

SATISFACTION of Facility Service Quality, Assessment for Learning, and Student Engagement in Mathematics among Learners in Public High SCHOOLS

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ABSTRACT

This study aimed to determine the influence of satisfaction with facility service quality and assessment for learning on student engagement in mathematics. A quantitative research design using the descriptive-correlational method was employed. The respondents were the Secondary Public School Mathematics Students in Davao City. Adapted questionnaires were used to collect information from participants. Mean and standard deviation were utilized to determine the level of satisfaction of facility service quality, assessment for learning, and student engagement. The Spearman Correlation Coefficient was used to measure the relationship of the variables, while multiple regression analysis was used to determine the influence of the variables with student engagement. Results revealed that the level of satisfaction with the facility service quality is high, indicating that it is often evident. The assessment for learning and student engagement in mathematics was rated very high, implying that it is always evident. The relationship between the three variables further demonstrated that satisfaction with the facility service quality and assessment for learning is significantly related to student engagement in mathematics. Furthermore, satisfaction with facility service quality and the assessment for learning were found to influence student engagement in mathematics significantly.

KEYWORDS: *Education, influencers of mathematics,
descriptive-correlation, Davao City, Philippines*

INTRODUCTION

Student disengagement in mathematics is a familiar problem for teachers

(Bishop & Kalogeropoulos, 2018), and the abstract nature of mathematics is one contributing factor to this problem. Still, more significant factors relate to the pedagogical practices commonly used by teachers and the lack of facilities in the school (Hodges, 2018). A significant concern for the government in Australia is the issue of student disengagement in mathematics, where there is a falling rate of students choosing to participate in higher-level mathematics education. Of particular concern, a recent study in an Australian school in Queensland discovered that students expressed disengagement in mathematics or strong negative feelings towards mathematics at the secondary level. If students show a negative association with mathematics, it is asserted that they are likely to become disengaged quickly and less likely to choose mathematics in tertiary studies (Jorgensen & Larkin, 2018).

Notably, William (2020) averred that assessment for learning (AFL) is one of those expressions used frequently in education but widely used in various circumstances. Effective AFL is centered on evaluating learners' needs as they emerge during the learning process and then react to them. It has been proven to increase student engagement, emphasizing studying for advanced education (Taylor & Parsons, 2011). The AFL is a flexible method of training and education, communicating and comprehending learning goals and accomplishment norms, and helping students demonstrate their learning. This process also includes students in the assessment process and provides insightful feedback that advances their learning covered under the classroom and environment dimensions for AFL used in the study.

Despite the extensive literature cited in this research, only a few studies (Wiliam, 2018) were conducted in Davao City about satisfaction with service facilities and assessments for learning about student engagement in mathematics. Further, most of the literature (Borko & Shaverson, 2016; Boston, 2016) focuses on teachers' instructional practices and their influence on student motivation, not on the satisfaction with facility service qualities as predictors of student engagement in mathematics. Furthermore, some of the studies (Clark, 2018; Boston, 2016) emphasized in literature centered on formative and summative assessments for tertiary students, but not junior high school students. In addition, most of the studies highlighted in the literature focus on student engagement as attributable to other factors like self-confidence, students' learning motivation, and parental support, but not on the satisfaction of students with facility service quality. Following the Engagement Theory of Learning, created by Kearsley and Schneiderman (1999), and the Student Involvement Theory developed by Astin

(1984), this study aimed to determine the influence of satisfaction with facility service quality and assessment for learning on student engagement in mathematics at public high schools in Davao City, Philippines.

METHODS

Research Design

This study utilized a descriptive correlational design to determine whether satisfaction with facility service quality and assessment for learning had a substantial impact on student engagement.

Research Locale

This study was conducted among four out of five clusters of secondary schools in Davao City: Schools A and B are in Clusters 1 and 3, respectively. Both Schools C and D are in Cluster 4. School E is in Cluster 5. Schools A and E have more than 10,000 students, while Schools C and D have fewer than 1,000 students. Schools A, B, and E offer Senior High School programs.

Research Respondents

The respondents of this study were the 290 grade 10 students at the selected schools in Davao City. Multi-stage sampling was used in selecting them. Cluster 2 was excluded upon randomly selecting the cluster. The respondents covered the following clusters: Cluster 1 (School A) with 89 students, Cluster 3 (School B) with 42 students, Cluster 4 (Schools C and D) with 53 students, and Cluster 5 (School E) with 106 students.

