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Formative Assessment in developing Lifelong Learning Skills among Secondary School Students

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Abstract: Lifelong learning has appeared as a significant concept in contemporary education, focusing on the never-ending pursue of knowledge, skills, and competencies through life. Lifelong learning skills can be facilitated through formative assessment as teaching tool that gives feedback, encourages reflection, and promotes self-regulation. This study investigated how formative assessment is enhancing the lifelong learning skills among secondary school students in a Government High School in Odisha, India. A mixed-method research design was employed with a sample of 42 Grade 10 students. Students' formative assessment scores have used to collect quantitative data, while qualitative insights were obtained through a semi-structured group interview schedule based on Lifelong Learning Skills Questionnaire. The quantitative data is concurrently analysed in accordance with the thematic analysis employed for qualitative data. Findings indicated that students exhibited a moderate level of lifelong learning skills. Though formative assessments had minimal impact on problem-solving and critical thinking skills, they positively influenced self-directed learning, as students reported enhanced planning, organization, and motivation for learning. The study concludes that current formative assessment practices in government schools are insufficient for cultivating comprehensive lifelong learning skills and recommends the integration of authentic, inquiry-based assessments, teacher training, and student-centred strategies to better align assessment with lifelong learning objectives.

Keywords: lifelong learning skills, formative assessment

INTRODUCTION

Lifelong learning has gradually arisen as a significant concept in the 21st-century education discourse, gaining prominence in both global policy frameworks and pedagogical practices lifelong learning is acknowledged as a fundamental catalyst for personal growth, societal advancement, and economic viability (European Commission, 2020; UNESCO, 2016). This concept asserts that education transcends formal schooling, persisting throughout an individual's life and facilitating the acquisition, adaptation, and application of knowledge, skills, and competencies in response to evolving conditions. This vision aligns strongly with the goal in SGD 4 of Sustainable Development Goals (SDGs), which

advocates for ‘inclusive and equitable quality education and the promotion of lifelong learning opportunities for all’ (United Nations, 2015). NCF-SE 2023 also focuses on assessment reforms. Moving away from high-stakes examinations, it recommends formative, continuous, and competency-based assessment practices that provide feedback, encourage reflection, and support the growth of essential lifelong learning skills (NCERT, 2023). In this way, the framework recognizes that assessment is not merely a tool for evaluating learning but also a powerful strategy for shaping how students learn.

Within school education, lifelong learning competencies are often framed as higher-order learning skills that include self-directed learning, critical and creative thinking, problem-solving, adaptability, and collaborative skills (Candy, 2002; Knapper & Cropley, 2019). Cultivating these dispositions early in students is essential to ensure that they evolve into adaptive and resilient learners who can thrive in dynamic societies. However, the challenge for educators and policymakers lies in identifying effective pedagogical strategies and assessment practices that genuinely foster these lifelong learning skills rather than limiting students to rote learning and performance-based outcomes.

Understanding Formative Assessment

Assessment has traditionally been positioned as a pedagogical tool for measuring learning outcomes. However, in recent decades, formative assessment has been recognized not only as a measure of learning but also as a tool to promote learning (Black & Wiliam, 1998; Sadler, 1989). Formative assessment emphasizes continuous feedback, reflection, and adjustment of learning strategies, thereby holding the potential to enhance students’ motivation, self-regulation, and autonomy-qualities closely associated with lifelong learning (Nicol & Macfarlane-Dick, 2006).

The National Education Policy (NEP) 2020 in India places a strong emphasis on developing lifelong learning dispositions, competency-based education, and holistic development (MHRD, 2020). Formative assessments are mostly limited to administrative obligations rather than effective pedagogical interventions, while summative testing still accounts for a substantial portion of classroom instruction. As part of a continuous and comprehensive evaluation process, government schools in the state of Odisha have implemented formative evaluations; so far as empirical evidence, there is no proof that these practices have an impact on students’ learning abilities and attitudes. Formative assessment practices, such as peer assessment, self-assessment, and descriptive teacher feedback, have been shown to enhance metacognitive awareness and help students take ownership of their learning (Heritage, 2010). By promoting goal setting, monitoring of progress, and self-evaluation, formative assessment aligns directly with the attributes of lifelong learning. In theory, it should help students develop the capacity to learn how to learn, thereby strengthening their readiness for continuous knowledge acquisition beyond the classroom (OECD, 2019).

