

Assessment Types and Learning Effectiveness among Undergraduates: Evidence from a Sri Lankan Private University

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Abstract

This study examines how formative and summative assessment types influence learning effectiveness among undergraduates in a Sri Lankan private university, with a particular focus on the role of learning fondness. Using a quantitative cross-sectional survey, data were collected from 125 undergraduate students across different academic years and analyzed using correlation, regression, and moderation techniques. The results show that both formative and summative assessments have a significant positive impact on learning effectiveness, with formative assessments having the strongest influence. Learning fondness was found to directly enhance learning effectiveness, highlighting the importance of students' positive attitudes toward learning. While learning fondness slightly influenced the relationship between summative assessments and learning effectiveness, it did not affect the relationship between formative assessments and learning effectiveness. These findings suggest that well-designed formative assessments consistently support effective learning, regardless of students' affective preferences. The study highlights the value of combining continuous formative assessments with meaningful summative evaluations to improve learning outcomes and inform assessment practices in higher education.

Keywords: *Formative assessments, Learning effectiveness, Perceived Effectiveness, Student motivation, Summative assessments.*

1. Introduction

1.1. Background of the study

Assessment practices in higher education have long been recognized as central to promoting meaningful learning, yet debates persist globally regarding their differential impacts on student outcomes. Research trends indicate a growing emphasis on formative assessments, characterized by ongoing feedback and opportunities for learners to monitor and adjust their learning, as an effective driver of deeper engagement, self-regulation, and academic success (e.g., Black & Wiliam, 1998; Carless, 2015). Concurrently, summative assessments remain widely implemented for certification and accountability, though scholars question whether their traditional usage prioritizes performance over learning (Brown, 2004; Taras, 2005). Recent literature also highlights a shift toward understanding how affective and dispositional factors, such as students' attitudes and preferences, shape responses to assessment practices and subsequent learning effectiveness (Gikandi, Morrow & Davis, 2011; Eva & Regehr, 2011).

Despite these advances, significant gaps remain. First, much of the existing research focuses on developed educational contexts, leaving limited insight into how different assessment types operate in emerging and culturally unique settings, such as Sri Lankan private universities, where pedagogical traditions and student expectations may differ substantially. Second, while constructs such as motivation, engagement, and self-efficacy have been explored extensively as determinants of learning outcomes, affective predispositions toward learning itself, termed learning fondness, have received comparatively little empirical attention (Adamson, 2024; Nakioba & Kasagga, 2020). Most studies assume that favorable dispositions automatically translate into engagement or motivation; however, affective preference represents a distinct psychological orientation that can shape how students interpret, respond to, and benefit from assessment practices.

Furthermore, contemporary studies rarely integrate both formative and summative assessment types with dispositional moderators within a single analytical framework, limiting theoretical development and practical generalization. This gap constrains understanding of whether students' positive orientation toward learning amplifies or attenuates the effects of different assessment formats on learning effectiveness.

To address these shortcomings, the present study investigates how perceived effectiveness of formative and summative assessments influences learning effectiveness among undergraduate students in a Sri Lankan private university, and whether learning fondness moderates these relationships. By situating the analysis in a non-Western context, this research contributes contextual depth to assessment scholarship. Methodologically, the study's integration of moderation analysis extends assessment research beyond simple main effects, offering richer empirical insights into how student predispositions intersect with assessment formats. Theoretically, it foregrounds learning fondness as a

conceptually distinct affective factor—beyond motivation and engagement, that can inform more nuanced educational interventions. Practically, the findings have implications for designing balanced assessment strategies that enhance learning outcomes across diverse higher education environments.

1.2. Problem Statement

A study that has been conducted by Ahmed et al. (2019) has demonstrated that a combination of both formative assessments and summative assessments can bring a positive reflective of knowledge in students. Also, it manifests that a teacher would know well about the capacity and standard of students during formative assessments, and it would help the teacher to set up the final exam or the summative tests in an effective way that suits the audience. A research conducted by Ismail et al. (2022) highlights the effects of formative assessments and summative assessments on academic motivation and self-regulation towards studies and learning. However, no study has been conducted to separately assess the impact of different types of formative assessments and summative assessments on learning fondness of students or the learning effectiveness. Therefore, it is suitable to research and explore the impact that different assessment types create in students' learning fondness and learning effectiveness.

1.3. Research Questions

1. What is the impact of Perceived Effectiveness of Formative Assessments on Learning Effectiveness?
2. What is the impact of Perceived Effectiveness of Summative Assessments on Learning Effectiveness?
3. What is the impact of Learning Fondness on Learning Effectiveness?
4. Does Learning Fondness moderate the relationship between Perceived Effectiveness of Summative Assessments and Learning Effectiveness?
5. Does Learning Fondness moderate the relationship between Perceived Effectiveness of Formative Assessments and Learning Effectiveness?

