

REFINING THE TERMINOLOGY OF PRE-HIGHER EDUCATION STUDENTS: A QUANTITATIVE STUDY OF ENTRY QUALIFICATIONS, ACADEMIC PERFORMANCE AND FAMILY BACKGROUND

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ABSTRACT

It is vital for educators to understand and match the learning needs of every student for learning to take place effectively. A detailed reference of the students' entry characteristics, family background, and previous academic performance is useful in determining the materials and activities to be used with the students. The respondents of this study involved 103 students who enrolled in the pre-higher education programme. The characteristics to identify at-risk students are used as guidelines to redefine the definition of pre-higher education students. Therefore, the study aims to examine the characteristics of pre-higher education students based on their academic performance and socio-economic status. A quantitative method is used to gather more information about the basic entry characteristics, previous academic achievement, family background and *Sijil Pelajaran Malaysia (SPM)* results of the students. The findings of the study help the researcher to define the terminology of the pre-higher education programme. Having to confirm to the conceptual definition of the pre-higher education students helps the policy makers and institutions to develop a suitable learning programme to cater to their learning needs.

Keywords: pre-higher education students; socio-economic status; academic performance; learning needs

1. Introduction

There are many public universities offered pre-higher education programme to students who come directly from secondary school. Candidates who meet the general entry requirements have an option to join either the foundation or diploma in higher education level depending on the results of their *Sijil Pelajaran Malaysia (SPM)*, a national examination for all Form 5 students. However, there are candidates who fall below the general entry requirements and could not enroll in the foundation or the diploma programs. Nevertheless, seeing the potential of these candidates, Universiti Teknologi MARA (UiTM) has a program called the pre-higher education program to give a chance for these candidates to further their studies. The term pre-higher education programme was previously known as *Menjelajah Destini Anak Bangsa (MDAB)* for students who enrol in UiTM. The term pre-higher education was introduced later

in 2019 to further improve the programme. Students who register for this programme must complete and pass one semester of the learning programme, equivalent to 14 weeks at diploma level. The present study focuses on students from the pre-higher education programme as these students may require specific approaches in teaching and learning. Hence, it requires further investigation to confirm that the pre-higher education students are at-risk students as defined by the general literature. The present study intends to investigate whether the characteristics of the pre-higher education students fit into the definition of at-risk students.

A quantitative method was used to gather more information about the family background, previous academic performance, pre-higher education programme outcomes and *Sijil Pelajaran Malaysia* (SPM) results of the students. The table below shows the standard of SPM grading system used by secondary schools in Malaysia while Table 2 shows the university grading system. These grading systems served as guidelines for the researchers to further interpret the pre-higher education students' academic performance in two distinguished levels of education namely SPM level and tertiary education.

Table 1. *Sijil Pelajaran Malaysia* (SPM) Grading System

Grades	Grade Value	Interpretations
A+	0	Super Distinction
A	1	High Distinction
A-	2	Distinction
B+	3	Super Credit
B	4	High Credit
C+	5	Upper Credit
C	6	Credit
D	7	Upper Pass
E	8	Pass
G	9	Fail

Table 2. University Grading System

Grades	Grade Value	Interpretations
A+	4.00	Distinction
A	4.00	
A-	3.67	Credit
B+	3.33	
B	3.00	
B-	2.67	Pass
C+	2.33	
C	2.00	
C-	1.67	Fail
D+	1.33	
D	1.00	
E	0.67	
F	0.00	

This present study focuses on the students' achievement in two relevant subjects during their SPM level and pre-higher education level which are English and Mathematics. It is worth to note that the English and Mathematics courses are among the courses offered during their pre-higher education level. Similarly, both courses are offered during their SPM level as well. Hence, this is the rationale of further investigating their scores in both courses. The findings of the study help the researcher to define the terminology of the pre-higher education programme. The term at-risk encompasses a variety of students, the majority of those who come from either a low socioeconomic background or a minority group or both. Educators continue to develop strategies to help every student's progress and master essential skills to ensure success and higher test scores for all students.

The purpose of this study is to define the term pre-higher education students based on their academic performance and socio-economic status (Batsche, 1985; Welch, 2017; McCann & Austin, 1988). Therefore, the research questions are as follows;

1. What are the characteristics of the pre-higher education students based on their academic performance in English and Mathematics Courses during their studies in
 - i. SPM level
 - ii. Pre-higher education level
2. What is the pre-higher education students' socioeconomic status based on their parents' salary?

