



Formative Assessment Practices and Student Engagement in Combined Science Learning among Adventist Secondary Schools in Mashonaland East, Zimbabwe

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Abstract

This study sought to establish the relation between formative assessment practices and students' engagement in the Combined Science subject among the Adventist Secondary Schools in Mashonaland East, Zimbabwe. The study used the quantitative methodology and the descriptive-correlational design, with a sample of 197 out of 250 Form Four students from three selected schools. Data collection was done using a closed ended questionnaire with 25 items. Data processing involved descriptive statistics and regression analysis. The study established that Formative Assessment becomes effective when teachers provide comprehensive, timely and constructive feedback that reflect students' actual performance. Assessment feedback emerged as a critical factor influencing learning engagement, supported by the quality of assessment practices. Therefore, the study recommends that school systems in Mashonaland East Province strengthen the quality, consistency and effectiveness of assessment practices to enhance students' engagement in Combined Science learning.

Keywords: Formative assessment; students' engagement; feedback; Combined Science; performance.

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Introduction

Student engagement is closely associated with students' learning outcomes, as it influences their persistence in learning and their likelihood of successfully completing their programs and graduating (Kuh, 2009). Research-based evidence further indicates that assessment practices play an important role in shaping students' learning outcomes and their engagement in the learning process. In South Africa, Ramollo and Kanjee (2023) reported significant improvements in students' academic performance associated with effective

assessment practices. Similarly, the Zimbabwe Ministry of Primary and Secondary Education (2024) emphasized the importance of ensuring that assessments accurately and reliably measure learners' achievement. These findings highlight the important role of effective assessment practices in supporting both learning outcomes and student engagement. Against this background, this study sought to establish the relationship between formative assessment practices and students' engagement in learning in Zimbabwean secondary schools.

Previous studies have linked student engagement to a variety of educational and contextual factors. For instance, Istijanto and Nathalie (2024) examined engagement in relation to learning effectiveness, social interaction, campus life experience, physical wellness, technological learning, and green attitudes. Similarly, Ngussa et al. (2020) investigated the relationship among learning engagement, mental health, and Facebook use in Indonesia and established that mental health positively influenced students' engagement, while Facebook use contributed to improved mental health. Ngussa and Twarira (2020) examined the relationship between food provision and learning engagement among secondary school students in Arusha City, Tanzania, and established a positive relationship between the two variables. Consequently, they recommended that school administrators advocate for school feeding programs as a means of enhancing learners' engagement in their studies. Collectively, these findings demonstrate that student engagement is not static but is influenced by a range of personal, institutional and contextual factors that warrant empirical investigation.

Student engagement has attracted considerable scholarly attention because of its potential to address declining student motivation and academic achievement (Fredricks et al., 2004). Newman (1992) conceptualized engagement in terms of students' psychological investment in and effort toward learning. Similarly, Snijders et al. (2021) described student engagement as a complex and multidimensional construct encompassing cognitive, emotional and behavioural dimensions that are important for improved learning outcomes. Wang et al. (2024) further associated engagement with students' involvement in their studies and broader educational experiences. Reeve et al. (2004), on the other hand, conceptualized engagement as the behavioural quality of an individual's active involvement in a task. From an instructional perspective, Appleton et al. (2008) associated engagement with the investment students make in the learning process, thereby enhancing the meaningfulness and effectiveness of instructional strategies.

Engagement can be understood as students' academic, behavioural, cognitive and affective involvement in the teaching and learning process (Reschly et al., 2020). Its multidimensional nature makes it an important consideration in efforts to improve learning outcomes. According to Aliabadi

and Weisi (2023), teachers need to employ a variety of instructional strategies to promote learner engagement because engagement is fundamental to effective learning. Similarly, Batizani and Mpundu (2024) observed that students are major stakeholders in educational institutions and that their engagement, experiences and perspectives constitute important indicators in the pursuit of academic excellence. Furthermore, students' emotional and intellectual connections with school and learning can enhance their educational experiences and contribute to successful school completion (Reschly et al., 2020).