2. Literature Review

2.1. Theoretical framework

2.1.1. Constructivist Learning Theory

Constructivist Learning Theory provides the first theoretical foundation of this study by positing that learners actively construct knowledge through interaction, reflection, and engagement with meaningful learning activities (Piaget, 1972; Vygotsky, 1978). In this perspective, learning is an active and iterative process in which students continually build and refine their understanding based on the stimuli and

feedback they receive. Formative assessments such as quizzes, presentations, class activities, and practice tests align strongly with constructivist principles because they create repeated opportunities for learners to test their knowledge, identify gaps, and adjust their understanding (Channa et al., 2025). The emphasis on continuous feedback and iterative improvement allows students to restructure misconceptions and deepen conceptual understanding. Summative assessments, although more evaluative in nature, also contribute to learning under constructivism by requiring students to integrate cumulative knowledge and demonstrate mastery at the end of an instructional period (Cizek, 2010).

2.1.2. Assessment for Learning (AfL) Theory

Assessment for Learning (AfL) Theory further frames this study by emphasizing that assessment should serve as a tool for improving learning rather than solely measuring it. According to Black and Wiliam (1998, 2006), effective assessment practices focus on providing feedback that helps learners understand their current level of performance, identify areas for improvement, and take actionable steps toward achieving learning goals. Within this framework, formative assessments play a central role because they are designed to support learning during the instructional process by offering continuous, targeted feedback (Mahmood & Ghaleb, 2024). Such feedback reduces the gap between actual and expected performance and assists both instructors and students in adjusting teaching and learning strategies accordingly (Heritage, 2012). AfL theory helps explain why formative assessments in this study had a stronger influence on learning effectiveness compared to summative assessments.

2.1.3. Motivation and Self-Regulated Learning Theory

Motivation and Self-Regulated Learning Theory provides the final theoretical lens for this study by highlighting the role of students' internal motivation, emotional engagement, and self-regulation in shaping academic outcomes. According to Zimmerman (2002), self-regulated learners set goals, monitor their progress, manage their emotions, and adjust their strategies to achieve academic success. Expectancy-Value Theory further suggests that learners are more likely to invest effort in tasks they value and believe they can successfully complete (Eccles & Wigfield, 2002). Learning fondness defined as students' enthusiasm, interest, and positive emotional attachment toward academic work fits within this motivational framework. Previous research indicates that learning fondness enhances engagement, deepens cognitive involvement, and increases persistence (Adamson, 2024; Nakijoba & Kasagga, 2020).

Taken together, these three theories form a cohesive foundation for understanding the relationships examined in this study. Constructivist Learning Theory explains how students build knowledge through active engagement with assessment tasks. Assessment for Learning Theory clarifies the mechanisms through which formative assessments, supported by timely and constructive feedback, enhance learning effectiveness. Motivation and Self-Regulated Learning Theory highlights the role of learning fondness in shaping how assessment experiences translate into meaningful learning outcomes.

Integrating these perspectives, the theoretical model suggests that while both formative and summative assessments influence learning effectiveness, formative assessments exert the strongest impact due to their alignment with active learning and feedback-driven improvement. Summative assessments, meanwhile, contribute meaningfully to learning when supported by students' motivation and emotional readiness (Kwan, 2024). This combined theoretical foundation thus provides a robust underpinning for the conceptual and empirical components of the study.

2.2. Overview of Assessments

Assessments are identified as an essential component in the learning-teaching process. According to Brown (2003), assessments is the mechanism which lecturers use to get a feedback on their teaching and assess the knowledge of students. Brown (2003) also highlighted that teaching shall not be effective without assessments and feedback. Palomba and Banta (1999) defined assessment as “the systematic collection, review, and use of information about educational programs undertaken to improve learning and development” (p.4). In conclusion, assessing student progress entails testing the knowledge that students have acquired during the learning process, advancing knowledge, and receiving feedback on teaching while modifying the existing teaching strategies (Aouine, 2011; Ghahderijani et al., 2021). There are two main types of assessments: formative assessments and summative assessments.

2.3. Formative Assessments

Different universities use variety of methods to assess their students. Among all of that, formative assessments are the most commonly utilized method. To enrich the teaching and learning process, some of the universities adopt digital tools to facilitate formative assessments such as Socrative, moodle, etc. Some of the platforms have self-assessment techniques and they promote student performance while improving the student teacher satisfaction (Cosi et al., 2020). As per the highlights of Carrillo-De-La-Peña et al. (2009), a study conducted in Spain in the Health Science academic stream has concluded that formative assessments tend to result better academic performance. As Fukuda (2022) mentions, formative assessments have tended to bring more self-regulated learning skills within students in a Japanese university. The same study highlights the importance of utilizing formative assessments to achieve course learning and evaluation objectives in a course of study. However, during initial education periods, formative assessments were not widely used and has not been a popular method of assessment among teachers (Vlachopoulos & Makri, 2024). There are a number of graduates who have mentioned the extensive use of formative assessments during their courses of study (Hamodi et al., 2017). As per the findings of Morris et al., (2021), formative assessments play an important role in higher education and the research has bring to attention that formative assessments should be done with a proper constructive feedback which helps to bridge the gap in learning process. However, many

studies have concluded that formative assessments are not the only effective way to test a student and there should be a balance between both formative and summative assessments.