Despite its potential, the implementation of formative assessment in classrooms often remains superficial. In many contexts, especially in developing countries like India, formative assessments are often reduced to structured reporting formats or compliance-driven documentation, with limited attention to their role in enhancing students’ learning dispositions (Kumar, 2021). This brings to question how formative assessment actually helps develop lifelong learning skills among students.

Lifelong Learning Skills

The lifelong learning skills refer to three sub-dimensions such as self-directed learning skill, problem solving skill, and critical thinking skill. Self-directed Learning Skills include the planned learning strategies adopted by the learners for themselves; Problem Solving Skills include ‘Exploring and Understanding, Representing and Formulating, Planning and Executing, Monitoring and Reflecting skills’ and Critical Thinking Skills include ‘Interpretation, Analysis, Evaluation, Inference, Explantation, Self-regulation’.

Summative and Formative Assessment in Education

In educational institutions, usually, assessment is used for assigning scores to measure academic achievement of a student. The most central mode of assessment has been summative assessment in the

20th century, which concentrating end session evaluation, often for certification and accountability purposes (Harlen, 2007). Summative methods offer useful insights on student performance, but they frequently fail to assess the learning process and can discourage students from exploring deeper into the concepts (Shepard, 2000).

On the other hand, formative assessment, sometimes known as ‘assessment for learning’ aims to facilitate learning as it takes place. In their landmark review, Black and Wiliam (1998) defined formative assessment as student-teacher activities that helps in revising the instructional process. Timely feedback, learning goal identification, peer and self-assessment, and chances for students to take ownership of their development are important components (Sadler, 1989; Nicol & Macfarlane-Dick, 2006).

From kindergarteners to upper secondary pupils, assessment procedures significantly aid in the development of problem-solving abilities (Ukobizaba, Nizeyimana, & Mukuka, 2021). Curiosity and intrinsic motivation can be stimulated by well-designed formative assessments that place an emphasis on understanding, critical thinking, and problem-solving rather than rote memorization. In turn, this encourages a more intense interest in the subject matter and a desire to continue learning outside of the classroom. Additionally, formative assessments that offer continuous feedback and chances for improvement help students understand learning as a process rather than an end result. This promotes perseverance and the ability to overcome obstacles and bounce back from challenges that arise. Studies show that teachers often struggle to embed formative assessment authentically within daily classroom practices, and instead reduce it to routine exercises or administrative checklists (Popham, 2008; Kumar, 2021). This issue is particularly evident in contexts where high-stakes examinations dominate, limiting the scope for formative feedback to influence learning behaviours.

REVIEW OF RELATED LITERATURE

Research linking formative assessment to lifelong learning skills is expanding, though findings are mixed.

- *Self-Directed Learning*: Several studies indicate that formative assessment fosters self-directed learning by encouraging students to set goals, reflect on progress, and plan next steps (Paris & Paris, 2003; Nicol, 2009). Yet, other studies report that students often view formative assessments as additional tasks rather than developmental opportunities, reducing their impact on learning autonomy (Birenbaum et al., 2015).
- *Critical Thinking and Problem-Solving*: Formative assessment strategies, such as open-ended questioning, peer dialogue, and reflective journals, have been linked to improvements in higher-order thinking (Carless, 2007). However, when formative assessment is narrowly implemented (e.g., repetitive quizzes or rigid checklists), it may reinforce surface learning rather than promote deeper skills (James & Pedder, 2006).
- *Motivation and Engagement*: Evidence suggests that formative feedback enhances intrinsic motivation when it is constructive and process-oriented, but can have negative effects when overly evaluative or judgmental (Deci & Ryan, 2000; Brookhart, 2008). Students who perceive formative assessment as supportive tend to display stronger learning engagement, while those who perceive it as punitive demonstrate resistance (Stiggins, 2005).
- *Collaboration and Peer Learning*: Peer assessment and group-based formative practices have been associated with the development of collaboration skills (Topping, 2010). Yet, cultural factors and classroom hierarchies sometimes hinder authentic peer learning, limiting the development of collaborative dispositions (Li, Liu, & Steckelberg, 2010).

