41.9)	27(19.9)	3.74	.871
BB_S3	12(8.8)	29(21.3)	35(25.7)	38(27.9)	22(16.2)	3.21	1.21
BB_S4	-	2(1.5)	11(8.1)	60(46.3)	60(44.1)	4.33	.683
BB_S5	-	3(2.2)	15(11)	57(41.9)	61(44.9)	4.29	.751
BB_S6	-	1(0.7)	12(8.8)	70(51.5)	53(39)	4.28	.654
Behaviour						3.92	.532
BB_S7	1(0.7)	9(6.6)	54(39.7)	59(43.4)	13(9.6)	3.54	.788
BB_S8	1(0.7)	5(3.7)	21(15.4)	75(55.1)	34(25.0)	4.00	.789
BB_S9	1(0.7)	8(5.9)	39(28.7)	57(41.9)	31(22.8)	3.80	.885
BB_S10	-	5(3.7)	36(26.5)	62(45.6)	33(24.3)	3.90	.806
BB_S11	-	5(3.7)	42(30.9)	67(49.3)	22(16.2)	3.78	.757
BB_S12	-	12(8.8)	47(34.6)	64(47.1)	13(9.6)	3.57	.785
BB_S13	-	4(2.9)	38(27.9)	69(50.7)	25(18.4)	3.85	.749
BB_S14	-	4(2.9)	23(16.9)	74(54.4)	35(25.7)	4.02	.705
BB_S15	-	2(1.5)	17(12.5)	70(51.5)	47(34.6)	4.19	.688
BB_S16	-	-	15(11)	36(26.5)	85(62.5)	4.51	.688
BB_S17	-	9(6.6)	26(19.1)	72(52.9)	29(21.3)	3.89	.814
Cognitive						4.33	.382
BC_S1	-	1(0.7)	10(7.4)	111(81.6)	14(10.3)	4.01	.455
BC_S2	-	-	9(6.6)	96(70.6)	31(22.8)	4.17	.519
BC_S3	-	1(0.7)	17(12.5)	96(70.6)	22(16.2)	4.02	.564
BC_S4	-	3(2.2)	27(19.9)	86(63.2)	20(14.7)	3.90	.654
BC_S5	-	1(0.7)	23(16.9)	95(69.9)	17(12.5)	3.95	.557
BC_S6	-	-	23(16.9)	88(64.7)	25(18.4)	4.01	.596
BC_S7	-	3(2.2)	27(19.9)	88(64.7)	18(13.2)	3.89	.640
BC_S8	-	-	19(14.0)	77(67)	22(19.1)	4.04	.563
BC_S9	-	2(1.7)	17(14.8)	85(73.9)	11(9.6)	3.90	.569
BC_S10	1(0.7)	1(0.7)	15(11.0)	98(72.1)	21(15.4)	4.00	.602
BC_S11	-	1(0.7)	20(14.7)	88(64.7)	27(19.9)	4.04	.613
BC_S12	-	1(0.7)	19(14.0)	93(68.4)	23(16.9)	4.01	.583
BC_S13	-	1(0.7)	7(5.1)	87(64)	41(30.1)	4.23	.573
Average total						3.95	.421

In conclusion, the level of student involvement in PTA is at a high level ( $M=3.95$  and  $SD=.421$ ). However, attention was also paid to the behavioural aspects of the students who were at the lower level compared to the three sub-constructs obtained.

### 3.2. The Level of Students' Achievement in PTA

Table 5 shows the students' grades in PTA. The majority of the respondents obtained 94 respondents (69.1%) obtained an A grade (excellent). The grades contained in the excellent performance are A, and A-. For the average grade B (Honors) B, B and B- on the other hand, the data findings showed a total of (27.9%) or 38 respondents. The remaining 3 people (2.2%) of the total respondents received a grade D (pass) and 1 person (0.7%) received a grade C (Honors).

**Table 5.** Frequency and percentage of grades obtained by students in PTA

Grade	Score	No. of students	(%)
A (Excellent)	5	94	69.1
A 4.00			
A- 3.67			
B (Honors)	4	38	27.9
B+ 3.33			
B 3.00			
B- 2.67			
C(Honors)	3	1	0.7
C+ 2.33			
C 2.00			
D (Pass)	2	3	2.7
D+ 1.67			
D 1.33			
D- 1.00 (Fail)			
E (Fail)	1	-	-
F 0.00			
Total		136	100.0

Min=4.58 SD=.65

The results from the achievement of PTA students obtained showed that on average was at the level of excellent performance. This showed a high percentage (69.1%) compared to the honors grade of 38 people (27.9%). The findings showed that 97% of the students of the Agricultural Vocational College in Peninsular Malaysia have achieved the level of excellence and excellence in terms of achievement of PTA for the 2021 study session.

### 3.3. The Relationship of Student Engagement and Their Achievement in PTA

Table 6 shows the relationship between engagement

consisting of emotional, behavioral and cognitive and student achievement. The findings suggest that the emotional dimension has a significant relationship with student achievement. While the behavioral dimension also showed significant results with the achievement of PTA. As for the cognitive dimension, there is no significant relationship with the achievement of PTA students.

**Table 6.** The relationship between students' engagement and achievement

Students' engagement	r value	P
	.213	.187
Emotion	.763	.000
Behavior	.120	.000
Cognitive	.092	.080
Total average	.213	.187

The findings showed positive findings from emotional dimensions ( $r=.763$ ,  $p<0.05$ ), behavior ( $r=.120$ ,  $p<0.05$ ) and cognitive dimensions ( $r=.115$ ,  $p>0.05$ ). The level of connection between emotion and achievement is strong, while the behavioral and cognitive dimensions are at a weak level. Based on the overall data findings, there is a very low positive relationship ( $r=.213$ ,  $p>.187$ ) that is not significant between student engagement and achievement in their PTA at the Peninsular Malaysia Agricultural Vocational College.

The value of the relationship between emotion and achievement is strong, while the behavioral and cognitive dimensions are at a very weak level. This study suggests that there is perception on the involvement of students in the implementation of PTA is more about producing projects alone without the need to increase the understanding and knowledge specific to the field of study. The involvement of these students is seen as not a major factor in influencing the results in the achievement of PTA. In addition to engagement, the achievement of PTA can also be influenced by other factors such as the support from the teachers, friends or family members [7,8]. Since cognitive was not significantly correlated to achievement among students in this study, it is suggested that instructors' role in planning strategies to conduct teaching and learning should also be emphasized to enhance cognitive acquisition [9-11]. Other than that, the instructors need to diversify teaching delivery methods such as engaging in guided activities, group learning, and student-centered learning, where these approaches would be helpful in building positive behavior and active learning [12].

## 4. Conclusions

The finding of the study concludes that the relationship of student engagement and their achievement in PTA is significantly positive in terms of emotional dimension, and

this is not the case for cognitive and behavioural factors. Measures should be taken by various parties to enhance student's engagement as well as to improve agricultural students' achievements in vocational college for the betterment of this field of study. Through the basic concept of learning in PTA, this has provided an insight for the instructors to open up a space for active thinking among students to solve problems and improve their achievement. This finding also suggests exploration for future study on the main factors contributing to vocational college students' achievement, rather than emotional dimension.

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