As per the findings of Cosi et al. (2020), formative assessments cannot stand alone to improve learning processes. Also, it is identified that formative assessments cannot be said as more-effective, but need to be utilized with proper feedback for better outcomes (Carrillo-De-La-Peña et al., 2009). According to the results of a research conducted by Fukuda et al. (2022), there have been a considerable set of students who have not yielded the best results out of formative assessments. Additionally, some students and related parties have expressed their distress and displeasure towards formative assessments due to variety of unspecified reasons (Hamodi et al., 2017). However, according to the findings of literature, formative assessments have a significant impact on the higher education of the learning and teaching process and several studies have identified different types of formative assessments.

Multiple Choice Questions (MCQs): Plenty of studies, specifically in the health sciences, have the multiple-choice questions as part of formative assessments in learning process. They are usually conducted by universities in the mid-term or mid-semester and are intended to give immediate feedback for students before the warmth of the exam is over. This practice helps students to learn from the mistakes and mould themselves correctly as per the feedback before the final exams (Carrillo-De-La-Peña et al., 2009).

Short Answer Questions: In addition to the MCQs, another frequent method of assessing learners under formative assessments is short answer questions. It opens up opportunities for students to accurately answer and comprehends subject matters (Carrillo-De-La-Peña et al., 2009).

Quizzes: As a low-stakes formative assessment tool, quizzes are commonly given to the students. They are well known for providing immediate feedback since extensive marking need not happen and even electronic marking is possible. These can enhance the students' learning and help them retain important learning information (Morris et al., 2021).

Apart from these, the following formative assessments are practiced by the concerned academic institution in Sri Lanka as identified by the module descriptors of the degree programmes;

1. MCQ Quiz
2. True and False Questions online based
3. In-class Presentations
4. In-class case studies
5. Structured Reports
6. Role Plays

7. Mid-term test written exam
8. Jigsaw activity
9. Group activities
10. Individual activities

2.4. Summative Assessments

Summative assessments can be considered as one of the most popularly practiced methods of student evaluation used in Sri Lanka almost in almost every school and university (Ismail & Rahul, 2022). Summative assessments are supposed to analyze the students' achievements at the end of a learning period (Harlen, 2005). It is a reflects the actual in-class learnings of the students.

As per the findings of Glazer (as cited by Ismail et al., 2022), "summative assessment is generally applied to give learners a numerical score with limited feedback." (p.2). Cizek (2010) has brought into light that , for the summative assessments to take place, as any evaluation type, it should be at the end of the delivery of a particular subject and after all sessions are completed. Summative assessments are conducted to measure the performance of students to evaluate their overall understanding of a respective subject. An outcome of summative assessments can be a certification, grading, evaluation and a research finding on how effective the learning-teaching processes has been and how effective the curriculum has been along with learning-teaching process (Cizek, 2010).

Black and Wiliam (2006) elaborates that summative assessments can be utilized in instances to evaluate students' overall knowledge and understanding about a subject/discipline, for an example, an evaluation occurs only after the learning has been completed and it gives a proper feedback and information which can summarize the impact of the learning-teaching process. However, formal learning cannot occur at this level, except for incidental learning which can appear when completing certain tasks and projects (Wuest & Fisette, 2012). Generally, the evaluations in summative assessments are usually given by the end of a teaching-learning term for the purpose of assessing student learning (Abeywickrama & Brown, 2010; Liu et al., 2021; Rezai et al., 2022).

Moreover, according to the findings of Woods (2015), summative assessments evaluate the overall effectiveness of lectures, whereas formative assessment help to further enhance them. As per the findnigs of Shepard (2006), a summative assessment should match its prime function of in terms of, documenting what students know and what they can do, but, in case if it is carefully crafted, it should also effectively fulfill a secondary objective of learning support. Brown (2003), brings into attention the point, that the goal of summative assessment is to measure or summarize what students have learned, so this basically entails looking back and taking stock of how well students have reached their goals. However, it does not necessarily clear the way for future improvement. Though the summative

assessment embody an important constituent in students' evaluation, it is not adequate to comprehend the progress they have made or to understand where they are weak in, which simply explains the nature of formative assessment (Pinchok & Brandt, 2009; Vadivel et al., 2021).

The following types of summative assessments are practiced by the concerned university in Sri Lanka as identified by module descriptors:

1. End-term final exam paper with essay questions
2. End-term MCQ paper
3. End-term final exam paper with MCQ and essay questions
4. End-term reflection report

2.5. Perceived Effectiveness of Assessments

Perceived effectiveness refers to students' subjective evaluation of how well different assessment methods support their learning, motivation, and understanding of course content. In higher education, students' perceptions of assessment practices significantly influence their engagement and academic behavior, making it an important construct for evaluating assessment quality. Brown (2003) notes that when students view assessments as fair, transparent, and aligned with learning outcomes, they are more likely to invest effort and demonstrate improved performance. Perceptions of effectiveness are shaped by the extent to which assessments provide clarity, constructive feedback, and opportunities for reflection (Nicol & Macfarlane-Dick, 2006). Formative assessments, in particular, are often perceived as more effective because they offer continuous feedback that helps students identify weaknesses and make timely improvements (Hattie & Timperley, 2007). Summative assessments, while essential for evaluating mastery, are perceived as effective when they accurately measure learning and contribute to students' sense of accomplishment (Harlen, 2005).

