



INFLUENCE OF MINDSET ON INTELLECTUAL PERFORMANCE

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ABSTRACT

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One of the priorities of education institutional existence is to empower student's academic performance. Understanding their perception towards themselves and their mindset able to help students in their development. This study aims to identify the influence of mindset on intellectual performance. The sample of this study covers 108 high school students ages 15 to 18 years old across Johor. The respondents of this research were selected through purposive sampling. In this research, student mindset had been measured using the 8 items growth mindset scale, and intellectual performance had been measured using 10 items of the psychometric and intellectual test. The data collected were analysed by using SPSS version 26 via multiple regression. The results of this research showed that majority of the students has a growth mindset and only able to achieve low intellectual performance level. In addition, the findings indicate that type of mindset did not influence intellectual performance.

Keywords: Intellectual; Mindset; Performance

ABSTRAK

Salah satu prioritas keberadaan institusi pendidikan adalah untuk memberdayakan kinerja akademik siswa. Memahami persepsi mereka terhadap diri sendiri dan pola pikir mereka dapat membantu siswa dalam perkembangannya. Penelitian ini bertujuan untuk mengidentifikasi pengaruh pola pikir terhadap kinerja intelektual. Populasi dari sampel penelitian ini adalah 108 siswa SMA usia 15 sampai 18 tahun di Johor. Responden penelitian ini dipilih melalui pengambilan sampel bertujuan. Dalam penelitian ini, pola pikir siswa diukur menggunakan skala mindset berkembang, dan kinerja intelektual diukur menggunakan 10 item tes psikometri dan intelektual. Data yang terkumpul dianalisis dengan menggunakan SPSS versi 26 menerusi analisis regresi berganda. Hasil penelitian menunjukkan bahwa sebagian besar siswa memiliki pola pikir berkembang dan hanya mampu mencapai tingkat kinerja intelektual yang rendah. Selain itu, temuan menunjukkan bahwa jenis pola pikir tidak mempengaruhi kinerja intelektual.

Kata kunci: Intelektual; Pola pikir; Kinerja

INTRODUCTION

Appraisal is an essential key for one's mindset development not only covering the aspects of motivation and performance, but appraisals also have been a key for proper

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mental development and mind growth including self-esteem and positive self-reflect. Students, particularly children, and adolescents are easily influenced by their surroundings and the milieu in which they live. When a young child's mind has come to life and is reacting to intervention, they are competent, active agents of their conceptual development (Gelman & Lucariello, 2002). Psychologist Jean Piaget in his Cognitive Developmental Theory issued that by pre-adolescent stage children already have the mental capabilities and intellectual abilities to develop abstract logic thinking in formal operational stage (Piaget & Cook, 1952).

A school dropout, a student who leaves the school without graduating or stops their studies halfway has been a common issue across the globe (Araque, Roldán, & Salguero, 2009). This topic has been brought up several times to better understand why a student chooses to quit rather than continue. Research that had been carried out has emphasized a lot on extrinsic value such as grade score and in-class performance are the reasons that contribute to the student's decision to drop out from school (Dweck, Walton, & Cohen, 2014). In addition, factors such as family socioeconomic status, ethnic background, and subject thought have been prominent (Archambault, Janosz, Dupéré, Brault, & Andrew, 2017). However, there is still a scarcity of studies that focus on the intrinsic value of the student as a factor in the number of students who drop out.

Rumberger (2001) suggested that personal motivation and the feeling of adequacy are the factors of school dropout. This finding has been supported by (Fan & Wolters, 2014), which suggested that students drop out of school are due to the expectation that they have for themselves and the subject. These two subjects emphasized student motivation (intrinsic value) attending the course as the main contributing factors that lead to dropping out. The significant decline in motivation is due to the expectation that has been created by the student's framework of thought by their own self (Fan & Wolters, 2014). Educational Psychologist Carol Dweck, aware of this situation and has come out with a theory to unveil the issues. Dweck tries to figure out what distinguishes students who choose to quit from those who choose to stay despite being in the same situation.