2. Literature Review

At-risk students have many characteristics. The following traits justify this label for students: minority status, low socioeconomic status, potential dropout, reading below grade level, not meeting the requirements of promotion or graduation, and having English as a second language (Slavin, Karweit, & madden, 1990; Sagor & Cox, 2004; McCann & Austin, 1988). The pre-higher education students in this study refer to students who enrolled in the selected university for one semester before they can further studies in diploma programmes. Based on the traits mentioned above, this study examines the students' characteristics and defines the pre-higher education students in more extensive details. Several studies listed the following factors faced by the at-risk students: low achievement, retention in grade, behaviour problems, poor attendance, low socioeconomic status, truant or poor attendance at schools and involve in drugs and alcohol (McCann & Austin, 1988; Slavin, Karweit & Madden, 1990; Cardon, 2000; Boon et al., 2007). These factors are used to predict the students' academic performance, identify drop out students and predict who will complete their schooling (Slavin, Karweit, & Madden, 1990).

In addition, Cardon (2000) described the characteristics of the at-risk students as having the tendency to exhibit disruptive behaviour that interferes with their learning abilities and the family background that may place them at or below the poverty level. He also added that the at-risk students may also speak different languages than English (Cardon, 2000). Besides that, Cardon (2000) listed down some characteristics of the at-risk students which include low grades and tests scores, prevalent absences from school, tendency to develop the feelings of alienation and isolation as well as the difficulty to form healthy social attachments. It is worth to note that many studies have found that at-risk students have low motivation level in their academic performance (Horton, 2015). In line with this notion, many studies highlighted the educational challenges faced by at-risk students including low social competence and low socioeconomic status (MacKay, Knott, & Dunlop, 2007; Whiting &

Mallory, 2007). Likewise, Cooper and Crosnoe (2007) shared a similar view on the effect of lower socioeconomic circumstances of the family that contributes to academic failure, along with other disadvantages among at-risk students. In relevance to the educational challenges faced by at-risk students, Walker and McConnell (1995) highlighted the socially vulnerable students as acutely susceptible to social and academic failures. A study by Batsche (1985) has compiled the common characteristics among at-risk students based on individual traits and family traits as follows:

Table 1: Summary of the characteristics of at-risk students (Batsche, 1085)

Characteristics of At-risk Students	Characteristics of the Family
History of school absenteeism	Family with several siblings
Poor grades	Father absent from the home
Low math and reading scores	Father unemployed
Low self-concept	Father did not complete high school
History of behavioural problems	Mother absent from the home in early adolescence
Inability to identify with other people	Little reading material at home
Employed full time while in school	
Low socioeconomic background	
More males than females	
Feel alienated and isolated	

Besides that, Welch (2017) identifies the factors that can create higher risks of failing academically for college students namely, homelessness, returning to academics after an extended absence, low motivation, physical or learning disabilities, first-generation students, having low self-efficacy, or inadequate study skills. However, this study focuses on the criteria of academic performance and socioeconomic status due to the limitation in terms of time constraint and the limitation to access the students' personal info. As a result, this study proposed a conceptual framework in refining the terminology of pre-education tertiary students.