Research further suggests that positive perceptions of assessment methods enhance learners' motivation and deepen their engagement with course material (Ismail et al., 2022). In this study, perceived effectiveness plays a central role because it directly influences learning effectiveness and shapes how students respond to both formative and summative assessment systems. Understanding students' perceptions can therefore guide educators in designing assessments that meaningfully support learning..

2.6. Learning Fondness

In simple terms, learning fondness refers to a student's enduring preference and affective inclination toward learning and academic content, rather than a situational state or performance belief. As noted by Adamson (2024), learning fondness is positively associated with student-centred learning

approaches, emphasizing the importance of instructional and assessment practices that align with students' interests and learning preferences. Unlike motivation or engagement, which are often outcomes of instructional design learning fondness functions as an antecedent affective orientation that shapes how students perceive, accept, and respond to different assessment types. When students genuinely like what they learn, assessments are more likely to be perceived as meaningful rather than compulsory, thereby enhancing their learning effectiveness.

Furthermore, learning fondness fosters enthusiasm, sustained involvement, and self-commitment to the learning process, while supporting higher-order skills such as critical thinking and collaboration (Adamson, 2024). Nakioba and Kasagga (2020) further argue that learning fondness creates emotional ties to academic courses, strengthening students' intrinsic connection to learning beyond task completion or performance expectations. This emotional attachment enhances retention, comprehension, and reflective learning, which are central to assessment effectiveness. In the Sri Lankan private university context, where assessment practices are often perceived as examination-driven learning fondness provides a contextually relevant lens to explain why identical assessment types may yield varying learning outcomes among undergraduates. Therefore, positioning learning fondness as a moderating variable offers a meaningful and novel contribution by capturing the affective-cultural dimension through which assessment types influence learning effectiveness..

2.7. Learning Effectiveness

Learning effectiveness has been widely examined within higher education as an indicator of how well students achieve intended learning outcomes, develop relevant competencies, and apply acquired knowledge in academic or real-world contexts. Biggs and Tang (2011) assert that learning effectiveness reflects not only performance on assessments but also deeper cognitive processes such as critical thinking, conceptual understanding, and the transferability of knowledge. In the context of university learning, effective learning is influenced by pedagogical design, assessment methods, learner motivation, and the extent to which learning opportunities encourage active engagement and reflection (Garrison & Cleveland-Innes, 2005). As educational environments increasingly shift toward student-centered learning, understanding the drivers of learning effectiveness has become essential for improving academic outcomes and enhancing teaching practices.

A significant body of literature highlights the role of assessments in shaping learning effectiveness. Nicol and Macfarlane-Dick (2006) argue that formative assessments contribute strongly to learning effectiveness by providing timely, constructive feedback that enables learners to reflect on their performance, identify gaps, and adopt corrective strategies. This process aligns with constructivist principles by promoting active knowledge construction and continuous refinement of understanding (Vygotsky, 1978). Studies have consistently demonstrated that formative assessments, when designed with feedback mechanisms, improve students' metacognitive abilities, enhance retention, and

encourage deeper engagement with learning materials (Hattie & Timperley, 2007). These findings resonate with the empirical results of the present study, which revealed a strong positive relationship between the perceived effectiveness of formative assessments and learning effectiveness.

Summative assessments also contribute to learning effectiveness, though in different ways. Harlen (2005) explains that summative evaluations serve to measure students' mastery of learning outcomes and consolidate learning by requiring the synthesis and application of knowledge. Brown and Glasner (1999) further note that when summative assessments are well-aligned with course objectives and include reflective components, they can reinforce long-term understanding and support curriculum coherence. However, the literature suggests that summative assessments alone are insufficient in fostering continuous learning, emphasizing the importance of balancing summative evaluation with formative opportunities to maximize learning effectiveness.

Motivational and affective factors also play a crucial role in determining learning effectiveness. Pintrich (2003) highlights that students with higher intrinsic motivation demonstrate greater perseverance, employ deeper learning strategies, and achieve stronger academic outcomes. Self-regulated learning theory similarly emphasizes that learners' emotional engagement influences how they process information and respond to academic demands (Zimmerman, 2002). This aligns with the findings of the current study where learning fondness an affective construct reflecting students' interest and enjoyment in learning showed a significant direct relationship with learning effectiveness. Such findings reinforce the notion that cognitive, behavioural, and emotional dimensions collectively shape effective learning.