Overall, while formative assessment has demonstrable potential to nurture lifelong learning skills, its actual impact is contingent upon pedagogical quality, contextual conditions, and students’ perceptions.

Research Gaps

The literature highlights three key gaps that the present study seeks to address:

1. *Limited empirical research in India:* While international studies have explored the link between formative assessment and lifelong learning skills, few have examined this relationship in Indian secondary schools, particularly within government school contexts.
2. *Student perspectives underexplored:* Much of the research on assessment reform emphasizes teacher practices, leaving students' perceptions of formative assessment relatively under-represented. Understanding how students themselves interpret and experience formative assessments is critical to assessing their effectiveness.
3. *Disconnect between policy and practice:* Although national and state policies promote formative assessment as a means of fostering lifelong learning, evidence on its actual classroom impact is limited, necessitating context-specific inquiry.

The literature establishes that formative assessment has strong theoretical potential to cultivate lifelong learning skills by fostering self-directed learning, critical thinking, and learner autonomy. However, evidence from practice, especially in the Indian context, reveals a significant implementation gap. While policies advocate formative assessment as a transformative tool, classroom realities often reduce it to routine exercises, thereby limiting its impact.

RATIONALE OF THE STUDY

This study is substantial in three major ways. At first, it talks about the major gap in empirical research on the relationship between lifelong learning skills of secondary school students and formative assessment in the Indian school context. Secondly, it focuses on views of students on formative assessments based on a learner-centred approach. Lastly, it contributes to the wider global concern on assessment reforms to be aligned with the global educational goal for development lifelong learners. This study offers insights that can help educators, school administrators, and policymakers create assessment techniques that go beyond documentation and compliance to genuine practices that support lifelong learning by critically examining the function of formative assessment.

Lifelong learning refers to inclination and willingness of any one engages in continuous learning throughout their life, even beyond formal education settings. In lifelong learning process, one has the willingness to learn and involve in learning activities for professional as well as personal development beyond their formal educational activities. Based on emancipatory, humanistic and democratic values, lifelong learning is founded in the integration of learning and living, covering learning activities for people of all ages, in all life contexts (home, school, workplace, community, etc.) and through formal, non-formal and informal modalities (UNESCO, 2014). The famous Faure report, titled "Learning to be" (Faure *et al.*, 1972), set out a detailed philosophical vision of a future scientific humanist learning society, marked by well-planned and delivered lifelong education to ensure that all citizens had the capacity to participate fully in this future society.

Learning is a phenomenon that extends beyond the educational or training settings. It offers understanding and direction about thinking about personal growth, overcoming barriers, innovation and professional development (The Oxford Handbook of Lifelong Learning, 2021).

Research Objectives

1. To explore the scope of formative assessments towards the development of lifelong learning skills among secondary school students.
2. To determine if any lifelong learning skills, are aided by formative assessment at school.
3. To study the perceptions of students about implications of formative assessment in enhancing their self-directed learning.

METHODOLOGY

Research Design: The present study has adopted a mixed-method research design (i.e., exploratory research design), integrating both quantitative and qualitative methods for comprehensive understanding of the role of formative assessment in the development of lifelong learning skills among secondary school students.

Participants: The participants of the study involved all the students of Grade 10 of a Government High School of Bhubaneswar run under School & Mass Education Department, Government of Odisha. From the total enrolment of 133 students, a sample of 42 students (40% of available student i.e., 105, during the time of data collection) from Grade 10 was selected using a simple random sampling technique. This sample was considered adequate to provide both quantitative insights and qualitative perspectives on the phenomenon under investigation of the population (Guest et al., 2006). According to Guest et al., “data saturation often occurs within the first 12 data collection in qualitative research”.

Tools and techniques for data collection: Two tools were adopted to collect the data viz. Guidelines for Focus Group Discussion with Students, and Analysis of Assessment Record for obtaining formative assessment scores of students.

