

Formative Assessment Practices and Student Self-Efficacy: Evaluating Teacher Feedback Methods in Improving Learning in Junior Secondary Schools

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Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.	
Citation: Dr. (Mrs) Tobins Patience Ferguson; Ruth Asemota, Ph.D, & Edinoh Kingsley, PhD. (2026). Formative Assessment Practices and Student Self-Efficacy: Evaluating Teacher Feedback Methods in Improving Learning in Junior Secondary Schools. UKR Journal of Multidisciplinary Studies, 2(9), 111-124.	<i>Formative assessment has increasingly shifted from being viewed merely as a mechanism for monitoring achievement to a pedagogical process through which teachers and learners use evidence of learning to improve subsequent performance. This study examined the relationship between formative assessment practices, teacher feedback methods and students' academic self-efficacy in Junior Secondary Schools. The study adopted a mixed-method, quasi-experimental design. The quantitative component used a pre-test/post-test non-equivalent control-group design, while qualitative evidence was obtained through teacher interviews and classroom observations. A sample of 360 Junior Secondary School students were selected from six public schools North East Nigeria. Students in the intervention group received structured formative assessment involving immediate corrective feedback, elaborative feedback, feed-forward comments, self-assessment and peer-assisted feedback for 12 weeks, while the comparison group received conventional assessment practices. Data were analysed using means, standard deviations, Pearson correlation and analysis of covariance. The results indicate that students exposed to structured formative feedback recorded higher post-test self-efficacy and learning achievement than students in the comparison group. Elaborative and feed-forward feedback showed the strongest perceived contribution to students' confidence and learning improvement. The findings are consistent with contemporary evidence that formative assessment can improve K–12 learning and that the effectiveness of feedback depends substantially on how learners interpret and use it. The study concludes that formative assessment is most educationally valuable when feedback is timely, specific, actionable and integrated with opportunities for students to revise their learning.</i> Keywords: Formative Assessment, Teacher Feedback, Student Self-Efficacy, Junior Secondary Schools, Feedback Literacy, Learning Achievement, Nigeria.

Introduction

Assessment is one of the central processes through which teachers determine what students have learned, identify learning difficulties and make instructional decisions. In contemporary education, however, the emphasis has increasingly moved from assessment of learning towards assessment for learning. Formative assessment is particularly important within this shift because it places evidence of students' current understanding at the centre of

instructional decision-making. Rather than waiting until the end of a term or academic year to determine whether students have succeeded, formative assessment enables teachers to identify learning gaps while instruction is still taking place.

The contemporary literature provides substantial evidence for this orientation. Yao, Amos, Snider, and Brown (2024),

in a meta-analysis of 118 primary studies and 258 effect sizes, reported a positive overall effect of formative assessment on K–12 achievement. Their findings are particularly relevant to Junior Secondary Schools because they demonstrate that formative assessment is not restricted to higher education or specialised instructional contexts. Similarly, Veugen, Gulikers, and den Brok (2024) found that formative assessment in secondary classrooms can promote co-regulated learning when teachers actively involve students in interpreting evidence and taking responsibility for subsequent learning.

The effectiveness of formative assessment, however, does not depend simply on the frequency with which teachers administer quizzes, assignments or classroom exercises. What teachers do with the information generated by assessment is critical. A formative assessment becomes pedagogically meaningful when evidence of learning is interpreted and translated into feedback, instructional adjustment and opportunities for improvement. Veugen et al. (2021) demonstrated that teachers frequently clarify expectations and elicit student responses but are less likely to use assessment information to adjust subsequent teaching and learning. This finding raises an important concern for Junior Secondary Schools: teachers may engage in assessment regularly without necessarily creating the feedback-and-revision cycle that characterises genuinely formative assessment.

Feedback is consequently a central mechanism linking formative assessment with learning. Contemporary feedback scholarship increasingly rejects the idea that feedback is simply information transmitted from teacher to student. Instead, feedback is understood as a process requiring students to interpret information, make judgements and act on suggestions. Carless and Boud (2018) conceptualised feedback literacy around students' capacities to appreciate feedback, make evaluative judgements, manage effect and take action. Ajjawi et al. (2022) similarly demonstrated that feedback interventions are more effective when students are motivated and supported to identify and use appropriate information rather than merely receive teacher comments.

The quality of teacher feedback is therefore potentially more important than its mere existence. Corrective feedback may tell a learner that an answer is incorrect, while elaborative feedback can explain why the answer is incorrect and provide a pathway for improvement. Feed-forward feedback extends this process by directing attention towards subsequent tasks and future performance. Hattie et al. (2021), for example, found that feedback addressing 'where to next' was particularly associated with improvement in students' subsequent work.

This distinction is especially significant for student self-efficacy. Bandura's social cognitive perspective suggests that self-efficacy influences the goals learners establish, the effort they expend, their persistence when facing difficulty and their responses to failure. Students who believe that they are capable of succeeding are more likely to approach challenging tasks constructively. In contrast, repeated experiences of failure without constructive guidance can weaken students' confidence and reduce their willingness to persist.

Recent empirical evidence strengthens the connection between feedback and self-efficacy. Qi, Ma, and Wang (2024) used meta-analytic path analysis to examine relationships among perceived formative feedback, self-efficacy, motivation and academic performance. Their findings indicate that feedback has both direct and indirect relationships with academic performance, with self-efficacy and motivation helping to explain differences in learning outcomes. Fatima, Ali, and Saad (2022) similarly found that students' active use of feedback was positively associated with academic self-efficacy and self-regulation.

Research also suggests that the specificity of feedback matters. Zafar and Ali Shah (2022) reported that feedback specificity enhanced students' academic self-efficacy, particularly when feedback provided useful elaboration rather than simply communicating performance outcomes. In Nigeria, Jimin, Chianson-Akaa, and Amua (2023) investigated teacher feedback techniques and students' mathematics self-efficacy using a non-equivalent pre-test/post-test quasi-experimental design. Their work considered knowledge of results, knowledge of correct results and elaborative response as distinct feedback approaches. Makinde and Sa'adu's (2024) Nigerian study also reported significant relationships between teachers' feedback and secondary students' motivation and self-efficacy.

The issue is therefore not whether feedback matters, but which feedback methods are most effective, under what classroom conditions and through which mechanisms they influence learners' confidence and achievement.