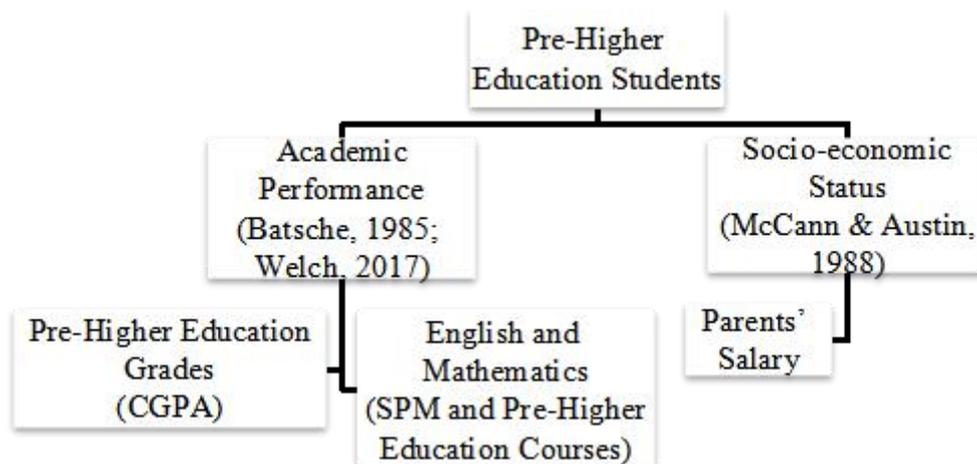


Figure 1: Conceptual Framework

Educators should be aware of the characteristics of the pre-higher education students. It is also worth to note that at-risk students are prone to have emotional problems due to frustration and discouragement in their unrewarding attempts in learning (Tannenbaum & Badlwin, 1983). A recent study by Fix, Ritzen, Pieters, & Kuiper (2019) revealed consequences of the frustration experienced by at-risk students which lead to discipline problems, emotionally unstable thus placing them at risk of academic failure. Higher education administrators must consider additional resources to help them in their quest for academic excellence. Walker and Graham (2019) further suggested that at-risk students who are socioeconomically challenged can excel in their academic performance only if suitable supplemental aid is provided. A previous study by Cowans (2005) highlighted on the various environmental problems that contribute to challenges that at-risk students face in their academic performance. He further added on the factors of short-term or long-term memory in assimilating information as another factor that is faced by at-risk students. This leads to an ardent need to address the working definition of pre-higher education students based on the characteristics of the at-risk students.

3. Research Methodology

This study employed a quantitative research design. The data collected were results from three semesters which include September 2018 Semester, March 2018 Semester and September 2017 Semester. A purposive sampling method was utilized in this study with the aim of reaching the targeted samples quickly. The respondents involved in this study were diploma students of a local public university. These students received weekly allowances to help them in their financial resources based on their parents' monthly income. The access to the data was approved by the academic affairs department with written permission granted by the assistant rector of the chosen campus. This study focuses on the students' achievement in two relevant subjects during their SPM level and pre-higher education studies which are English and Mathematics. Both subjects are part of the entry requirement to pre-higher education studies at the university level. During their pre-higher education programme, the course code for the English course is ELC030, English for Pre-Diploma Course and the course code for Mathematics course is MAT037, Intensive Mathematics I Course.

4. Results and Discussion

The following table shows the distribution of respondents involved in this study according to different semesters.

Table 3. Respondents

Semester	N=Respondents
September 2017 – January 2018	53
March 2018 – July 2018	17
September 2018 – January 2019	33
Total	103

4.1. Academic Performance (Pre-Higher Education Programme)

Table 4: CGPA for Semester September 2017 – January 2018

	N	Minimum	Maximum	Mean	Std. Deviation
CGPA	53	1.87	3.85	3.1025	.38132
Valid N (listwise)	53				

In the September 2017 Semester, the data collected were based on the information gathered from 53 respondents. The table shows that the average CGPA for September 2017 Semester is mean=3.10, SD=0.38. This indicates that the students scored a CGPA which is equivalent to above B grade in accordance with the university grading system.

Table 5: English and Mathematics Grades for Pre-higher Education Level

	N	Minimum	Maximum	Mean	Std. Deviation
ELC030	53	2.00	4.00	3.0508	.48594
MAT037	53	2.00	4.00	3.3083	.55782
Valid N (listwise)	53				

The table above shows their grades for the English and Mathematics courses for September 2017 – January 2018 Semester of pre-higher education students. The mean and SD for each course is: mean=3.05, SD=0.49 for the English course and mean=3.31, SD=0.56 for Mathematics course. This illustrates that the students in September 2017 – January 2018 Semester scored an average of B grade according to the university grading system for their English course and above the B grade for their Mathematics course.

Table 6: English and Mathematics Grades for SPM Level

	N	Minimum	Maximum	Mean	Std. Deviation
SPM English	53	1	8	6.68	1.438
SPM_Mathematics	53	2	8	6.75	1.343
Valid N (listwise)	53				

The table above shows their grades for English SPM and Mathematics SPM results for September 2017 – January 2018 Semester of pre-higher education students. The mean and SD for each course is: mean=6.68, SD=1.44 for the English subject and mean=6.75, SD=1.34 for Mathematics subject. This illustrates that the September 2017 – January 2018 Semester students scored an average of C grade for their English subject and Mathematics subject during their SPM level.