2.8. Learning Effectiveness

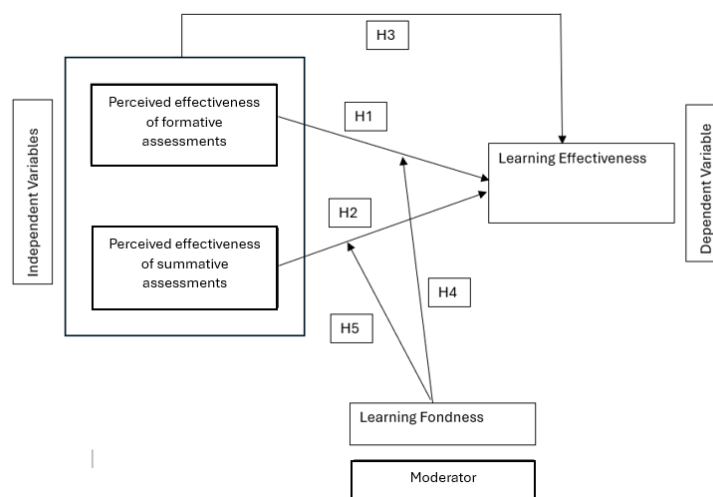


Figure 1: Conceptual Framework

This study seeks to examine how different types of assessments influence university students' learning fondness and overall learning effectiveness. The independent variables in this research are categorized as perceived effectiveness of formative assessments (e.g., quizzes, multiple-choice questions) and perceived effectiveness summative assessments (e.g., examinations, project work). The moderating variable, learning fondness, reflects students' preferences, motivation, and enthusiasm toward learning, which are shaped by the assessment methods they encounter. It serves as a moderator because it is affected by the type of assessment and, in turn, influences learning effectiveness. The dependent variable, learning effectiveness, refers to students' perceived ability to grasp and retain knowledge, typically reflected in academic performance or the development of relevant skills.

For this study hypothesis can be derived as given below, .

H1: There is a significant impact of the Perceived Effectiveness of Formative Assessments on Learning Effectiveness.

H2: There is a significant impact of the Perceived Effectiveness of Summative Assessments on Learning Effectiveness.

H3: Learning Fondness has a significant impact on Learning Effectiveness.

H4: Learning Fondness significantly moderates the relationship between the Perceived Effectiveness of Summative Assessments and Learning Effectiveness.

H5: Learning Fondness significantly moderates the relationship between the Perceived Effectiveness of Formative Assessments and Learning Effectiveness.

3. Methodology

3.1. Research Design and Approach

Guided by a positivist research philosophy (Saunders et al., 2019), this study adopted a quantitative, deductive research approach to examine the relationships between assessment types, learning fondness, and learning effectiveness. The study sought to test hypothesized relationships derived from existing literature using measurable variables and statistical analysis. A mono-method quantitative survey strategy was employed, enabling objective examination of patterns and relationships among the study variables. Data were collected at a single point in time, making the study cross-sectional in nature.

This design is particularly suitable within the Sri Lankan private university context, where assessment practices are relatively structured, lecturer-led, and often examination-oriented. Given existing power

dynamics between lecturers and students, a questionnaire-based approach provided participants with a less intrusive and anonymous means of expressing perceptions, thereby supporting more candid responses.

3.2. Instrument Development and Validation

Data were collected using a structured self-administered questionnaire developed based on established measures from prior studies (see Operationalization Table 1). The instrument comprised Likert-scale items assessing perceived effectiveness of formative and summative assessments, learning fondness, and learning effectiveness. Items were adapted to reflect institutional assessment practices commonly used in Sri Lankan private universities, such as continuous assessments, in-class activities, assignments, mid-semester tests, and final examinations.

To ensure content and face validity, the questionnaire items were reviewed by subject experts in higher education and assessment prior to data collection. A pilot test was conducted with a small group of undergraduate students who were not part of the final sample to assess clarity, wording, and relevance of the items. Minor revisions were made based on feedback. The internal consistency of the constructs was later assessed using Cronbach's alpha, with values meeting accepted thresholds, confirming the reliability of the measurement instrument.

3.3. Population and Sampling

The study population consisted of undergraduate students enrolled in multiple degree programmes across different faculties at the selected private university in Sri Lanka. This setting was chosen due to its diverse student body, standardized assessment structures, and strong emphasis on academic performance and employability outcomes.

A simple random sampling technique was applied to minimize selection bias and ensure representation across academic years and disciplines (Pinchok & Brandt, 2009). Several batches were randomly selected, and students were invited to participate voluntarily. A total of 125 valid responses were obtained. Participation was anonymous, and ethical considerations were observed, particularly given the hierarchical nature of lecturer–student relationships in Sri Lankan higher education institutions.

3.4. Data Collection Procedure

The questionnaire was distributed electronically during the academic semester. Participants were informed of the study's purpose, assured of confidentiality, and advised that their responses would not

affect their academic standing. This approach helped mitigate potential response bias arising from institutional power structures and assessment-related sensitivities.

3.5. Data Analysis

Data analysis was conducted using statistical software. Descriptive statistics were first used to summarize respondent characteristics and variable distributions. Correlation analysis was performed to examine initial relationships among variables, followed by multiple regression analysis to test the direct effects of formative and summative assessments and learning fondness on learning effectiveness.