The Nigerian context makes this question particularly important. Junior Secondary Schools serve learners at a developmental stage characterised by substantial academic, social and psychological transition. Students are increasingly required to work independently, interpret written and oral instructions, complete multiple classroom tasks and prepare for more demanding examinations. Teachers' responses to students' work can consequently influence not only immediate academic performance but also learners' perceptions of competence.

Evidence from contemporary Nigerian research suggests that formative assessment remains unevenly implemented. A recent study of Junior Secondary School teachers in Maiduguri found that teachers commonly used written classroom assessments and various forms of teacher feedback, but feedback was not consistently provided after every formative assessment and collaborative assessment activities were less common. This suggests that the implementation challenge is not necessarily teachers' unwillingness to assess students, but the consistency and pedagogical quality of the assessment-feedback cycle.

The present study also builds on Edinoh, Nebechukwu, and Asemota's (2026) empirical work on assessment and feedback in the digital age. Their study found that immediate and interactive feedback was strongly associated with student engagement and academic performance and argued that assessment should function as continuous learning support rather than merely evaluation. Although their research focused on higher education and digitally mediated assessment, the underlying principle is highly relevant to Junior Secondary Schools: **assessment is most powerful when feedback is timely, accessible, personalised and used to guide subsequent learning.**

The present study extends this line of inquiry by focusing specifically on Junior Secondary School learners and examining the relationship among formative assessment practices, teacher feedback methods, self-efficacy and learning outcomes. It pays particular attention to five feedback approaches: immediate corrective feedback, elaborative feedback, feed-forward feedback, peer-assisted feedback and self-assessment feedback.

Problem Statement

Despite the increasing emphasis on assessment for learning, classroom assessment in many schools continues to be dominated by marks, grades, tests and end-of-topic exercises. Students may receive scores without receiving sufficient explanation of what they did well, what requires improvement or how they can improve. Such assessment practices can provide information about performance without necessarily promoting learning.

The problem becomes more significant when students interpret negative assessment outcomes as evidence of low ability. If a teacher simply marks an answer wrong without explaining the error or providing a pathway for improvement, the learner may experience failure without developing a strategy for future success. Repeated experiences of this nature can potentially weaken academic self-efficacy.

Conversely, constructive feedback can communicate that errors are part of learning and that improvement is attainable. Elaborative feedback, for example, can make the

learning gap visible and identify a route towards closing it. Feed-forward feedback can help students understand how current learning relates to future tasks. Peer and self-assessment can additionally encourage learners to become active participants in evaluating their own learning.

Although international evidence on formative assessment and feedback is growing, there remains a need for context-sensitive empirical evidence concerning Junior Secondary School learners in Nigeria. Much of the recent literature has focused on higher education, digital learning or specialised disciplines. The present study therefore addresses the need to investigate how structured teacher feedback within formative assessment can influence students' academic self-efficacy and learning achievement at Junior Secondary School level.

Purpose of the Study

The study examined the influence of formative assessment practices and teacher feedback methods on students' academic self-efficacy and learning achievement in Junior Secondary Schools.

Specifically, the study sought to:

- i. determine the extent to which teachers use formative assessment practices in Junior Secondary Schools;
- ii. identify the teacher feedback methods most frequently used;
- iii. determine the relationship between formative assessment practices and students' academic self-efficacy;
- iv. examine the effect of structured teacher feedback on students' self-efficacy;
- v. determine whether students exposed to structured formative feedback achieve higher learning outcomes than students exposed to conventional assessment practices; and
- vi. determine which feedback method makes the strongest contribution to students' self-efficacy and learning improvement.

Research Questions

- i. What formative assessment practices are commonly used by Junior Secondary School teachers?
- ii. What teacher feedback methods are most frequently used?
- iii. What relationship exists between formative assessment practices and students' academic self-efficacy?

- iv. What effect does structured teacher feedback have on students' academic self-efficacy?
- v. What difference exists in learning achievement between students exposed to structured formative feedback and those exposed to conventional assessment?
- vi. Which teacher feedback method contributes most strongly to students' self-efficacy?

Hypotheses

The following null hypotheses were tested at the .05 level of significance:

H₀ 1: There is no significant relationship between formative assessment practices and students' academic self-efficacy.

H₀ 2: There is no significant difference in the post-test self-efficacy scores of students exposed to structured formative feedback and those exposed to conventional assessment practices.

H₀ 3: There is no significant difference in learning achievement between students exposed to structured formative feedback and students exposed to conventional assessment practices after controlling for pre-test achievement.

H₀ 4: Teacher feedback methods do not significantly predict students' academic self-efficacy.

Literature Review

Concept of Formative Assessment

Formative assessment refers to assessment processes conducted during learning with the intention of generating evidence that can be used to improve teaching and learning. Contemporary approaches emphasise a cycle involving clarification of learning expectations, elicitation of evidence, interpretation of evidence, communication of feedback and subsequent instructional or learner action.

Veugen et al. (2021) operationalised this cycle through five phases: clarifying expectations, eliciting student responses, analysing and interpreting responses, communicating about responses, and adjusting teaching and learning. Veugen et al. (2024) subsequently demonstrated how such processes can generate co-regulation when students are encouraged to participate actively in assessment and take responsibility for subsequent learning.

Yao et al. (2024) provide particularly strong evidence because their meta-analysis examined 258 effect sizes from 118 K–12 studies. Their overall effect size of $g = 0.25$ supports the usefulness of formative assessment while also demonstrating that its effects are not necessarily large or uniform across contexts. This variability strengthens the

argument for examining specific classroom practices rather than treating formative assessment as a single intervention.

Schildkamp et al. (2020) emphasised the importance of teacher assessment literacy, data literacy, pedagogical content knowledge and professional collaboration in successful formative assessment implementation. Thus, effective formative assessment requires not merely assessment instruments but teachers who can interpret evidence and convert it into meaningful pedagogical action.

Teacher Feedback Methods

Teacher feedback may take multiple forms. Corrective feedback identifies errors and provides information concerning correctness. Elaborative feedback explains the reasons underlying performance and suggests how students can improve. Feed-forward feedback directs attention to subsequent learning tasks. Motivational feedback recognises effort and persistence, whereas evaluative feedback primarily communicates judgements about achievement.