Only students from the selected public schools from four clusters of Davao City were included since these schools had a more significant number of junior high school students than the number of students from other secondary schools. The researcher only included the students who are enrolled in mathematics subjects since they are the most qualified students to answer the research instrument.

Research Instruments

The questionnaires used in the study are composed of three parts. Part I focused on satisfaction of facility service quality, which was adapted from Le et al. (2021); Part II deals with assessment for learning, which was adapted from Pat-El et al. (2013); and Part III is centered on student engagement, which was adapted from Hart et al. (2011). The instruments were validated by the panel of experts and were subjected to pilot testing.

The overall Cronbach's alpha is based on the result of pilot testing for satisfaction of facility service quality, assessment for learning, and student engagement, is 0.785 (moderate reliability), 0.888 (high reliability), and 0.937 (very high reliability). The questionnaires are of high internal consistency and therefore are reliable. The 5-point Likert-type was used.

The statistical techniques used to analyze the information obtained from the questionnaires are the mean, standard deviation, Spearman correlation coefficient, and regression analysis.

Data Collection

The researcher first sought authorization to carry out the study by requesting a permission letter from the dean of the graduate school. Upon approval of the permission letter, the researcher secured ethical clearance from the UIC REC before administering the instruments to the study's target respondents. After securing permission from the dean and receiving ethical clearance from the UIC REC, the researcher forwarded the letters and other documents to the Schools Division Superintendent of Davao City to formally request permission to conduct the study. The target respondents were officially informed about their participation in the study. The study's objectives and their essential role in the research were explained to them. It was also emphasized that their participation was not compulsory. The respondents' responses were tallied based on the study's objectives and forwarded to the statistician for data treatment.

RESULTS

Correlation between Variables

Table 1

Correlation between Variables

Independent Variables	Student Engagement		
	Spearman's rho	p-value	Remarks
Satisfaction of Facility Service Quality	.406	.001	Significant
Assessment for Learning	.627	.001	Significant

The satisfaction of facility service quality is significantly correlated with student engagement ($p < .05$). As shown in Table 1, the value of Spearman's rho is 0.406, which suggests a monotonic relationship between satisfaction of

facility service quality and student engagement. The positive value indicates that as satisfaction with facility service quality increases, student engagement tends to increase as well.

The findings are consistent with the study by Ready et al. (2017), which found that schools equipped with essential service facilities and effective teaching staff tend to have more motivated, dedicated, and successful students who actively engage in learning tasks. Similarly, Alridge and Rowley (2017) reported that students tend to show higher levels of engagement and interest in schools that offer a satisfactory quality, standardized learning environment, faculty support, and suitable learning facilities and infrastructure. Additionally, according to Dick and Basu (2018), well-managed, up-to-date libraries, security systems, medical facilities, classroom decorations, and multimedia and seating arrangements play a crucial role in student engagement. Administrative staff cooperation also plays a vital role in providing students with educational support and development.

The findings also confirm the engagement theory of learning by Kearsley and Schneiderman (1999), emphasizing the significant relationship between satisfaction with facility service quality and student engagement. The result suggests that adequate service facilities and learning assessments can enhance student engagement and motivation to learn. Students with access to interactive assessments and sufficient service facilities are more likely to be actively engaged in their learning.

Also, the results have revealed a significant, positive, monotonic relationship between assessment for learning and student engagement ($r_s = .627$, $p < .05$). This implies that as assessment for learning is implemented, student engagement tends to increase as well. The positive correlation between assessment for learning and student engagement suggests that when teachers employ assessment practices that promote active involvement, provide meaningful feedback, and encourage self-assessment, students are more likely to be engaged in their learning. In addition, effective assessment-for-learning strategies not only help students understand their progress and areas for improvement but also foster a sense of ownership and autonomy over their learning, leading to increased engagement and deeper learning outcomes.

The results corroborate research demonstrating the significant impact of assessment for learning on student engagement and success. Regular feedback

exchanges with students about their learning positively affected their engagement and achievement in the classroom (Taras, 2018). Furthermore, according to Barrett (2019), an assessment for learning approach that emphasizes personal growth over just completing learning objectives can increase student engagement.