To test the moderating effect of learning fondness, moderation analysis was conducted using hierarchical regression. Prior to creating interaction terms, the independent variables and the moderator were mean-centered to reduce multicollinearity and improve interpretability of the interaction effects. Interaction terms were then computed and entered into the regression model. Statistical significance was evaluated using standard criteria.

This analytical approach allowed the study to capture not only the direct influence of assessment types but also how students' affective orientation toward learning shapes their responses to different assessment practices within a private university setting.

Table 1: Operationalization

Construct	Statement	Reference
Perceived Assessment Effectiveness	Summative assessments accurately reflect my knowledge of the subject	Harlen et al., 2005
	The feedback from summative assessments is helpful for my future learning	Cizek, 2010
	Summative assessments motivate me to study harder for exams	Black & Wiliam, 2006
	The variety of summative assessment types used in my courses keeps me engaged in learning	Ismail et al., 2022
	I receive constructive feedback from formative assessments that improves my learning	Hwang et al., 2008
	Formative assessments help me understand course material better.	Glazer, 2014
	I believe that formative assessments enhance my critical thinking skills	Morris et al., 2021

	I find formative assessments to be less stressful than summative assessments.	Ahmed et al., 2019
Learning Fondness	I enjoy participating in formative assessments (e.g., quizzes, presentations	Adamson, 2024
	I feel more fond of subjects that utilize diverse assessment methods	Nakijoba & Kasagga, 2020
	My interest in a subject increases when I receive regular formative feedback	Popham, 2008
	I prefer courses that include both formative and summative assessments	Heritage, 2012
	I am more motivated to learn when I can see my progress through formative assessments	Fukuda, 2022
	Summative assessments make me feel anxious about my performance in a course	Wuest & Fisette, 2012
	I feel a sense of accomplishment after completing formative assessments successfully	Carrillo-De-La-Peña et al., 2009
Learning Effectiveness	My overall learning effectiveness improves with regular formative assessments throughout the course	Cosi et al., 2020
	I believe that my learning effectiveness is higher when I receive timely feedback on assignments and tests	Brown, 2003
	The structure of summative assessments helps me prepare better for final evaluations	Liu et al., 2021
	I can apply what I learn from formative assessments to real-world situations effectively	Abeywickrama & Brown, 2010
	My engagement with course material increases when I know there will be formative assessments throughout the semester	Pinchok & Brandt, 2009
	I often reflect on my performance in formative assessments to improve my study habits	Vadivel et al., 2021
	Summative assessments provide a clear picture of what I have learned over the course duration	Woods, 2015

4. Results and Discussions

4.1. Frequency Analysis

To provide a more comprehensive insight into the sample profile, an analysis was undertaken utilizing descriptive statistics for each demographic variable. In order to present a detailed overview of the sample composition, the frequencies and corresponding percentages for each individual variable have been illustrated in Tables 2,3 and 4.

Table 2. Gender

Gender	Frequency	Percent
Male	67	53.6
Female	58	46.4
Total	125	100.0

Table 2 demonstrates an overview of the gender distribution within the sample. According to frequency column, out of 125 respondents, 67 and 58 respondents are accounted for male and female respectively. This data underscores the prevalence of male respondents, constituting a substantial 53.6 percent of the total respondent pool.

Table 3. Age Group

Age group	Frequency	Percent
16-20 years	12	9.6
21-25 years	107	85.6
Above 25	6	4.8
Total	125	100.0

Table 3 represents an view of the age distribution within the sample. Remarkably, the age group 21-25 was found to have the highest number of respondents, comprising 107 individuals out of the total 125 respondents, as revealed by the frequency column and which is accounted for a substantial 85.6 percent of the total respondents. Conversely, the lowest percentages 9.6 percent and 4.8 percent are attributed to the age groups 16-20 and above 25 respectively.

Table 4. Academic Year

Academic year	Frequency	Percent
1st year	4	3.2
2nd year	30	24.0
3rd year	2	1.6
4th year	89	71.2
Total	125	100.0

Table 4 provides an insight into the academic year of the respondents. Notably, academic year 4 found to have the highest number of respondents of a 89, accounting for a 71.2 percent. Consequently, the second highest number of respondents are from academic year 2, accounting for 24 percent of the total pool. From academic year 1 and 2, there is only 4 and 2 responses have been recorded, accounting for 3.2 percent and 2.6 percent respectively.

4.2. Reliability Analysis

Reliability analysis was conducted to examine the internal consistency and stability of Likert scale data, to test whether the items within these instruments consistently produce similar results over repeated measurements. Refer Table 5.

Table 5. Reliability Analysis

Variable	Cronbach's Alpha	Items
Perceived Effectiveness of Summative Assessments	.790	4
Perceived Effectiveness of Formative Assessments	.843	4
Learning Fondness	.908	7
Learning Effectiveness	.908	7

According to the reliability analysis, the Cronbach's Alpha value of four variables of this study, which have been measured through Likert scale; Perceived Effectiveness of Summative Assessments, Perceived Effectiveness of Formative Assessments, Learning Fondness and, Learning Effectiveness are

0.790, 0.843, 0.908 and 0.908 respectively. As all the values are greater than 0.5, it signifies that the items of each of the scales are having internal consistency. Since the Cronbach's Alpha for Learning fondness and Learning effectiveness are greater than 0.9, which indicates an excellent reliability.