According to Dweck, a student's mindset played a decisive role in the decision-making process (Yeager, Paunesku, Walton, & Dweck, 2013). Dweck's theory suggests that mindset comes in two shapes fix and growth mindset. Fix mindset indicate a person who believes that intelligence is non-malleable and predetermined (Tenemaza Kramaley & Wishart, 2020). It cannot be changed and fixated on the individuals. Meanwhile, growth mindset people believe that a student's intelligence can be changed depending on the hard work and effort that one puts in achieving goals (Hochanadel & Finamore, 2015). Another concerning issue is the decline in children's and adolescents' creative abilities. According to Kim (2011) although the overall intelligence quotient (IQ) has increased consistently across the globe since the past few decades creative thinking scores have been significantly decreased.

The amount of time spent by children and adolescents in free play has been decreasing (Hirsh-Pasek, Golinkoff, Berk, & Singer, 2009; Weisberg, Hirsh-Pasek, & Golinkoff, 2013). Instead, a strict schedule based on learning-oriented has become the new norm leading to the declination of creativity. Students especially adolescents in Malaysia are not excluded from this category. Growing concern on student's declination in creativity and negative self-perception will be the foundation of this study. Replica or modification of this study has already been done before. While majority of the research output supports Dweck's fix and growth mindset theory, there are research that received contradict results.

This study utilises the model for Motivational Resonance of Feedback as the theoretical underpinning. This model is the most influential model postulate that gaining feedback will lead to different motivational judgments depending on the manners (Timmers, Braber-Van Den Broek, & Van Den Berg, 2013). There are two different judgments in this model; (1) attributional judgement and (2) appraisal judgement. According to Pekrun (2006), both judgments are highly linked to the emotional response of the student. Emotional response involving retrospective and prospective. Attributional judgment is a situation where learners have to explain the results that they achieved. This comes under three dimensions; (1) internal or external, (2) stable or transient, and (3) controllable or uncontrollable causal dimension (Weiner, 2011). By referring to the explanation one will generate various emotional states such as pride or disappointment in oneself, guilt or shame, and hope or hopelessness.

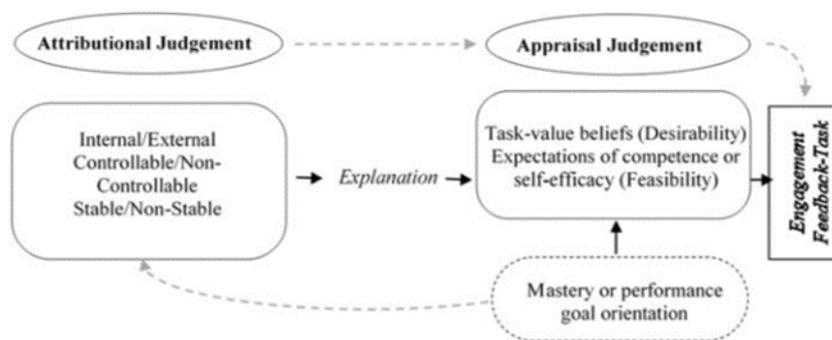


Figure 1. Motivational Resonance of Feedback

Appraisal judgment indicates the degree of commitment that the learners have in performing a task or suggestion that has been recommended from the given feedback to elevate their performances. Degree of commitment underlay by the motivational processes; (1) task-value beliefs and (2) expectancy or belief, in regards to the ability to control one action and the possible outcome that is presented inside the expectancy-value classic theories of learner's motivation (Wigfield & Cambria, 2010). Task values include intrinsic value, degree of interest, the importance of the task, and the utilization of the task. Generally agreed that providing feedback can contribute towards student learning. The volume of urgency to learn and improve one performance is highly depends on the motivation, and this includes one's willingness to invest time, proactive attitude, and self-regulating behaviour (Timmers et al., 2013). A high volume of urgency to improve oneself shows that one possessed a growth mindset, meanwhile, a low volume of urgency to improve oneself demonstrate fix mindset. This study attempt to find how influential intrinsic value is towards performance. Therefore, the objective of this study is to identify the influence of mindset on intellectual performance.