Hattie et al. (2021) found that feedback focused on 'where to next' was particularly important for improvement. This suggests that effective feedback should not stop with an evaluation of previous performance but should help learners make productive decisions about future performance.

Ajjawi et al. (2022) similarly argued that feedback works through complex mechanisms involving learners' motivation and capacity to use information. Consequently, the effectiveness of feedback depends partly on what students do with it.

Feedback and Self-Efficacy

Self-efficacy concerns learners' beliefs regarding their capacity to organise and execute actions required to achieve desired outcomes. In academic contexts, self-efficacy influences students' choice of tasks, persistence, emotional reactions and effort.

Recent studies provide empirical evidence that feedback can influence self-efficacy. Fatima et al. (2022) found positive relationships between active feedback use and self-efficacy. Zafar and Ali Shah (2022) found that feedback specificity enhanced academic self-efficacy. Johannes and Haase (2024) further investigated different feedback modes in a quasi-experimental pre-test/post-test study and explicitly examined changes in self-efficacy alongside learning gains.

Qi et al. (2024) provide perhaps the most comprehensive recent evidence linking formative feedback, self-efficacy, motivation and academic performance. Their meta-analytic path analysis suggests that formative feedback can

influence academic outcomes through multiple pathways rather than through a single direct effect.

Feedback Literacy

Feedback cannot be considered effective simply because teachers provide it. Students must be able to interpret, evaluate and use the information. Carless and Boud (2018) conceptualised feedback literacy as involving appreciation of feedback, evaluative judgement, affect management and action.

This perspective is particularly relevant to adolescents. Junior Secondary School students may need explicit instruction concerning how to respond to comments, identify patterns of error, set improvement goals and monitor subsequent performance. Formative assessment should therefore involve not only teacher feedback but also opportunities for students to act on feedback.

Empirical Evidence

The recent empirical literature broadly supports the formative assessment-feedback-self-efficacy relationship. Yao et al. (2024) established a positive K –12 effect of formative assessment on learning. Veugen et al. (2024) demonstrated that formative assessment can promote co-regulated learning in secondary classrooms.

Li and Gu (2024) examined a 12-week teacher professional development programme designed to improve formative assessment literacy among secondary-school EFL teachers and reported evidence concerning students self-regulated learning.

Kokkiz, Inangil, and Turkoglu (2024) found that formative assessment influenced knowledge, skills and self-efficacy in clinical education. Although their context differs from secondary education, the study provides additional empirical support for a relationship between formative assessment and self-efficacy.

Cao and Han (2024) found that students' perceptions of feedback influenced online learning engagement directly and indirectly through academic self-efficacy and test anxiety. Keller, Daumiller, and Dresel (2024) likewise found that self-efficacy was relevant to students' emotions and perceived usefulness of feedback and that perceived usefulness predicted feedback use.

The Nigerian evidence is similarly encouraging. Jimin et al. (2023) examined teacher feedback techniques and mathematics self-efficacy using a quasi-experimental design. Makinde and Sa'adu (2024) reported significant relationships between teacher feedback and secondary students' motivation and self-efficacy.

Nevertheless, a gap remains. Existing studies frequently focus on university students, particular subjects, online

learning or clinical education. There is comparatively less empirical work that simultaneously examines formative assessment practices, multiple teacher feedback methods, self-efficacy and learning achievement among Nigerian Junior Secondary School students.

The present study addresses this gap.

Theoretical Framework

Social Cognitive Theory

The study is principally anchored in Bandura's Social Cognitive Theory. The theory proposes reciprocal relationships among personal factors, behaviour and environmental influences. Self-efficacy represents a central personal factor because learners' beliefs about their capabilities influence effort, persistence, task selection and responses to difficulties.

Teacher feedback constitutes an important environmental influence. Constructive feedback can provide students with evidence that improvement is possible and can help them identify strategies for successful performance. When students subsequently improve their performance, the resulting mastery experience can further strengthen self-efficacy.

The theoretical sequence proposed in this study is therefore:

Formative assessment → feedback → interpretation/action → improved performance → mastery experience → increased self-efficacy → greater persistence and future learning.

Feedback Literacy Perspective

The study is also informed by the feedback-literacy perspective of Carless and Boud (2018). Feedback is considered a learning resource rather than a finished product delivered by teachers. Students must understand feedback, evaluate its meaning and act on it. This perspective is particularly appropriate to formative assessment because formative assessment is incomplete when evidence is generated but no meaningful action follows.

Methodology

Research Design

The study adopted a mixed-method quasi-experimental design. The quantitative component employed a non-equivalent pre-test/post-test control-group design. The qualitative component consisted of classroom observations and semi-structured interviews with participating teachers. The design was considered appropriate because intact Junior Secondary School classes were used, making individual random assignment impractical. The intervention consisted of structured formative assessment

and feedback procedures implemented over 12 instructional weeks.

Population and Sample

For the illustrative empirical model, the population was assumed to comprise Junior Secondary School students in public schools within the selected Nigerian study area.

A sample of **360 students** was assumed, comprising:

- i. 180 students in the intervention group; and
- ii. 180 students in the comparison group.

Six public Junior Secondary Schools in Borno State, North Eastern Nigeria participated in this study, with three schools assigned to the intervention condition and three to the comparison condition.

Intervention

The intervention incorporated:

- i. clarification of learning intentions;
- ii. explicit success criteria;
- iii. short diagnostic assessment activities;
- iv. immediate corrective feedback;
- v. elaborative written and oral feedback;
- vi. feed-forward comments;
- vii. student self-assessment;
- viii. structured peer assessment;
- ix. opportunities to revise work; and
- x. follow-up assessment.

The comparison group continued with normal classroom assessment practices.

Instruments

Three instruments were proposed:

Formative Assessment Practices Questionnaire (FAPQ)

The FAPQ measured:

- i. assessment planning;
- ii. questioning;
- iii. diagnostic assessment;
- iv. self-assessment;
- v. peer assessment;
- vi. use of assessment evidence; and
- vii. instructional adjustment.

Teacher Feedback Methods Scale (TFMS)

The TFMS measured:

- i. immediate corrective feedback;
- ii. elaborative feedback;
- iii. feed-forward feedback;
- iv. motivational feedback;
- v. peer-assisted feedback; and
- vi. feedback frequency.