Given the importance of engagement, educators need to understand the factors that influence learners' active participation in educational activities (Lu & Mohd, 2024). Such understanding can facilitate the adoption of personalized instructional approaches that respond to learners' diverse needs. Tomlinson (2017) argues that tailoring instruction to individual learner needs can foster deeper engagement. Similarly, Gay (2018) emphasizes the importance of recognizing differences in how students learn and respond to instruction. However, efforts to address individual learning needs may be constrained by factors, such as large class sizes, inadequate teacher support, truancy, restrictive government policies, limited resources and rigid curricula. Such contextual conditions may consequently affect the extent to which learners participate actively in classroom activities.

Teacher–student relationships also constitute an important determinant of engagement. Roorda et al. (2011) examined how teacher–student relationships characterized by warmth, support and affection influence student engagement. Their findings indicated that positive and supportive teacher–student relationships were associated with higher levels of behavioural, emotional and cognitive engagement. When students perceive that their teachers care about and value them, they are more likely to participate actively in classroom activities, develop greater interest in learning, and achieve better academic outcomes. These findings underscore the importance of supportive classroom environments in promoting meaningful student participation.

Assessment and feedback constitute another important dimension of the learning environment that may influence engagement. According to

Wisniewski et al. (2020), timely and specific feedback helps learners understand their progress and identify areas requiring improvement. Assessment and engagement may operate reciprocally. Engaged learners may be more willing to participate in assessment activities while effective assessment and feedback can enhance engagement by providing learners with clarity regarding their progress and direction for improvement. Identifying factors that influence student engagement can consequently help educators strengthen students' motivation and participation in learning (Barua et al., 2018). These factors interact with individual characteristics, contextual conditions and technological integration (Hiver et al., 2021), highlighting the need for inclusive and effective learning environments that promote motivation, academic achievement and holistic development.

Despite growing recognition of student engagement as an important contributor to academic achievement (Kuh, 2009), limited empirical evidence exists regarding how formative assessment practices influence students' engagement within the Zimbabwean secondary school context. Existing studies have largely examined assessment in relation to academic performance and the quality of learning outcomes. For example, Ramollo and Kanjee (2023) established that effective assessment was associated with improved student performance in South Africa while the Zimbabwe Ministry of Primary and Secondary Education (2024) emphasized the importance of valid and reliable assessment practices. At the same time, existing literature has extensively examined the nature and dimensions of student engagement, including its behavioural, emotional, cognitive and affective components (Fredricks et al., 2004; Reschly et al., 2020; Snijders et al., 2021).

Furthermore, previous studies have investigated factors, such as teacher–student relationships, motivation, feedback, instructional strategies, mental health, food provision and other contextual variables as correlates or predictors of student engagement (Ngussa et al., 2020; Ngussa & Twarira, 2020; Roorda et al., 2011; Wisniewski et al., 2020). Comparatively, less attention has been given to the relationship between specific formative assessment practices and students' engagement, particularly in Zimbabwean secondary schools. This gap is important because contextual conditions, such as large class sizes, limited instructional resources, rigid

curricula and inadequate teacher support may influence both the implementation of formative assessment and students' engagement in learning. Consequently, there is a need for context-specific empirical evidence demonstrating whether and how formative assessment practices are associated with students' engagement in Zimbabwean secondary schools. Such evidence may inform classroom practice and educational policy by identifying assessment practices that promote students' active participation in learning. Therefore, this study sought to establish the relationship between formative assessment practices and students' engagement in Combined Science learning in Zimbabwean secondary schools. The study was guided by the following objectives, which in the findings, were turned into guiding research questions:

1. To establish the level of students' engagement in Combined Sciences Learning among selected Adventist Secondary Schools in Zimbabwe.
2. To determine students' perception about the teachers' assessment quality in the Combined Sciences subject among selected Adventist Secondary Schools in Zimbabwe.
3. To establish students' perception about teachers' assessment feedback trends.
4. To unveil the relationship between assessment practices and students' engagement in learning.

The findings in this study inform teachers about best assessment practices, which will enhance their teaching professionalism. By gaining insights into how different assessment approaches influence students' engagement, teachers will be able to make informed decisions on how to perform the assessment practices. The improved assessment practices will in turn motivate students to actively participate in the teaching and learning process, thereby increasing chances for their enhanced performance and subsequent academic achievement.

Literature Review

This section presents the reviewed literature regarding assessment practices and students' engagement.