March 2018 – July 2018 Semester

Table 7: CGPA for March 2018 – July 2018 Semester

	N	Minimum	Maximum	Mean	Std. Deviation
CGPA	17	2.45	3.85	3.1418	.42035
Valid N (listwise)	17				

In March 2018 Semester, the data collected was based on the information gathered from 17 respondents. The table shows that the average CGPA for March 2018 Semester is mean=3.14, SD=0.42. This indicates that the students scored a CGPA which is equivalent to above the B grade.

Table 8: English and Mathematics Grades for Pre-higher Education Level

	N	Minimum	Maximum	Mean	Std. Deviation
ELC030	17	2.67	4.00	3.0988	.45159
MAT037	17	2.00	4.00	3.2741	.65830
Valid N (listwise)	17				

The table above shows their grades for English course and Mathematics course for March 2018 Semester among the pre-higher education students. The mean and SD for each course is: mean=3.10, SD=0.45 for the English course and mean=3.27, SD=0.66 for Mathematics course. This illustrates that the students in March 2018 Semester scored above the B grade for their English course and Mathematics course during their pre-higher education studies.

Table 9: English and Mathematics Grades for SPM Level

	N	Minimum	Maximum	Mean	Std. Deviation
SPM English	17	4.00	8.00	7.0000	.93541
SPM Mathematics	17	2.00	8.00	6.6471	1.86886
Valid N (listwise)	17				

The table above shows their grades for the English SPM and Mathematics SPM results for March 2018 Semester among the pre-higher education students. The mean and SD for each course is: mean=7.00, SD=0.94 for the English subject and mean=6.65, SD=1.87 for Mathematics subject. According to the SPM grading system, this illustrates that the March 2018 Semester students scored a grade of D for their English SPM result and above the C grade for their Mathematics subject in their SPM level.

September 2018 – January 2019 Semester

Table 10: CGPA for September 2018 – January 2019 Semester

	N	Minimum	Maximum	Mean	Std. Deviation
CGPA	33	2.03	4.00	3.1924	.48331
Valid N (listwise)	33				

In September 2018 Semester, the data collected was based on the information gathered from 33 pre-higher education students. The table shows that the average CGPA for September 2018 Semester is mean=3.19, SD=0.48. According to the university grading system, the students scored a CGPA which is equivalent to above B grade.

Table 11: English and Mathematics Grades for Pre-higher Education Level

	N	Minimum	Maximum	Mean	Std. Deviation
ELC030	33	2.00	4.00	3.2218	.56944
MAT037	33	.67	4.00	3.1612	.93983
Valid N (listwise)	33				

The table above shows their grades for English course and Mathematics course for September 2018 Semester among the pre-higher education students. The mean and SD for each course is: mean=3.22, SD=0.57 for the English course and mean=3.16, SD=0.94 for Mathematics course. This illustrates that the pre-higher education students in September 2018 Semester scored above B grade for their English course and Mathematics course during their pre-higher education studies.

Table 13: Summary of CGPA for Three Consecutive Semesters

	N	Minimum	Maximum	Mean	Std. Deviation
CGPA	103	1.87	4.00	3.1378	.42041
Valid N (listwise)	103				

The table above illustrates the descriptive statistics on CGPA for 103 students, for three consecutive semesters with mean=3.13, SD=0.42041. This indicates that the pre-higher education students are among above-average students with CGPA = 3.13, thus equivalent to above grade pointer B by referring to the university grading system.

4.2. Academic Performance (SPM Level)

Table 12: English and Mathematics Grades for SPM Level

	N	Minimum	Maximum	Mean	Std. Deviation
SPM English	33	2.00	8.00	6.5455	1.73369
SPM Mathematics	33	1.00	8.00	6.5152	1.82211
Valid N (listwise)	33				

The table above shows the pre-higher education students' grades for English SPM and Mathematics SPM results for September 2018 – January 2019 Semester. The mean and

SD for each course is: mean=6.55, SD=1.73 for English subject and mean=6.51, SD=1.82 for Mathematics subject. According to the SPM grading system, the pre-higher education students scored above the C grade for their English subject and Mathematics subject in their SPM level.

Table 14: Summary of Grades for English Course and Mathematics Course

	N	Minimum	Maximum	Mean	Std. Deviation
ELC030	103	2.00	4.00	3.1135	.50989
MAT037	103	0.67	4.00	3.2555	.71281
Valid N (listwise)	103				

The table above shows the mean and SD for the English course and Mathematics course during their pre-higher education with mean=3.11, SD=0.51 and mean=3.26, SD=0.71 respectively. This indicates that the pre-higher education students scored grades above B for their English course and Mathematics course during their pre-higher education studies based on the data collected from three consecutive semesters.