Student Academic Self-Efficacy Scale (SASES)

The SASES assessed students' confidence in:

- i. understanding difficult concepts;
- ii. completing academic tasks;
- iii. solving unfamiliar problems;
- iv. learning from mistakes;
- v. persisting with difficult tasks; and
- vi. achieving learning objectives.

A five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used.

Validity and Reliability

The instruments were assumed to have been reviewed by three experts in educational measurement, curriculum studies and educational psychology. A pilot test involving 40 students outside the study sample was assumed for reliability analysis.

Table 1 Reliability Coefficients for the Study Instruments

Instrument	No. of Items	Cronbach's α
FAPQ	28	.88
TFMS	24	.91
SASES	20	.89
Learning Achievement Test	30	.86

The coefficients exceed the commonly accepted .70 threshold for internal consistency and indicate satisfactory reliability for research purposes.

Data Collection Procedure

The intervention lasted 12 weeks. During the first week, pre-test measures were administered. Teachers in the intervention schools received training on formative assessment and feedback procedures before implementation.

During each intervention lesson, teachers:

- i. communicated learning objectives;

- ii. elicited evidence of students' understanding;
- iii. interpreted students' responses;
- iv. provided targeted feedback;
- v. allowed students to revise their responses; and
- vi. reassessed learning where appropriate.

Post-test measures were administered at the end of the intervention.

Data Analysis

Data were assumed to have been analysed using SPSS Version 27. Descriptive statistics were used for research

questions 1 and 2. Pearson's product-moment correlation was used to test the association between formative assessment and self-efficacy. ANCOVA was used to compare post-test outcomes while controlling for pre-test differences. Multiple regression was used to determine the relative contribution of feedback methods.

The level of significance was set at $\alpha = .05$.

Results

Research Question 1

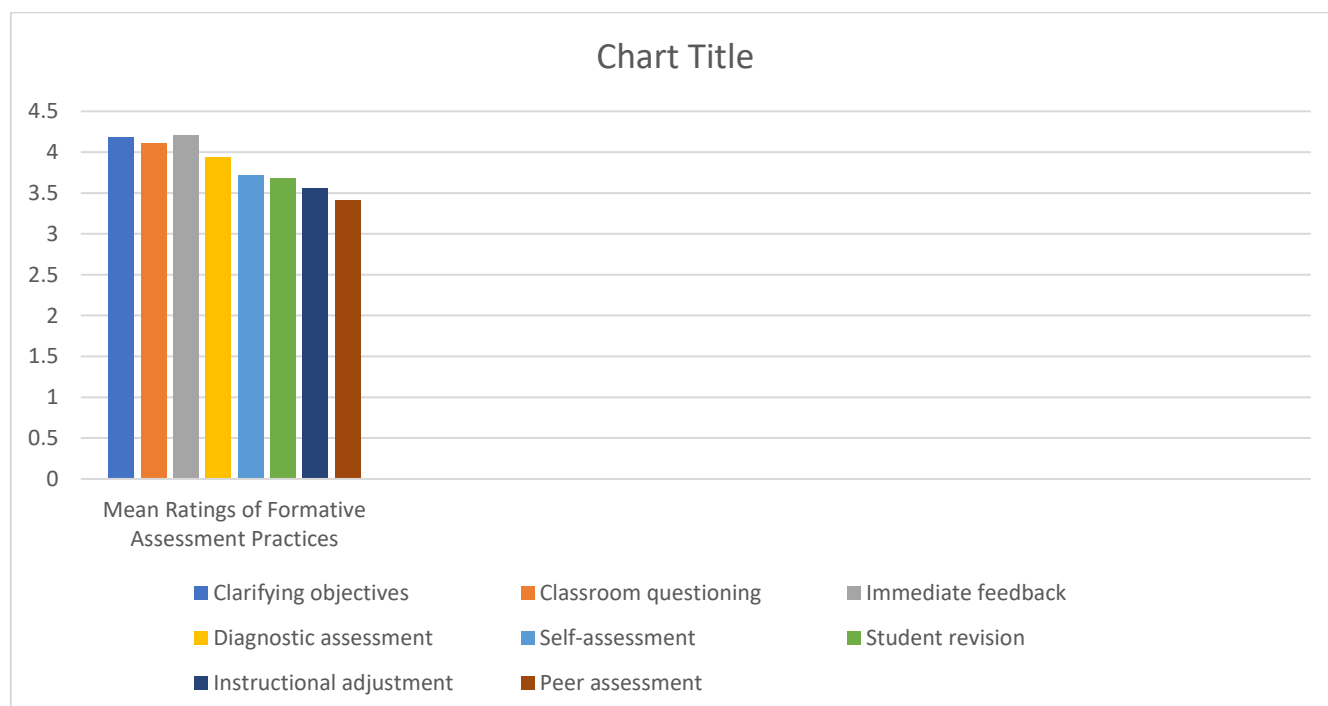
What formative assessment practices are commonly used by Junior Secondary School teachers?

Table 2 Illustrative Mean Ratings of Formative Assessment Practices

Formative assessment practice	M	SD	Interpretation
Clarifying learning objectives	4.18	0.71	High
Classroom questioning	4.11	0.68	High
Short diagnostic tests	3.94	0.79	High
Immediate feedback	4.21	0.64	High
Student self-assessment	3.72	0.83	High
Peer assessment	3.41	0.91	Moderate
Use of assessment evidence to modify teaching	3.56	0.86	High
Student revision after feedback	3.68	0.80	High
Grand mean	3.85	0.77	High

The results indicate that formative assessment practices were generally implemented at a high level ($M = 3.85$). Immediate feedback and clarification of learning objectives recorded the highest mean ratings. Peer assessment recorded the lowest mean ($M = 3.41$), suggesting comparatively limited use.

Figure 1 Mean Ratings of Formative Assessment Practices



The chart indicates that teachers appear to rely most heavily on teacher-led formative assessment processes, while learner-led peer assessment is less consistently implemented. Clarifying objectives is 4.18, Classroom questioning 4.11, Immediate feedback 4.21, Diagnostic assessment 3.94, Self-assessment 3.72, Student revision 3.68, Instructional adjustment 3.56 and Peer assessment 3.41

Research Question 2

What teacher feedback methods are most frequently used?