4.3. Correlation Analysis

Correlation analysis was conducted to examine the strength and direction of the potential linear relationship between variables. The direction and the strength of the relationship can be measured using the coefficient of Pearson Correlation. Further, to assess whether the correlation between variables is significant, the P-value (significant value) is being used, and it should be less than 0.05. Refer Table 6,

Table 6. Correlation Analysis

		PAE_S	PAE_F	LE
LE	Pearson Correlation	.611**	.801**	1
	Sig. (2-tailed)	.000	.000	
	N	125	125	125

According to the correlation analysis, P value of the relationship between PAE_S and LE is 0.000, which is highly significant. Coefficient of correlation is 0.611 and which indicates that PAE_S and LE are positively correlated. Hence, there is a highly significant and moderately positive relationship between Perceived effectiveness of summative assessments and Learning effectiveness. Which indicates that, higher Perceived effectiveness of summative assessments, higher the Learning effectiveness and vice versa.

P value of the relationship between Loan PAE_F and LE is 0.000, which also highly significant. The coefficient of correlation is 0.801 and it implies that, there is a strong positive correlation between PAE_F and LE. Hence, there is a highly significant and strong positive relationship between Perceived effectiveness of formative assessments and Learning effectiveness. Which indicates that, higher Perceived effectiveness of formative assessments, higher the Learning effectiveness and conversely.

4.4. Regression Analysis

The Multiple regression analysis was conducted to measure the explanatory power of the independent variables against dependent variables. Basically the purpose was to ascertain the cause-effect of one variable upon another as an extension of the correlation analysis performed earlier. Refer Table 7

4.4.1. Model Summary

Table 7. Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.823 ^a	.677	.672	.561	1.853

The model summary serves the purpose of evaluating goodness of the model and the extent to which the model is fit. Accordingly, the Coefficient of Determination (R^2) measure the proportion of the variance in the dependent variable that is explained by the independent variables. According to the model summary, R^2 value is 0.677. This signifies that, out of Learning effectiveness 67.7 percent has explained by the two independent variables which have been employed in the study. Accordingly, 67.7 percent of the variance in Learning Effectiveness can be explained by those two independent variables. Since the R^2 is more than 60 percent, model is nicely fitted.

Multiple Correlation (R) quantifies the strength and direction of the linear relationship between the dependent variable and the collection of independent variables in the model. As depicted in the table, R value is 0.823 and which indicates that the independent variables are jointly correlated with Learning effectiveness. There is a strong relationship between independent variables and dependent variable.

The Durbin Watson (DW) test statistics is utilized to check whether the assumption of independency of residuals is met. As shown in the table 6, DW test statistic is 1.853. Since the value lies between 1.5 – 2.5, which indicates that the residuals are independent. In other words, the residuals are not correlated. Hence we can conclude that the model is appropriate.

4.4.2. ANOVA

Table 8. ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	80.365	2	40.182	127.829	.000 ^b
Residual	38.350	122	.314		
Total	118.714	124			

As indicated in Table 8, according to the Regression ANOVA, the probability of F statistics is 0.000 and which indicates that model is jointly significant. It indicates that all the independent variables jointly influence on Learning Effectiveness. Therefore, it is worthwhile to note that, Perceived

effectiveness of summative assessments and Perceived effectiveness of formative assessments are jointly influence on the Learning Effectiveness.

4.4.3. Coefficients

Table 9. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.452	.185		2.437	.016		
PAE_S	.241	.065	.230	3.685	.000	.678	1.476
PAE_F	.568	.053	.670	10.716	.000	.678	1.476

According to the individual coefficients (Table 9), P value of PAE_S is 0.000, which indicates that the result is highly significant. Further, the beta value of PAE_S is .241. Therefore, it is important to note that, the PAE_S has a highly significant positive impact on LE. Based on above conclusion we can accept the H1, which was developed earlier. (H1: There is a significant relationship between the Perceived effectiveness of summative assessments and Learning Effectiveness)

P value of the PAE_F is also 0.000, which indicates that the result is highly significant. Further, the beta value of PAE_F is .568 and It suggest that, PAE_F has a highly significant positive impact on LE. Based on above conclusion we can accept the H2, which was developed earlier. (H2: There is a significant relationship between the Perceived effectiveness of formative assessments and Learning Effectiveness)

According to the standardized coefficient of beta, the highest value is having for PAE_F, which is 0.67. Therefore, the most influencing factor is the Perceived effectiveness of formative assessments on Learning effectiveness.

By shifting the focus to collinearity statistics, the VIF values for both independent variables are less than 10. Alternatively, the tolerance values for aforementioned variables are more than 0.1. Therefore, is important to note that the independent variables are not perfectly correlated.

4.5. Moderator Regression Analysis

Two moderator regression models has been employed to identify whether there is any moderating impact created by the Learning fondness on the relationship between PAE_S and LE, and between PAE_F and LE. The results are given below.