Table 15: English SPM and Mathematics SPM

	N	Minimum	Maximum	Mean	Std. Deviation
SPM English	103	1.00	8.00	6.69	1.469
SPM Mathematics	103	1.00	8.00	6.66	1.588
Valid N (listwise)	103				

The table above demonstrates the grades for their SPM results in English and Mathematics subjects with mean=6.69, SD=1.47 and mean=6.66, SD=1.59 respectively. This further indicates that the pre-higher education students scored above C grade for both of their English and Mathematics subjects in their *Sijil Pelajaran Malaysia* (SPM) level.

4.3. Interrater Reliability (Intraclass Correlation Coefficient)

Table 16: Item Statistics

	N	Mean	Std. Deviation
ELC030	103	3.1135	0.50989
MAT037	103	3.2555	0.71281

Mean score for Mathematics course is $m=3.25$ which is higher than the mean score for ELC030 $m=3.11$. The distribution of mark for ELC030 is less dispersed as compared to MAT037.

Table 17: Intraclass Correlation Coefficient for English and Mathematics Courses (Pre-higher Education Level)

	Intraclass Correlation ^a	95% Confidence Interval		F Test with True Value 0		
		Lower Bound	Upper Bound	Value	df1	df2 Sig
Single Measures	.244 ^b	.054	.417	1.645	102	102.006
Average Measures	.392	.102	.589	1.645	102	102.006

Two-way random effects model where both people effects and measures effects are random.

- a. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- b. The estimator is the same, whether the interaction effect is present or not.

The intraclass correlation coefficient for average measures is 0.392. (ICC = .392; 95% CI, .102 to .589). Although the ICC value was significant, they were only moderately reliable.

Table 18: Intraclass Correlation Coefficient for English and Mathematics Subjects (SPM Level)

	Intraclass Correlation ^a	95% Confidence Interval		F Test with True Balue 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	-.092 ^b	-.279	.103	.832	102	102	.823
Average Measures	-.202	-.776	.187	.832	102	102	.823

Two-way random-effects model where both people effects and measures effects are random.

- a. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- b. The estimator is the same, whether the interaction effect is present or not.

The intraclass correlation coefficient for average measures is -0.202. (95% CI, -.776 to .187). The ICC value was not significant which indicating somehow not reliable.

4.4. Socioeconomic Status based on Parents' Salary

Table 19: Parents' Salary

	N	Minimum	Maximum	Mean	Std. Deviation
Parents' Salary	103	499.99	7999.99	2.4545E3	1454.32349
Valid N (listwise)	103				

The table above shows an average parents' salary among the pre-higher education students which is RM2454.50. By referring to the income classifications in Malaysia, the figure classifies the pre-higher education students to fall in the category of B40 households with an earning of RM3900 a month or less.

From the findings above, the pre-higher education students showed improvement in their pre-higher education academic results even though they did not perform during their SPM level. This shows that the Mathematics and English assessments for SPM and Pre-Higher Education are not comparable whereby SPM is a summative, high-stakes exam while the Pre-Higher Education programme is a combination of both summative and formative. Therefore, this explains the inconsistencies on how the same students who scored grade C in SPM Mathematics and Science subjects could score B at the Pre-Higher Education level as well as achieve an above average CGPA of 3.13. Additionally, the pre-higher education students scored below slightly above credit which is a C grade for their English and Mathematics subjects in their SPM level for their entry requirement to enrol for the pre-higher education programme. Besides that, it is worth to note, that similar trends are found in September 2017 – January 2018 Semester, March 2018 – July 2018 Semester and September 2018 – January 2019 Semester in terms of their scores during their SPM and pre-higher education level for both English and Mathematics subjects and the CGPA scores.