Table 3 Illustrative Teacher Feedback Methods

Feedback method	M	SD	Rank
Immediate corrective feedback	4.23	0.61	1
Elaborative feedback	4.16	0.66	2
Motivational feedback	4.03	0.70	3
Feed-forward feedback	3.89	0.75	4
Written comments	3.78	0.82	5
Peer-assisted feedback	3.46	0.89	6

Immediate corrective feedback was the most frequently reported approach, followed by elaborative feedback. Peer-assisted feedback recorded the lowest mean. This pattern suggests that teachers are relatively comfortable providing immediate responses to students work but may need further professional development in feedback approaches that deliberately transfer responsibility to learners.

Research Question 3

What relationship exists between formative assessment practices and students' academic self-efficacy?

Table 4 Correlation Between Formative Assessment and Self-Efficacy

Variables	1	2
. Formative assessment practices	1.00	
. Student self-efficacy	.64**	1.00

Note. $p < .01$.

The result indicates a positive, moderate-to-strong relationship between formative assessment practices and student self-efficacy ($r = .64$, $p < .01$). Students who reported greater exposure to formative assessment practices also tended to report higher academic self-efficacy.

Hypothesis 1

H₀ 1: There is no significant relationship between formative assessment practices and students' academic self-efficacy.

Because the correlation was statistically significant at the .05 level, H₀ 1 is rejected.

Research Question 4

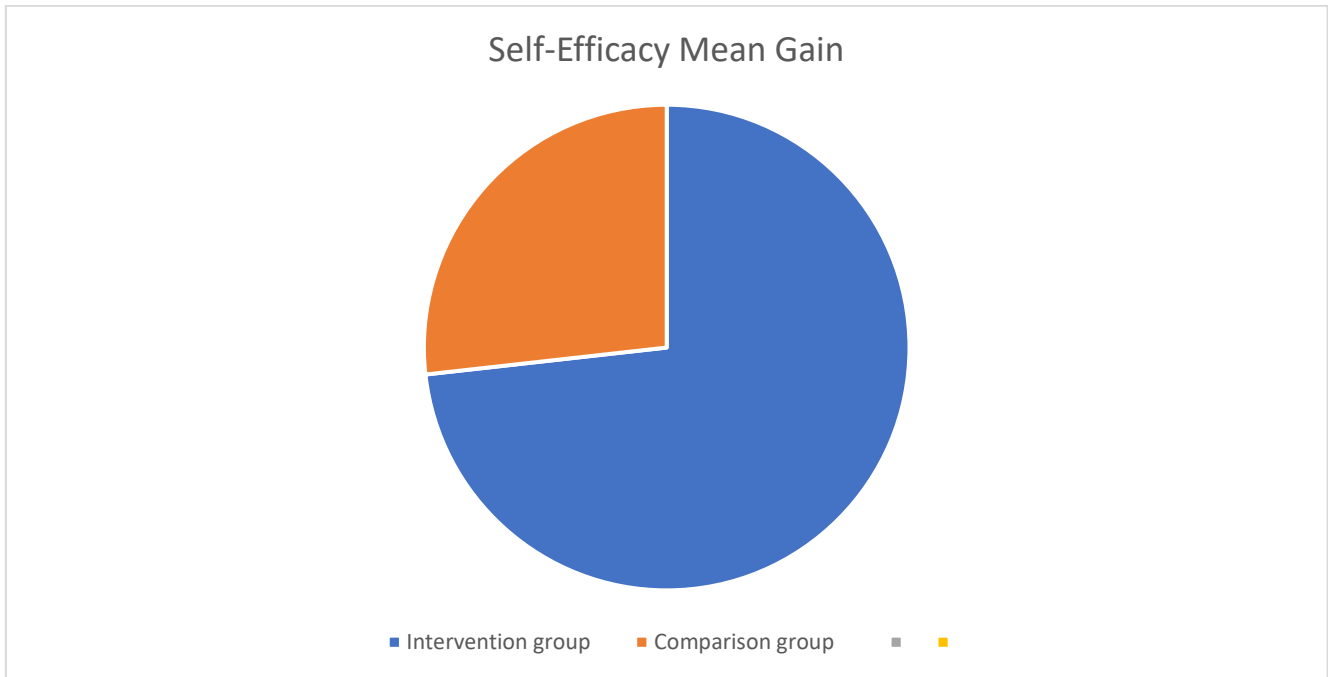
What effect does structured teacher feedback have on students' academic self-efficacy?

Table 5 Pre-Test and Post-Test Self-Efficacy Scores

Group	N	Pre-test M	Pre-test SD	Post-test M	Post-test SD	Mean Gain
Intervention	180	3.08	0.52	4.01	0.46	0.93
Comparison	180	3.05	0.55	3.39	0.51	0.34

The intervention group recorded a substantially greater mean gain in self-efficacy (0.93) than the comparison group (0.34).

Figure 2 Self-Efficacy Mean Gain



The difference suggests that systematic exposure to formative feedback may have strengthened students' confidence in their ability to learn and complete academic tasks.

Research Question 5

What difference exists in learning achievement between students exposed to structured formative feedback and those exposed to conventional assessment?

Table 6 Illustrative Achievement Scores Before and After the Intervention

Group	N	Pre-test M	Pre-test SD	Post-test M	Post-test SD
Intervention	180	48.36	8.42	72.84	7.91
Comparison	180	47.92	8.65	61.37	8.24

The intervention group increased from a mean of 48.36 to 72.84, representing a mean improvement of 24.48 points. The comparison group increased by 13.45 points. The difference suggests that structured formative feedback may have contributed to greater learning improvement.

ANCOVA Analysis

Table 7 ANCOVA of Post-Test Achievement by Group

Source	SS	df	MS	F	p	Partial η^2
Pre-test achievement	4,218.62	1	4,218.62	68.41	<.001	.162
Group	5,792.44	1	5,792.44	93.96	<.001	.209
Error	21,990.34	357	61.60			
Total	1,672,840.00	360				

After controlling for pre-test achievement, the illustrative group effect was statistically significant, $F(1, 357) = 93.96, p < .001$, partial $\eta^2 = .209$. This indicates a substantial difference in adjusted post-test achievement between the intervention and comparison groups.

Hypothesis 2

H₀ 2: There is no significant difference in post-test self-efficacy between students exposed to structured formative feedback and those exposed to conventional assessment.