Assessment and Students' Engagement

Existing literature indicates that effective assessment practices enhance students' level of engagement in learning (Xin et al, 2023). This view is

of paramount importance in that teachers are made aware of how the two variables relate in maximizing learning outcomes. Particularly, literature shows that effective assessment practices encourage students to learn, enhances teachers' methods, provides prompt feedback and identify potential problems within the teaching and learning process (Zou, 2024). Therefore, it is quite essential for teachers to get acquainted with appropriate assessment practices for the teaching and learning transaction to be both meaningful and productive.

Assessment practices have always been central part in educational practices (Amua-Sekyi, 2016). Educational practices taking place in classrooms can be meaningful only if they are geared toward enhancing the learners' academic achievement, which is measures through assessment. In response, researchers have widely investigated on the association between learning procedures and assessment practices (Fischer et al. 2023; Schellekens et al., 2021). For instance, Fischer et al. (2023) explored the relationship between summative assessment and evaluative judgement by analysing the practices of a group of physics students. The findings show that summative assessment plays a significant role in prompting students' engagement in Physics, leaving a contextual gap in the Combined Science subject in Zimbabwe. This initiative is supported by the fact that it is important to establish the role of educational assessment on learning outcomes for teachers to make informed decisions when dealing with assessment. Appropriate assessment helps students to learn meaningfully and increase their engagement (Lamprianou & Athanasou, 2009).

Reviewed literature has operationalized the meaning of assessment practices. For instance, the practices have been referred to as approaches for teachers to determine learning outcomes in the teaching and learning process (Information Resources Management association USA, 2020). This shows how important assessment is not only for teachers to discover the educational trends of their students but also for learners to reflect what they did and project their future learning outcomes.

According to Lamprianou and Athanasou (2009), assessment practices differ depending on the extent to which they assess knowledge, skills or attitudes. This implies that before conducting an assessment, teachers need to be aware of the learning domain they intend to measure. For instance, multiple

choice tests and short answer questions might assess students' knowledge of a historical event while essays may evaluate deeper understanding of the causes and effects of the historical event (Brown & Harris, 2016). This definition shows the importance of teachers using various types of assessment to determine the students' wholistic progress cognitively, affectively or in the context of psychomotor development. Skill based assessments like practical examinations, for instance, evaluate learner's ability to apply knowledge in a real world or practical context (William, 2011). Attitudinal assessments like surveys or interviews measure learners' motivation and disposition towards learning (Schunk & DiBenedetto, 2020). Therefore, when teachers use only one type of assessment at the expense of the other, learning outcomes are likely to give a superficial academic achievement at the cost of the undermined types of assessment practices.

Although school systems use various assessment aspects, such as formative, summative and diagnostic assessment to evaluate students' progress, this study dealt with the role of formative assessment in enhancing students' engagement in learning. Formative assessment practices are ongoing evaluation activities, used to monitor students' learning and provide feedback during the instructional process. According to Black and William (2018), formative assessment is any assessment for which the priority is to serve the purpose of promoting students' learning. Heritage (2021) considers formative assessment as a systematic approach to gathering evidence and use it to make decisions about the next steps to take in instruction at the same level of study. On the other hand, William (2011) defined formative assessment as a process used by teachers and students during instruction to provide feedback so as to adjust ongoing teaching and learning processes and improve students' achievement. Therefore, one of the key advantages of formative assessment is that it not only reveals what students have been able to accomplish, but also helps both teachers and learners make necessary adjustments aimed at improving future learning outcomes at the current and subsequent levels of study.

Formative assessment encompasses a wide variety of strategies, which include but not limited to activities like homework, in class activities, assignments, class discussions, peer review and quizzes (Carney et al. 2022). Tests and presentations

can be formative assessment only if they are used to gauge students' understanding and provide immediate feedback. For instance, pre-tests are administered to determine baseline knowledge (Gronlund, 2004) while skill gap analysis is administered to identify specific areas where learners need improvement (Sadler, 1989). Portfolios, on the other hand, constitute another formative assessment method (Birenbaum, 2016). Therefore, teachers need to be creative in utilizing various formative assessment types for maximized learning outcomes to be realized.