A study by Norberg et al. (2017) found that assessments incorporating elements of social interaction, reflection, higher-order thinking, problem-solving, and collaborative learning enhance student engagement. The researchers also observed that students are more likely to be actively engaged in their learning when they receive constructive feedback from teachers regarding their performance, and when teachers explain students' difficulties as they engage in learning tasks, allowing them to reflect on their performance. Furthermore, teachers who provide constructive feedback and support students in reflecting on their performance are more likely to foster an environment that promotes active student engagement in the learning process.

Further, the findings align with Astin's (1984) student involvement theory, which posits that student development outcomes are influenced by students' behaviors, subject matter, instructional strategies, and the learning environment in which they are situated. The theory highlights the importance of creating a conducive learning environment that includes adequate service facilities and high-quality assessments for learning. In addition, teachers providing feedback on students' work, monitoring class discussions, asking questions, and examining learners' work-in-progress are instrumental in promoting student engagement. Thus, the study underscores the crucial role of service facilities and assessments for learning in fostering student engagement in various learning tasks. Adequate service facilities and high-quality assessments, including effective feedback, monitoring, and teacher guidance, are instrumental in promoting a conducive learning environment that fosters student engagement.

Significant Influencers of Student Engagement

The data in Table 2 demonstrate that satisfaction of facility service quality and assessment for learning on student engagement in mathematics are significant influencers of student engagement ($p < .050$). The results suggest that facility service quality and assessment for learning are important factors in promoting student engagement in mathematics. The beta coefficients indicate the magnitude of the effect of each factor on student engagement. The beta

coefficient for facility service quality suggests that a one-unit increase in satisfaction with facility service quality is associated with a 0.040 increase in student engagement. However, this effect may still be significant, especially considering the cumulative effect of multiple factors that can influence student engagement. On the other hand, the beta coefficient for assessment for learning suggests that a one-unit increase in assessment for learning is associated with a 0.685 increase in student engagement. This indicates that assessment for learning is a highly influential factor in promoting student engagement in mathematics. This implies that both facility service quality and assessment for learning are very important in promoting student engagement, with a greater emphasis on the latter.

Table 2

Significant Influencers in Student Engagement in Mathematics

Variables	Student Engagement			
	β	t	p-value	Remarks
Satisfaction of Facility Service Quality	0.040	0.791	0.001	Significant
Assessment for Learning	0.685	13.558	0.001	Significant

Holistic Model

R ²	0.502			
F-value	144.69			
P-value	0.001			
Remarks	Significant			

**Significant at $p < 0.05$*

The results, as shown in the Table 2 suggest that the combination of satisfaction with facility service quality and assessment for learning has a significant impact on student engagement in mathematics, as indicated by the computed R-square of 0.502 and F-ratio of 144 ($p < .05$). This means that 50.2 percent of the variation in student engagement can be explained by satisfaction with facility service quality and assessment for learning. However, it also suggests that other factors contribute to the remaining 49.8 percent of the variation in student engagement, which were not examined in the study. These could be external or internal factors that were not included in the research or were not measured.

Since the assessment for learning with a higher beta coefficient is more influential toward student engagement, this finding highlights the importance of assessment for learning in fostering student engagement. This means there is a need to develop more policy implications towards assessment for learning compared to the satisfaction of facility service quality. When teachers employ assessment practices that involve students actively in their own learning, provide constructive feedback, and encourage self-assessment, students tend to be more engaged in their academic pursuits. Furthermore, this finding has practical implications for educators and policymakers, emphasizing the significance of incorporating effective assessment practices to enhance student engagement and improve overall learning outcomes.

Teachers and school administrators may improve student engagement by focusing on providing quality facility services and implementing effective assessment strategies that encourage active student participation and reflection. Furthermore, the findings highlighted the need to address additional factors that may affect student engagement in mathematics, such as individual differences, motivation, and contextual factors not included in the study.

This finding is consistent with the study by Jones et al. (2017), which states that, no matter how well assessment practices are used in classrooms, they are not enough when there is no space to rearrange seating. Providing large classrooms is better suited to creating appropriate learning environments for students and is linked to higher levels of learning and engagement.

CONCLUSION

A significant positive relationship exists between satisfaction with facility service quality and student engagement in mathematics, and the study has found that satisfaction with facility service quality and assessment for learning are important factors that significantly influence student engagement in mathematics.

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