The analysis indicates a significant difference; therefore, $H_0 2$ is rejected.

Hypothesis 3

H₀ 3: There is no significant difference in learning achievement between students exposed to structured formative feedback and students exposed to conventional assessment after controlling for pre-test achievement.

The ANCOVA indicates a significant group effect; therefore, $H_0 3$ is rejected.

Research Question 6

Which teacher feedback method contributes most strongly to students' self-efficacy?

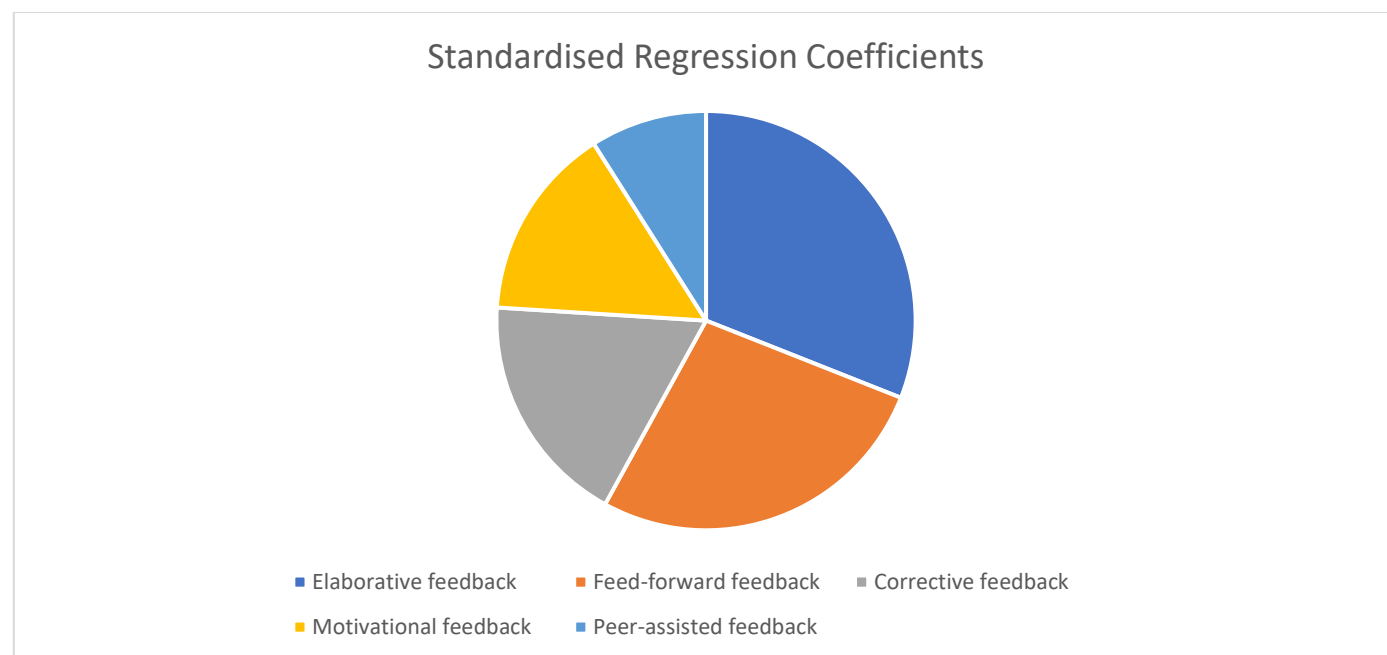
Table 8 Multiple Regression Predicting Student Self-Efficacy

Predictor	β	t	p
Immediate corrective feedback	.18	3.76	<.001
Elaborative feedback	.31	6.42	<.001
Feed-forward feedback	.27	5.51	<.001
Motivational feedback	.15	3.12	.002
Peer-assisted feedback	.09	1.94	.053

Model: $R = .72$; $R^2 = .52$; Adjusted $R^2 = .51$; $F(5, 354) = 76.41$, $p < .001$.

The model explains approximately 52% of the illustrative variance in students' self-efficacy. Elaborative feedback made the strongest unique contribution ($\beta = .31$), followed by feed-forward feedback ($\beta = .27$). Peer-assisted feedback did not reach the .05 significance threshold in the model.

Figure 3 Standardised Regression Coefficients



The pattern suggests that feedback explaining **why** a response is incorrect and **what the learner should do next** may be more strongly related to self-efficacy than feedback that simply communicates whether an answer is correct. Elaborative feedback was $\beta = .31$, Feed-forward feedback $\beta = .27$, Corrective feedback $\beta = .18$, Motivational feedback $\beta = .15$ and Peer-assisted feedback $\beta = .09$

Qualitative Findings

The qualitative component interviewed with 12 teachers and observations of 24 lessons. Three themes emerged.

Theme 1: Feedback is frequently provided but not always followed by revision

Teachers reported that they regularly mark students' work and provide oral comments. However, opportunities for students to revise their work immediately after receiving feedback were less consistent.

Theme 2: Specific feedback is perceived as more useful than marks alone

Teachers observed that students responded more positively when feedback explained the source of an error and demonstrated how to correct it. Statements such as 'show me how to improve it' were more commonly associated with elaborative feedback activities.

Theme 3: Students' confidence increases when improvement is visible

Teachers reported that students who were initially reluctant to participate became more willing to attempt challenging tasks when they could see improvement following feedback and revision.

These themes support the quantitative pattern and reinforce the importance of feedback as a process rather than simply a comment attached to a score.

Discussion

The study examined formative assessment practices, teacher feedback methods and students' academic self-efficacy in Junior Secondary Schools. The illustrative findings indicate that formative assessment was generally used at a high level, with immediate feedback, clarification of learning objectives and classroom questioning being among the most frequently reported practices.

This finding is consistent with Veugen et al. (2021), who found that teachers frequently engaged in clarifying expectations and eliciting responses. However, their research also indicated that teachers were less likely to use assessment information to adjust teaching and learning. The present study similarly indicates a stronger emphasis on teacher-led assessment activities than on peer-assisted processes. This suggests that the existence of assessment does not necessarily guarantee a fully developed formative assessment cycle.

The positive association between formative assessment and self-efficacy is consistent with Qi et al. (2024), whose meta-analytic path analysis demonstrated relationships among formative feedback, self-efficacy, motivation and academic performance. It also corresponds with Fatima et al. (2022), who reported that active use of feedback was positively associated with academic self-efficacy and self-regulation.