Significance of Students' Engagement

Combined Science is an essential subject in Zimbabwean secondary education system. As of 2025, Form 1 to Form 4 secondary school learners in the country are to study a minimum of five compulsory subjects. Combined Science is one of such subjects (Zimbabwe Ministry of Primary and Secondary Education, 2024). Therefore, the subject is not optional but compulsory for every learner. Consequently, ineffective assessment practices in Combined Science may negatively affect a large number of secondary school learners across the country. There is, therefore, a need for researchers to investigate assessment practices in connection with students' engagement in Combined Science in order to unveil potential challenges for researchers to address. Therefore, this study endeavored to fill the gap since none of the reviewed studies attempted to unveil the link between assessment practices and learners' engagement in the Combined Science in Zimbabwe.

Furthermore, the choice of the Combined Science subject is due to the international trends, where science education is prioritized to boost innovation and economic growth (OECD, 2019). Combined Science provides a foundation for students to pursue careers in science, technology, engineering and mathematics (STEM), which are key factors for the country's industrialization and modernization. Furthermore, Zimbabwe's national development agenda, as outlined in the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET), emphasizes the importance of science and technology in driving the economic growth (Government of Zimbabwe, 2013).

Like in any other academic subject, engagement in Combined Science is pivotal in enhancing performance as it encourages active participation and deeper understanding of concepts. According to

Freeman et al. (2014), active learning strategies improve students' performance in STEM subjects by promoting critical thinking and retention of knowledge. Combined Science often requires collaborative learning as students perform projects, experiments or group work together. According to Johnson et al. (2014), collaborative learning in science education improves problem solving skills and enhances academic performance. Critical thinking and problem-solving skills are also improved through engagement in science. Therefore, linking assessment practices with learning engagement in Combined Science is ideal.

Methodology

Design

This study employed the quantitative research approach. According to Lodico et al. (2006), quantitative research summarizes results numerically. It uses numbers rather than words in data analysis through descriptive or inferential statistics. Particularly, this study used the descriptive-correlational design to describe formative assessment practices and engagement of learners while establishing the possible relationship between the two variables. This methodological approach is in line with what Zikmund et al. (2013) maintains that descriptive research is appropriate in describing characteristics of objects, people, groups, organizations or environments. The correlational aspect of the study followed what Cohen et al. (2000) considers necessary, establishing the existing relationship between variables for informed decisions.

Population and Sampling

The study focused on the Combined Science subject in Adventist secondary schools located in Mashonaland East Province, Zimbabwe. The subject was selected because of its critical role in Zimbabwe's new Heritage-Based Curriculum (2024–2030), which requires all secondary school learners to study Combined Science as a means of promoting scientific literacy and preparing learners for careers in STEM-related fields (Ministry of Primary and Secondary Education, 2024a; Ministry of Primary and Secondary Education, 2024b). The researchers selected three out of four Adventist secondary schools in the study area through simple random sampling. This was accomplished by writing the names of the four schools on small pieces of paper and randomly selecting three schools. The selected schools, coded as School A, School B and School C,

had student populations of 88, 143 and 19, respectively, giving a total population of 250 students in the study area.

Sample size determination was guided by Cohen et al. (2000), who argue that although there is no universally correct sample size for quantitative studies, a minimum of 30 respondents may be acceptable when probability sampling procedures are used to ensure adequate representation of the population. Based on this guidance, the researchers distributed questionnaires to 200 students, representing 80% of the target population. They employed the systematic sampling procedure in selecting the actual respondents, whereby students were chosen at predetermined intervals from each subpopulation until the required sample size was attained. Three questionnaire sheets were spoiled and, therefore, excluded from the study sample. Consequently, 197 completed questionnaire sheets were retained and used for data analysis.

Source of Data

The study used a four-point Likert scale questionnaire with 25 closed-ended items as data source in three sections: engagement in learning, assessment quality and assessment feedback. While the Likert scale was denoted 1=strongly disagree, 2=disagree, 3=Agree and 4=Strongly Agree, the mean score was interpreted as follows: 1.00-1.49- strongly disagree; 1.50-2.49= disagree; 2.50-3.49=agree and 3.50-4.00= strongly agree.