4.5.1. Interaction effect of Learning fondness and Perceived effectiveness of summative assessments

Table 10. Moderator Regression 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.195	.171		1.139	.257
	PAE_S	.275	.055	.263	4.985	.000
	LF	.669	.050	.702	13.305	.000
	MV1_LFxS	.063	.045	.065	1.411	.100

According to the moderator regression (Table 10) coefficient results, the P value of moderator variable LF is 0.100. This is marginally significant. It indicates that Learning Fondness marginally moderates the relationship between Perceived effectiveness of summative assessments and Learning effectiveness. Therefore, we can accept the H3, which was developed earlier (H3: There is a moderating impact of Learning Fondness on the relationship between Perceived effectiveness of summative assessments and Learning Effectiveness).

4.5.2. Interaction effect of Learning fondness and Perceived effectiveness of formative assessments.

Table 11. Moderator Regression 2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.447	.149		3.002	.003
	PAE_F	.345	.057	.407	6.059	.000
	LF	.508	.062	.533	8.194	.000
	MV2_LFxF	-.009	.046	-.009	-.202	.840

Based on the above results, the P value of moderator variable LF is 0.840. This is insignificant. It indicates that Learning fondness does not have any moderating effect on the relationship between Perceived effectiveness of formative assessments and Learning effectiveness. (H4: There is a moderating impact of Learning Fondness on the relationship between Perceived effectiveness of formative assessments and Learning Effectiveness).

5. Implications of the Study

The current study builds upon previous research that has explored the effects of formative and summative assessments on academic motivation and attitudes toward learning (Ismail et al., 2022), students' perceptions of formative assessment effectiveness (Ogange et al., 2018), and how assessments contribute to knowledge development prior to classroom engagement (Todorova, 2004).

This research offers valuable insights for improving educational practices, particularly within Sri Lankan university settings. By examining the relationship between students' learning preferences and the effectiveness of various assessment types, the study underscores the importance of incorporating diverse assessment strategies. The integration of engaging formative assessments such as quizzes, presentations, and group work can significantly boost student motivation and engagement, ultimately leading to enhanced academic performance.

Moreover, this study reinforces the notion that assessments should serve not only to evaluate students' knowledge but also to enrich the learning experience by fostering voluntary and meaningful student participation. The findings can inform curriculum revisions and promote feedback mechanisms that support continuous improvement in teaching and learning processes. These strategies can be extended beyond universities to school-level education as well. When assessment practices align with students' learning fondness, institutions can enhance both educational outcomes and student satisfaction.

6. Limitations and Avenues for Future Research

This conceptual study aims to explore how various assessment types influence students' learning fondness, ultimately contributing to their learning effectiveness. However, the study presents several limitations. It adopts a cross-sectional design, relies on a convenience sampling method, and is confined to a single private university, with data collected from a limited range of subject disciplines.

Although cross-sectional in nature, future research could adopt a longitudinal approach to examine how different assessment methods impact long-term learning outcomes, knowledge retention, and overall academic performance. Additionally, the scope of future studies could be broadened by

comparing different types of educational institutions, such as private vs. state universities, or even expanded to international contexts to test the consistency of findings across diverse academic environments.

While this study does not target a specific academic field, focusing instead on general academic assessments, future researchers could investigate discipline-specific effects to better understand how formative and summative assessments function across varied academic domains. Furthermore, future research could examine the role of digital assessment tools, the influence of teacher feedback on different assessment types, and sociocultural factors, such as cultural perceptions of education and students' preferences for assessment styles.

7. Conclusion

This study examined the impact of the perceived effectiveness of formative and summative assessments on learning effectiveness, while exploring the moderating role of learning fondness among undergraduates in a Sri Lankan private university. The findings underscore the pivotal role of assessment design in shaping students' learning experiences. Formative assessments emerged as the strongest predictor of learning effectiveness, highlighting their capacity to provide continuous feedback, promote self-regulated learning, and encourage deeper cognitive engagement. Summative assessments also demonstrated a significant positive effect, suggesting that well-structured final evaluations contribute meaningfully to knowledge consolidation. Learning fondness showed a strong direct influence on learning effectiveness, reaffirming the importance of affective dimensions in academic learning. Although learning fondness marginally moderated the relationship between summative assessments and learning effectiveness, no moderating effect was observed for formative assessments, indicating that the benefits of formative assessment remain robust regardless of students' affective orientation toward learning.

Importantly, the consistency and clarity of these relationships suggest that the proposed model has the potential to yield greater explanatory power if replicated across different institutional types, disciplines, and cultural contexts. Repeating this study in other higher education settings both within and beyond Sri Lanka—could strengthen the empirical evidence base and enhance the generalizability of the findings, thereby contributing to a more universal understanding of how assessment design and affective learning orientations interact to influence learning effectiveness. Overall, this study advocates for a balanced assessment strategy that integrates frequent formative activities with meaningful summative evaluations, offering insights that are not only contextually relevant but also transferable to broader higher education environments.

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