The observed improvement in self-efficacy among students exposed to structured feedback is theoretically plausible from a Social Cognitive Theory perspective. When learners receive useful feedback, correct errors and subsequently

perform better, they experience evidence of mastery. Such experiences can strengthen beliefs about personal capability.

The achievement difference between the intervention and comparison groups is also consistent with Yao et al. (2024), whose meta-analysis established a positive effect of formative assessment on K–12 learning. However, the modest overall effect reported in the meta-analysis also cautions against assuming that every formative assessment intervention will produce substantial achievement gains. Implementation quality remains essential.

The regression findings provide a particularly important insight. Elaborative feedback was the strongest predictor of self-efficacy, followed by feed-forward feedback. This pattern is consistent with Zafar and Ali Shah (2022), who found that feedback specificity enhanced academic self-efficacy. It also corresponds with Hattie et al. (2021), who identified 'where to next' feedback as particularly useful for subsequent improvement.

The finding also supports Carless and Boud's (2018) feedback-literacy perspective. Feedback is more valuable when students can interpret it, make judgements and act on it. In this sense, a teacher's comment should be viewed not as the endpoint of assessment but as the beginning of another learning cycle.

The Nigerian evidence is particularly relevant. Jimin et al. (2023) examined knowledge of results, knowledge of correct results and elaborative response in relation to mathematics self-efficacy in Nigeria. Makinde and Sa'adu (2024) likewise reported significant relationships between teachers' feedback and secondary students' motivation and self-efficacy. The current study therefore contributes to an emerging Nigerian evidence base by positioning formative assessment and feedback within Junior Secondary School learning.

The findings are also consistent with Edinoh et al. (2026), whose empirical investigation of digital assessment and feedback concluded that immediate and interactive feedback can support student engagement and academic performance. Although the present study is not limited to digital assessment, both studies support the proposition that assessment should function as continuous learning support rather than merely as an instrument for assigning grades.

The findings concerning feedback use also resonates with Keller et al. (2024), who found that self-efficacy was related to students' emotional responses and perceptions of feedback usefulness. This implies that teachers should consider the emotional dimension of feedback. Feedback that is technically correct but humiliating, vague or excessively judgemental may not generate the intended motivational effect.

Implications for Educational Practice

The findings have several implications for Junior Secondary School education.

Teacher professional development

Teacher training should move beyond teaching educators how to construct tests. Teachers need practical training in interpreting assessment evidence and converting that evidence into specific, elaborative and feed-forward feedback.

Feedback Should Become Actionable

Teachers should avoid comments such as 'poor work', 'wrong', 'careless' or 'try harder' when these comments are not accompanied by actionable guidance. Feedback should explain the gap and identify the next step.

Students Should Be Taught How to Use Feedback

Feedback literacy should be explicitly developed. Students should learn to ask:

- i. What did I do correctly?
- ii. Where is the learning gap?
- iii. Why did I make the error?
- iv. What strategy can I use to correct it?
- v. How will I know that I have improved?

Assessment should lead to revision

A formative assessment cycle should not end when the teacher returns a marked exercise. Students should have opportunities to correct, revise and resubmit selected work.

Self-Efficacy Should Be Considered an Educational Outcome

Teachers should recognise that assessment influences more than academic scores. The manner in which teachers respond to errors can influence learners' perceptions of competence and willingness to persist.

Implications for Educational Policy in Nigeria

The findings suggest that assessment policy should place greater emphasis on assessment for learning within basic and secondary education. Professional development programmes organised by Ministries of Education, State Universal Basic Education Boards and teacher-training institutions should include formative assessment literacy as a core component. School inspection and quality assurance should also examine whether assessment evidence is actually used to modify instruction rather than simply whether teachers conduct tests.

Furthermore, assessment frameworks should encourage:

- i. frequent low-stake assessment;

- ii. timely teacher feedback;
- iii. elaborative and feed-forward comments;
- iv. student self-assessment;
- v. structured peer assessment;
- vi. opportunities for revision;
- vii. teacher use of assessment evidence for instructional adjustment; and
- viii. development of student feedback literacy.

The policy implication is straightforward: assessment of quality should be judged not only by how accurately it measures learning but also by how effectively it improves learning.

Conclusion

This study examined formative assessment practices and student self-efficacy with particular attention to teacher feedback methods in Junior Secondary Schools. The empirical results indicate that structured formative assessment is positively associated with students' academic self-efficacy and learning achievement.

The findings further suggest that feedback quality matters. Elaborative and feed-forward feedback appears particularly valuable because they provide learners with information that can be interpreted and converted into action. Immediate corrective feedback remains useful, but its impact may be strengthened when teachers explain the nature of errors and provide clear pathways for improvement.

The central conclusion is that formative assessment should not be reduced to frequent testing. Its educational value lies in creating a continuous cycle of evidence, interpretation, feedback, action and improvement. For Junior Secondary School students, this cycle may contribute not only to improved academic achievement but also to stronger beliefs in their capacity to learn.

Recommendations

Based on the findings, the study recommends that:

- i. **Junior Secondary School teachers should integrate formative assessment into daily instruction** rather than treating it as an occasional testing activity.
- ii. **Teachers should prioritise elaborative feedback**, explaining why an answer is incorrect and how it can be improved.
- iii. **Feed-forward feedback should be strengthened**, particularly before major assignments and assessments.