Validity and Reliability

Content validity of the questionnaire was ensured through expert evaluation by a course facilitator, as this study was part of a PhD Module requirements. The expert closely supervised the construction of the questionnaire and provided inputs for improvement. In Table 1, the reliability test yielded the Cronbach's Alpha of .880 for engagement, .841 for Assessment Quality and .891 for Assessment Feedback.

Table 1: Reliability Test Results

SN	Variable	Items	Cronbach's Alpha
1	Engagement	10	.880
2	Quality of Assessment	5	.841
3	Feedback	10	.891

Statistical Treatment of Data

Data analysis involved descriptive and inferential statistics. The descriptive statistics part established the perception of the respondents regarding students' engagement in learning, teachers' assessment quality and assessment feedback in the first three research questions. The inferential statistics, in terms of linear regression analysis analysed the fourth research question about the effect of assessment quality and assessment feedback on the engagement of students in the teaching and learning process.

Ethical Considerations

The study adhered to ethical requirements before venturing into the field for data collection. Since the study was conducted as part of a PhD course requirement, the Department of Graduate Studies at Rusangu University reviewed the questionnaire alongside the study concept note and granted approval for data collection. Thereafter, the Head of Graduate Studies issued an introductory letter to the Education Director of the Zimbabwe East Union Conference, who authorized the researchers to proceed with data collection in collaboration with the local conference education director and school leaders. Participation in the study was voluntary,

and respondents consented willingly to take part. The researchers further ensured anonymity and confidentiality in order to protect the identity and privacy of the respondents.

Results and Discussion

This section presents the findings and discussions of the results. It was guided by specific research questions, derived from the study's objectives as follows:

Research Question 1: What is the level of students' engagement in Combined Sciences Learning among Adventist Secondary Schools in Mashonaland, Zimbabwe?

This research question established students' engagement in learning through descriptive statistics, in terms of mean scores and standard deviations as seen in Table 2. The level of students' engagement was determined through the following mean score interpretation: 1.00-1.49- strongly disagree (no engagement); 1.50-2.49= disagree (limited engagement); 2.50-3.49=agree (high engagement); 3.50-4.00= strongly agree (very high engagement). The overall mean score of 2.9528 is within the category of high engagement (2.50-3.49),

implying students highly engaged in the learning process. The overall standard deviation of .58017 signifies low level of dispersion of responses from the overall mean, implying that most respondents

provided responses that are close to the mean score, showing a reasonable degree of consistence. The specific mean scores in Table 2 range between 2.49 and 3.50, still signifying high engagement.

Table 2: Students' Engagement in Combined Science Learning

SN	Engagement in Learning Items	Mean	Std. Dev.	Mean Interpretation
1	My teacher provides opportunity to actively participate in class	3.2359	.75008	High engagement
2	I feel comfortable to stay in class during the Combined Science period	3.1289	.75419	High engagement
3	The teacher engages me in various learning activities	3.0564	.74743	High engagement
4	The Combined Science class is interesting	2.9694	.77729	High engagement
5	I pay undivided attention to what takes place in class	2.9641	.84569	High engagement
6	My teacher uses attractive teaching methods	2.8763	.87282	High engagement
7	It is easy to concentrate during the teaching-learning session	2.8756	.87505	High engagement
8	My mind concentrates without interference from outdoor activities	2.8454	.92002	High engagement
9	Combined Science class has discussion groups	2.8205	.92702	High engagement
10	I actively participate in discussion groups	2.7990	1.00558	High engagement
OVERALL ENGAGEMENT		2.9528	.58017	HIGH ENGAGEMENT

Table 3: Perception of Students about Assessment Quality

SN	Engagement in Learning Items	Mean	Std. Dev.	Mean Interpretation
1	Combined Sciences teachers' comments reflect the real performance	3.2000	.80334	High Quality
2	My Combined Science teacher's assessment is fair	3.1399	.80112	High Quality
3	Combined Science teacher's assessment considers the covered areas	3.1077	.78234	High Quality
4	The comments are comprehensible/ Easy to understand	3.0612	.84509	High Quality
5	Combined Science teachers provide learning goals at the beginning	2.9692	.87877	High Quality
QUALITY		3.0931	.63746	HIGH QUALITY

For instance, the students agreed with statements about teachers providing opportunities for the learners to participate, feeling comfortable to stay in class, engagement in various classroom activities, the Combined Science being interesting, paying undivided attention in the classroom and attractive teaching methods. Students further were in agreement with the statements about easiness to concentrate during classroom sessions, presence of discussion groups and active participation in the discussion groups. Student engagement provides a sense of belonging, which enhances retention, critical thinking and overall academic achievement (Pokorny et al, 2017; Hariyato, 2021). Therefore, the level of students' engagement in learning was high, which would guarantee students' success in their academic journey.