RESEARCH METHODOLOGY

This study used quantitative, cross-sectional, and correlational research designs. This study's participants are high school students enrolled in any educational institution in Johor or who live in Johor. By determining the sample size, the intended sample size was determined using the G*Power application. The effect size f^2 was set to 0.15, with the error probability set to 0.05 (5%) and the power $1-\beta$ error of probability set to 0.95. (95%). After running the survey using G*Power, the sample size was calculated to be 108

respondents. Purposive sampling was used to obtain data for approximately one month. This study used purposive sampling by approaching high school students that met the criteria of gender, age, and school region. The sampling technique also included inviting students from different backgrounds to participate in this study involving those who are in daily high school, semi-boarding high school, and full boarding high school. This step is taken to ensure respondents demographical information is evenly distributed from one category to another and indicate that researcher takes into consideration the student's academic background as part of the mindset and intellectual performance assessment

The instrument was delivered online in the form of a self-administered questionnaire, and the link to the Google Form was distributed to the students via emails and WhatsApp. Respondents are required to sign in via their Gmail account to avoid this questionnaire be answered more than once by the same person. The instrument of this study is in the form of a self-administered questionnaire. The questionnaire was presented in both English and Malay. The questionnaire consisted of three main sections. The first section was on demographic information. The second section was mainly on identifying mindset where it consisted of the 8-items of the Growth Mindset Scale by Carol Dweck. This inventory did not consist of any reversed items, instead, the lower results indicate the stronger the trajectory to fix mindset, meanwhile, the higher the results indicate the stronger the trajectory to the growth mindset. Growth Mindset Scale Questionnaire uses a 5-point Likert scale ranging from 1 to 5 to rate their level of agreement to each item. Where one is considered as strongly disagree and five strongly agree. The scale will be used to classify the sets of mindsets possessed by high school students.

Meanwhile, the third section was on intellectual performance. The assessment consists of 10 aptitude questions that incorporated numerical questions, logical questions, and diagrammatical questions (Carter, 2005). Each question contributed to one point and have a total score of 10 points. The time limit for the assessment where each respondent was given 20 minutes to answer the assessments was set. The assessment was done in a form of a quiz using Google Presenter. After 20 minutes the questionnaire will be automatically close and the answer will be saved. Questions were in the form of multiple choices questions (MCQ) and different questions have a different number of answer options. The mean score ratio was implemented in assessing the high school student's level of performance. A score ranging from (0-3) is considered in low-level performance, a score ranging from (4-6) is considered to be in medium level performance, and a score ranging from (7-10) is considered to be in high-level performance.

The Statistical Package for Social Science (SPSS) version 26 was used to analyse the data collected in this study. To achieve the objectives, descriptive and inferential analysis were used. The mean and standard deviation of the data were analysed to meet the first objective of this study, which was to identify the type of mindset. For the second objective, the ratio method was used to measure the respondent's level of intellectual performance. Lastly, multiple regression was used to identify the influence of mindset on intellectual performance.

RESULT AND DISCUSSION

Type of Mindset

To identify the type of mindsets possessed by high school students in Johor objective Mindset Scale created by Carol Dweck had been used in this study. Mindset

Scale consists of 8-items from two dimensions; growth mindset and fix mindset divided evenly for each dimension.

Table 1. Type of Mindset

Mindset	Frequency	Percent (%)
Growth	92	85.2
Fix	10	9.3
Equal	6	5.6

Table 1 summarised the finding on type of mindset possessed by high school students across mindset have identified that majority of the respondents have a growth mindset with a frequency of 92 respondents and 85.2%. Out of 108 respondents, 10 of them have been identified as having a fixed mindset at 9.3%, followed by 6 respondents who got an equal score on fix and growth mindset at 5.6%.