The pre-higher education students in this study are among those who are at-risk by any of the definitions discussed above, specifically in two related factors namely low academic achievement (associated with Limited English Proficiency) and low socioeconomic family background (McCann & Austin, 1988; Sagor and Cox, 2004; Welsch, 2017). The preceding characteristics are utilized in identifying the pre-higher education students analysed in this study. This research focuses on the pre-higher education students who are partly classified as at-risk students. The pre-higher education programme is a pre-diploma university programme, targeting for a low socioeconomic group of students (McCann & Austin, 1988) and for those who face difficulty to continue their studies in diploma level due to low academic achievement in their SPM level. The pre-higher education students will receive allowances and financial incentives during their period of study provided that their parents' total income is less than RM4000 per month. The pre-higher education students were selected based on their family income which is considered as the low-income level of the family thus making those students qualified to receive financial aid from the institution. This programme offers the basic knowledge of grounded subjects including the following essential courses namely English, Mathematics, Accounting, and Business Management courses.

4.5. Redefine the Term of Pre-Higher Education Students

Based on the previous literature, the term pre-higher education students can be defined according to two distinguishing factors that are closely related to the nature of this study:

Academic Achievement

The targeted group of pre-higher education students in this study are among pre-higher education students who could not continue their diploma studies due to low academic performance during their secondary schools. Specifically, these students are among those who possess limited English proficiency (LEP) thus being classified as at-risk students (McCann & Austin, 1988). Specifically, the pre-higher education students in this study focused on those students whose English proficiency is within normal limits and failing to achieve the basic skills necessary for success in English related course. Hence, it is crucial for practitioners, syllabus designers, curriculum planners and policymakers to develop an appropriate pre-higher education program that aims to improve their English proficiency and basic Mathematics.

Socioeconomic Family Background

The findings of the current study showed that students who are from low socioeconomic family are at risk of failing or dropping out from schools (McCann & Austin, 1988; Cardon, 2000; Sagor and Cox, 2004; Batch, 1985; Welsch, 2017). Hence, a practical definition that fits the term of pre-higher education students in this study are those students who are presently eligible to receive education supports due to low socioeconomic family background. Significantly, the economic status of students determines whether an at-risk student would fail in school.

Conclusion

Based on the findings, the terminology of pre-higher education students can be defined as those above-average students with CGPA 3.13 during their pre-higher education studies. The terminology of pre-higher education students is further elaborated specifically in terms of

their English and Mathematics SPM results and pre-higher education academic success as those who scored slightly above credit, C-grade for both of their English and Mathematics subjects during their SPM level and above B-grade for English and Mathematics courses during their pre-higher education studies.

However, there are few limitations of this study. Firstly, in terms of refining the terminology of pre-higher education students, at-risk students only fit with their academic result during their SPM level and not during pre-higher Education programme. Secondly, the academic results achieved during their SPM and the Pre-Higher Education is not comparable due to the nature of each assessment. Therefore, this further clarifies how the same students performed better during the Pre-Higher Education programme as compared to their SPM level and scored above average CGPA of 3.13. Nevertheless, the authors intend to redefine the terminology separately i.e., SPM as the entry qualifications of the students and Pre-Higher Education as their academic performance. It is worth to note that the pre-higher education students did not perform well during their SPM level but exhibited better academic performances when they pursue their pre-higher education. This consistency provides the rationale for the authors to redefine the terminology of pre-higher education students.

This study defined the terminology of the pre-higher education students based on two criteria namely academic performance and socio-economic status. The academic performance criteria do not reflect the at-risk student characteristics mentioned in the Literature Review. However, the finding of this study shared its unique at-risk student characteristics based on two different assessments in terms of the entry qualifications and academic performance in pre-higher education. Nevertheless, to some extent, the pre-higher education students in this study share similar characteristic with at-risk students' criteria in terms of their average parents' salary which is categorized under the B40 households with earning of RM3900 a month or less.

These findings help educators to be aware of the different needs of diversified students in one classroom. By knowing the terminology of pre-higher education students, educators will be able to design the teaching and learning materials based on their academic performance and socio-economic status. Hence, the ability to design a more constructive teaching and learning materials can help learning to take place effectively. The programme designers of the pre-higher education programme can refer to this working terminology to design and construct effective syllabus and learning outcomes that fit into the definition of their academic performance specifically in English and Mathematics subjects. For example, an intensive Mathematics course outline should be designed to cater to the learning needs of C-grade students.

Finally, a more in-depth study should be conducted in future research. It is recommended that future research on syllabus design and development of appropriate instructional materials to be conducted with pre-higher education students. There has not yet been enough evidence revealed concerning students' learning style. Additionally, it is recommended that further research involves bigger student participants so that in-depth analysis can be conducted.

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