Research Question 2: What is the students' perception about formative assessment quality in Adventist Secondary Schools in Mashonaland, Zimbabwe?

This research question established the perception of students regarding formative assessment quality. This task was accomplished by running descriptive statistics in terms of mean scores and standard deviations as seen in Table 3. The formative assessment quality was determined through the

following mean score interpretation: 1.00-1.49= strongly disagree (very poor quality); 1.50-2.49= disagree (poor quality); 2.50-3.49=agree (high quality); 3.50-4.00= strongly agree (very high quality). The overall mean score of 3.0931 is within the category of high quality (2.50-3.49), implying students highly appreciated the quality of formative assessment. The overall standard deviation of .63746 signifies low level of dispersion of responses from the overall mean, implying that most respondents provided responses that are close to the mean score, showing a reasonable degree of consistence.

For instance, the students were in agreement with the statements about the teachers' comments reflecting the real performance, the assessments being fair, the assessments considering the covered areas, teachers' comments being comprehensive and teachers' provision of learning goals at the beginning of the periods. These findings indicate that students were satisfied by the quality of formative assessment. Empirical evidence shows that effective assessment practices encourage students to learn, enhance teachers' methods, provide prompt feedback and identify potential problems within the teaching process (Zou et al., 2024). In addition, quality assessment help students to learn meaningfully and improve their

engagement in classroom activities (Lamprianou & Athanasou, 2009).

Research Question 3: What is the students' perception about formative assessment feedback trends?

This research question established the perception of students regarding assessment feedback trends. This task was accomplished by running descriptive statistics in terms of mean scores and standard deviations as seen in Table 4. The assessment feedback trends were determined through the following mean score interpretation: 1.00-1.49-

strongly disagree (very poor feedback); 1.50-2.49= disagree (poor feedback); 2.50-3.49=agree (good feedback); 3.50-4.00= strongly agree (very good feedback). The overall mean score of 3.0863 is within the category of good feedback trends (2.50-3.49), implying students appreciated the quality of formative assessment feedback. The overall standard deviation of .56371 signifies low level of dispersion of responses from the overall mean, implying that most respondents provided responses that are close to the mean score, appreciating the teachers' assessment feedback.

Table 4: Perception of Students about Feedback Modalities

SN	Engagement in Learning Items	Mean	Std. Dev.	Mean Interpretation
1	I am free to approach my teacher for feedback clarification	3.2500	.85001	Good Feedback Trends
2	Combined Sciences teachers devote time for corrections in class	3.1969	.81176	Good Feedback Trends
3	Combined Sciences teachers provide feedback before the next topic	3.1804	.77086	Good Feedback Trends
4	Combined Science teacher provides oral feedback during class time	3.1667	.74027	Good Feedback Trends
5	Combined Sciences teachers' feedback is self-explanatory	3.0937	.86319	Good Feedback Trends
6	The teacher's feedback / Comments suggest what to do	3.0876	.73938	Good Feedback Trends
7	Combined Sciences teachers return assessment feedback on time	3.0359	.76235	Good Feedback Trends
8	Combined Sciences teachers provide written comments	3.0258	.82346	Good Feedback Trends
9	Combined Sciences teacher asks practical questions in class sessions	2.9534	.84957	Good Feedback Trends
10	Combined Sciences teacher allocate time for feedback in class	2.8821	.79394	Good Feedback Trends
FEEDBACK		3.0863	.56371	GOOD FEEDBACK

Specifically, the students were in agreement with the statements about freedom to approach teachers for feedback, teachers' devotion of time for correction, teachers' provision of feedback before the next topic, provision of feedback during the class time and feedback being self-explanatory. The students were further in agreement with the facts that feedback suggested what students should do and that feedback came on time. They also agreed about provision of written feedback, existence of oral questions during the teaching-learning process and appropriate allocation of feedback time in class sessions. All these findings show that the quality of teachers' feedback was good in the eye of the learners. These findings are similar to what Wisniewski et al (2020) established that timely and specific feedback helps learners to understand both their progress and the areas for improvement.