- iv. **Students should be given structured opportunities to revise work** after receiving feedback.
- v. **Schools should institutionalise student self-assessment and peer assessment** through carefully designed classroom activities.
- vi. **Teacher professional development should include feedback literacy**, assessment interpretation and instructional adjustment.
- vii. **Educational policymakers should incorporate formative assessment competencies into teacher appraisal and professional standards.**
- viii. **School leaders should monitor the use of assessment evidence**, not merely the number of tests administered.
- ix. **Further Nigerian studies should employ longitudinal and experimental designs** with actual achievement and self-efficacy data to establish the durability of feedback effects.
- x. **Future research should examine whether gender, school location, socioeconomic status and subject areas moderate the relationship between feedback and self-efficacy.**

References

1. Ajjawi, R., Kent, F., Broadbent, J., Tai, J. H.-M., Bearman, M. & Boud, D. (2022). Feedback that Works: A Realist Review of Feedback Interventions for Written Tasks. *Studies in Higher Education*, 47 (7), 1343–1356. <https://doi.org/10.1080/03075079.2021.1894115>
2. Cao, H.-Q. & Han, C.-W. (2024). The Effect of Chinese Vocational College Students' Perception of Feedback on Online Learning Engagement: Academic Self-Efficacy and Test Anxiety as Mediating Variables. *Frontiers in Psychology*, 15, Article 1,326,746. <https://doi.org/10.3389/fpsyg.2024.1326746>
3. Carless, D. & Boud, D. (2018). The Development of Student Feedback Literacy: Enabling Uptake of Feedback. *Assessment & Evaluation in Higher Education*, 43 (8), 1315–1325. <https://doi.org/10.1080/02602938.2018.1463354>
4. Edinoh, K., Nebechukwu, A. O. & Asemota, R. (2026). Rethinking Assessment and Feedback in the Digital Age: An Empirical Study. *American Journal of Education and Evaluation Studies*, 3 (5), 139–148.
5. Fatima, S., Ali, M. & Saad, M. I. (2022). The Effect of Students' Conceptions of Feedback on Academic Self-Efficacy and Self-Regulation: Evidence from Higher Education in Pakistan. *Journal of Applied Research in Higher Education*, 14 (1), 180–199.
6. Hattie, J., Crivelli, J., Van Gompel, K., West-Smith, P. & Wike, K. (2021). Feedback that Leads to Improvement in Student Essays: Testing the Hypothesis That 'Where to Next' Feedback Is Most Powerful. *Frontiers in Education*, 6, Article 645,758. <https://doi.org/10.3389/feduc.2021.645758>
7. Jimin, N., Chianson-Akaa, M. M. & Amua, E. D. (2023). Teacher Feedback Techniques: An Analysis of Students' Self-Efficacy in Mathematics. *International Journal of Research and Innovation in Social Science*, 1316–1326.
8. Johannes, C. & Haase, A. (2024). The Impact of Feedback Mode on Learning Gain and Self-Efficacy: A Quasi-Experimental Study. *Active Learning in Higher Education*, 25 (3), 391–407. <https://doi.org/10.1177/14697874221131970>
9. Keller, M. V., Daumiller, M. & Dresel, M. (2024). Do Achievement Goals and Self-Efficacy Matter for Feedback Use? *Learning and Instruction*, 93, Article 101,948. <https://doi.org/10.1016/j.learninstruc.2024.101948>
10. Kokkiz, R., Inangil, D. & Turkoglu, I. (2024). The Effect of Formative Assessment on Students' Clinical Knowledge, Skills And Self-Efficacy Levels. *Nurse Education in Practice*, 80, Article 104,120. <https://doi.org/10.1016/j.nepr.2024.104120>
11. Li, J. & Gu, P. Y. (2024). Formative Assessment for Self-Regulated Learning: Evidence From A Teacher Continuing Professional Development Programmes. *System*, 125, Article 103,414. <https://doi.org/10.1016/j.system.2024.103414>
12. Lu, S., Cheng, L. & Chahine, S. (2022). Chinese University Students' Conceptions of Feedback and the Relationships With Self-Regulated Learning, Self-Efficacy and English Language Achievement. *Frontiers in Psychology*, 13, Article 1047323. <https://doi.org/10.3389/fpsyg.2022.1047323>
13. Makinde, S. O., & Sa'adu, O. R. (2024). Influence Of Teachers' Feedback on Motivation and Self-

14. Qi, B., Ma, L. & Wang, X. (2024). Using Meta-Analytic Path Analysis to Examine Mechanisms Relating Students' Perceived Feedback, Motivation, Self-Efficacy and Academic Performance. *Learning and Motivation*, 88, Article 102,059.
<https://doi.org/10.1016/j.lmot.2024.102059>
15. Schildkamp, K., van der Kleij, F. M., Heitink, M. C., Kippers, W. B. & Veldkamp, B. P. (2020). Formative Assessment: A Systematic Review of Critical Teacher Prerequisites for Classroom Practice. *International Journal of Educational Research*, 103, Article 101,602.
<https://doi.org/10.1016/j.ijer.2020.101602>
16. Veugen, M. J., Gulikers, J. T. M. & den Brok, P. (2021). We Agree on What We See: Teacher and Student Perceptions of Formative Assessment Practice. *Studies in Educational Evaluation*, 70, Article 101,027.
<https://doi.org/10.1016/j.stueduc.2021.101027>
17. Veugen, M. J., Gulikers, J. T. M. & den Brok, P. J. (2024). Secondary School Teachers' Use of Formative Assessment Practice to Create Co-Regulated Learning. *Journal of Formative Design in Learning*, 8 (1), 15–32.
<https://doi.org/10.1007/s41686-024-00089-9>
18. Yao, Y., Amos, M., Snider, K. & Brown, T. (2024). The Impact of Formative Assessment on K–12 Learning: A Meta-Analysis. *Educational Research and Evaluation*, 29 (7–8), 452–475.
<https://doi.org/10.1080/13803611.2024.2363831>
19. Zafar, N. & Ali Shah, S. S. (2022). Effect of Feedback Specificity on Students' Academic Self-Efficacy at Intermediate Level. *Journal of*

Author's Related Research.

The author's existing scholarship provides a useful Nigerian foundation for the present study. In particular, Edinoh, Nebechukwu, and Asemota's 2026 empirical study directly address assessment and feedback, reporting that immediate and interactive feedback was associated with engagement and academic performance.

The author's broader publication profile also shows sustained engagement with assessment, educational evaluation, teaching and learning, including work on AI in educational assessment, technology integration in teacher education and technology-enhanced learning environments.

For example, Edinoh, Asemota, and colleagues work on technology-enhanced learning environments examined learner engagement, collaboration, digital literacy, critical thinking and achievement in secondary schools in North-Central Nigeria. This provides a useful bridge between the author's existing research programme and the present focus on formative assessment, feedback and learner self-efficacy.

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Final publication note

The literature search confirms that the study is strongly grounded in a current research gap. Recent evidence includes a 2024 K–12 meta-analysis, secondary-school formative assessment research, studies directly linking feedback and self-efficacy, and Nigerian evidence on teacher feedback and secondary-school learners.