Table 2. Type of Mindset Dimension Analysis

Dimensions	Mean	SD	Level
Fix Mindset	2.68	1.271	Medium
Growth Mindset	3.75	0.543	High

Table 2 shows the type of mindset dimension analysis. Fix mindset dimension analysis, recorded that the mean score of the is only at a medium level with the mean value is 2.68, while the standard deviation 1.271. This indicated that the average answer of the respondents for the fix mindset dimension is only at the medium level. The standard deviation score at 1.271, is considered a high variation meaning the tendency of the respondents to answer differently from one another is high. For the growth mindset dimension, the mean score recorded is high at 3.75, and the standard deviation recorded at 0.543. This means the average score of students to select a higher scale is high in this dimension. The low standard deviation score indicates that there is a low variation in the answer given by the students.

Equal mindset data is not included as the questionnaire only consists of fix mindset dimension and growth mindset dimension. Therefore, it can be concluded that in this study majority of the respondents have a growth mindset compared to fix mindset. This shows that the majority of the students that took part in the study have a growth mindset. Majority of the students believe their talent can be developed through hard work, proper planning, and taking in input from others (Dweck, 2016). These findings support the suggestion by National Center on Scaling Up Effective Schools that believes the high school can help address the gap in student achievement, and able to help the student develop policies and practices that help the student to take ownership and responsibility of their own.

Level of Intellectual Performance

To identify respondent's intellectual performance, 10 questions from Carter IQ and Psychometric Test had been adapted in this study. Table 3 shows that more than half of the total respondents, had a poor intellectual performance, receiving a score of 3 or lower (53.7%). 30 of the 108 respondents (27.8%) were able to perform at a medium level, with scores ranging from 4 to 6. Finally, only 20 respondents (18.5%) were able to achieve a high level of performance, scoring between 7 and 10 on the scale.

Table 3. Level of Intellectual Performance

Performance	Frequency	Percentage (%)	Range Score
Low	58	53.7	0-3
Medium	30	27.8	4-6
High	20	18.5	7-10
Total	108	100	

The results of the analysis indicated that most students were only able to receive scores only at a low level. According to Croizet et al. (2004) studies on stereotypes had repeatedly demonstrated intellectual performance in the social context is highly sensitive in which how the test is administered. Croizet also found out that individuals that are targeted by a reputation of intellectual inferiority tend to score lower than others. This indicates that there is a multitude of factors that can cause students to score lower in a test than their real capabilities include their inferiority and how the test has been administered. Although based on the data analysis the majority of the student has a low level of intellectual performance various factors may affect the results apart of this is their actual capabilities.

Only 18.5% of the students able to score a high level of intellectual performance. There is a multitude of factors that can contribute toward the score collected in this study and student intellectual capabilities are only one of the factors. A study conducted by Barrows, Dunn, and Lloyd (2013) had found out that self-efficacy and test anxiety directly impact one academic success. Therefore, 20 students that score high in intellectual performance not only perform well intellectually but also have good self-control. Therefore, it can be concluded that the level of intellectual performance among high school students across Johor that participated in this study mainly at a low level, followed by, medium level, and a high level.

Influence of Mindset on Intellectual Performance

Table 4 shows the influence of mindset on intellectual performance among high school students across Johor. The results of the multiple regression show that coefficient of determination R^2 at 0.044, meaning mindset only explain 4.4% of the variability of the intellectual performance. The results obtained by fix mindset dimension indicate that there is a negative and non-significant result ($\beta = -0.133$, $p = 0.174$). Therefore, fix mindset did not significantly influence intellectual performance of high school students across Johor. Next, the results in growth mindset show that there is a positive but non-significant result ($\beta = 0.188$, $p = 0.055$). Therefore, the growth mindset also did not significantly influence intellectual performance of high school students across Johor.