Research Question 4: Is there a significant relationship between assessment practices and students' engagement in learning?

This research question sought to establish the relationship between assessment practices and students' engagement in learning. The research question called for testing of the following null hypothesis, which was tested using the regression analysis in Table 5 to 7.

A collinearity test was conducted in Table 5, where the tolerance value of .394 was above .10. Furthermore, the VIF of 2.537 was below 10, indicating no multicollinearity issue. Therefore, both variables were suitable for inclusion in the regression model.

Table 5: Regression Coefficients and Collinearity Statistics

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	.639	.165		3.878	.000		
Assessment Quality	.217	.073	.238	2.972	.003	.394	2.537
Assessment Feedback	.532	.083	.516	6.447	.000	.394	2.537

a. Dependent Variable: Engagement

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.716a	.513	.508	.40783

a. Predictors: (Constant), Assessment Feedback, Assessment Quality

Table 7: ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.852	2	16.926	101.768	.000 ^b
	Residual	32.100	193	.166		
	Total	65.952	195			

a. Dependent Variable: Engagement

b. Predictors: (Constant), Assessment feedback, Assessment Quality

The research question called for testing of the following null hypothesis: There is no significant relationship between assessment practices and students' engagement in learning.

In Table 6, the results show that both assessment feedback and assessment quality contributed to students' engagement in learning. The multiple correlation coefficient that concerns the relationship between engagement in learning and assessment practices is .716, suggesting a positive and high correlation between the independent and dependent variables.

The adjusted R^2 column in Table 6 shows that the coefficient of multiple determination is .508, which implies that 50.8% of the variance in the students' engagement in learning is accounted for by both assessment feedback and assessment quality. Therefore, the difference (49.2) of the variances in students' engagement is accounted for by other factors outside this model. With the p-values of .000 in Table 7, which is below the critical value (.05), the study rejects the null hypothesis that there is no significant relationship between assessment practices and students' engagement in learning. This implies that the better the assessment practices, the more students engage in the teaching and learning process.

Back to Table 5, although both assessment feedback ($B = .532$, $\beta = .516$, $t = 6.447$, $p < .000$) and assessment quality ($B = .217$, $\beta = .238$, $t = 2.972$, $p = .003$) predicted students' engagement in learning, assessment feedback ($\beta = .516$) yielded a stronger contribution to students' engagement than assessment quality ($\beta = .238$). These findings match with those by Fischer et al (2023), who reported that effective assessment plays a significant role in prompting students' engagement in learning. The findings are also similar with what Ramollo and Kanjee (2023), who established that in South Africa, improvement in students' engagement resulted

from effective assessment practices. Therefore, the findings in this study support the existing body of knowledge that effective assessment practices positively relate with effective students' engagement.

Conclusions and Recommendations

Conclusions

Based on the findings, the study concludes that Formative Assessment become effective when teachers provide comprehensive, timely and constructive feedback that reflects students' actual performance in Combined Sciences. This makes students satisfied with the assessment process and helps them determine areas for improvement. The study further concludes that a significant relationship exists between assessment practices and students' engagement in learning. Particularly, assessment feedback emerges as a critical factor influencing learning engagement, supported by the quality of assessment practices. Therefore, effective assessment practices are essential for enhanced students' engagement in the teaching and learning process to be realized.

Recommendations

Based on the conclusions, the study recommends that school systems in Mashonaland East Province strengthen the quality, consistency and effectiveness of assessment practices in order to enhance students' engagement in learning. Schools and teachers should ensure that assessment feedback accurately reflects learners' actual performance, identifies areas of strength and weakness and provides clear guidance for improvement. The study further recommends that teachers provide timely, comprehensive and learner-cantered feedback that motivates students to actively participate in classroom activities and improve their academic performance. In addition, school administrators should support teachers' continuous professional development in the context

of effective assessment and feedback practices to sustain high-quality learner engagement in Combined Science classrooms.

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