Table 4. Influence of Mindset on Intellectual Performance

Model	Intellectual Performance				
	Coefficient of Determination	Regression	B	t	p
R²	0.044				
F		2.417			0.094
Fix Mindset			-0.133	-1.368	0.174
Growth Mindset			0.188	1.940	0.055

The findings of the study demonstrate that both types of mindsets did not significantly influence intellectual performance. According to the findings in Table 4, it is identified that the fix mindset dimension has a negative and non-significant relationship towards the intellectual performance of the students, meanwhile, for the growth mindset dimension, it is identified that there is a positive but non-significant relationship with intellectual performance. The coefficient of determination R^2 indicates that overall mindset only influences the level of intellectual performance by 4.4%.

Results for fix mindset indicate that there is a negative and non-significant relationship with intellectual performance means, the direction of the mindset is moving in the opposite direction. In simpler words, the higher the tendency of one's to have fix mindset, the lower the tendency of one will have high intellectual performance. However, there is no influence found between fix mindset and intellectual performance. Results for growth mindset indicate that there are positive but non-significant relationships with intellectual performance, meaning the direction of the mindset is moving in the same direction. To simplify, the higher the tendency for one's to have a growth mindset the higher the tendency of one will have high intellectual performance. Hence, it can be concluded that mindset did not influence the intellectual performance of high school students across Johor.

These findings did not aligned with the previous research (Broussard, 2004; Glerum, Loyens, Wijnia, & Rikers, 2019; Zeng, Hou, & Peng, 2016). A study conducted by Ronkainen, Kuusisto, and Tirri (2019) also did not support the findings of this research. Similar to Glerum, Loyens, Wijnia, and Rikers (2020) and Ortiz Alvarado, Rodriguez Ontiveros, and Ayala Gaytan (2019) indicate the results recorded are in contrast with results found in this study. After further analysing past research papers one of the likely factors that contribute to the non-alignment in the results is a false growth mindset. According to Dweck (2015), a false growth mindset is acknowledging oneself has a growth mindset but did not really understand it thoroughly. Each individual has their own mixture of fix and growth mindset, and the predominant area varies between one and another (Vermote et al., 2020). This also means the triggering area varies between each individual and work need to be done to understand the triggers. Therefore, a false growth mindset could be one of the factors that contribute towards why majority of the respondents have a growth did not perform well in the intellectual performance assessment. Beyond that according to Yeager and Dweck (2020), mindset theory is a

theory that focuses on response to challenges and feedback and not about academic performance including variance in grades or test scores. To conclude, the theory predicts mindset association towards achievement specifically towards those who are facing challenges.

CONCLUSION

Overall, the study objectives of this research were met with success. This study was able to determine the types of mindsets that high school students in Johor had, as well as the intellectual performance of high school students in Johor and the influence of mindset on intellectual performance. The findings in this research revealed that the majority of students in Johor have a growth mindset, while just a tiny percentage have a fixed mindset. High school students in Johor have a low overall level of intellectual achievement. Finally, there is no evidence of a link between mindset and intellectual performance. As a result, the outcomes of this study may be inferred that mindset did not influence high school students' intellectual performance in Johor.

For further research reference, several recommendations can be made throughout the research that can prevent or mitigate the drawback of this research. Firstly, this research is highly recommended to take place without any intervention of pandemic outbreak, unless the research would like to specify it during a disease outbreak. During the pandemic-free period, the researcher can engage and enlighten the respondents if they need any assistance during the implementation of the research and the assessment period. This also includes standardizing the test administered settings into in-class context settings. This able to widen the locus of control of the researcher in valuing the student's real capabilities. Next, this research is highly recommended to use a mixed-method instead of only a quantitative or only a qualitative method. Although mindset is intangible and varies for each individual, the ideas of self-perception and alignment with the action are what form a mindset. Therefore, using mix method is the best way to measure a person's mindset, both using instruments and through observation.

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