Guidelines for Focus Group Discussion with Students was adopted to explore students’ perceptions on the role of formative assessment in fostering lifelong learning skills. The FGD focused on students’ experiences, perceptions, and reflections on formative assessments practised in school.

Analysis of Assessment Record of students was done to obtain formative assessment scores as secondary source of data. This helped in analysing student performance in combination with the findings of interview to explore the extent to which formative assessment results are aligned with the development of lifelong learning skills.

Techniques Data Analysis: The qualitative data obtained from the semi-structured group interviews were analysed using thematic analysis. The quantitative data collected through formative assessment scores were analysed in line with qualitative data. The interview data has coded systematically, categorized, and interpreted recurring themes. This process enabled the identification of patterns in students’ responses and provided insights into the interrelationships between formative assessment and lifelong learning skills.

Results

The first objective was to analyse the role of formative assessment in facilitating lifelong learning skills among students, explored qualitatively through group interviews. Three key themes emerged corresponding to the skill dimensions.

- **Problem-Solving Skills:** Students generally reported that formative assessments did not significantly contribute to problem-solving skills. While a few students mentioned applying classroom learning to problem-solving, the majority perceived formative assessments primarily as preparation for examinations rather than as tools for addressing real-life challenges. One student remarked, “*I just prepared the night before the exam to get reasonable marks.*” This suggests that formative assessments in government schools were largely structured around test performance rather than problem-solving development.
- **Critical Thinking Skills:** Similarly, formative assessments were found to have little to no influence on the development of critical thinking skills. Students reported that assessment tasks were limited to answering questions from the prescribed syllabus and did not involve opportunities for analysis, evaluation, or reasoning beyond the textbook. One student explained that assessments rarely included critical-thinking-oriented tasks, and preparation was focused solely on syllabus-based questions. This indicates that formative assessments, in their current form, provide minimal scope for fostering critical thinking.
- **Self-Directed Learning Skills:** Unlike the other two dimensions, formative assessments appeared to positively influence self-directed learning skills. Students reported that assessments

motivated them to take responsibility for their own learning by planning, organizing, and managing study schedules. Many students emphasized that the anticipation of formative assessments encouraged them to engage in self-regulated learning. For instance, a high-performing student stated, *"I always plan, prepare a schedule, and allocate a specific timeframe when assessments are ahead."* Another student highlighted a broader perspective, *"Not only formative assessments but also other class tests make me conscious of my own learning, and I start planning how I will complete my studies."* These responses suggest that while formative assessments did not significantly contribute to problem-solving or critical thinking, they played a meaningful role in fostering self-directed learning among students.

DISCUSSION OF THE RESULTS

The findings indicate that formative assessments, as implemented in the studied government high school, have limited impact on the development of lifelong learning skills among secondary school students. While they encourage some aspects of self-directed learning, they do not significantly enhance problem-solving or critical thinking skills. Thus, formative assessments in their current design contribute minimally to the broader goal of cultivating lifelong learners.

The present study aimed to explore the role of formative assessment in developing lifelong learning skills among secondary school students. The results showed that although students exhibited a moderate level of lifelong learning skills, formative assessments played a very small part in developing these abilities. In particular, formative assessments did not improve critical thinking or problem-solving abilities, but they seemed to promote self-directed learning abilities. This result is consistent with other research that suggests formative evaluations do not foster higher-order thinking skills when they are solely focused on test performance (Black & Wiliam, 2009; Brookhart, 2017). In contrast, research by Nicol and Macfarlane-Dick (2006) emphasizes that formative assessment can significantly promote self-regulated learning, which is consistent with the students' accounts in this study.

Problem-Solving and Critical Thinking Skills: The lack of contribution of formative assessments to problem-solving and critical thinking mirrors concerns raised by researchers who argue that traditional assessment practices in schools remain rote-driven and exam-oriented (Sadler, 1989; Carless, 2015). As students in this study reported, most assessments tested recall from prescribed syllabi, leaving little room for application, interpretation, or reasoning. This suggests that the current model of formative assessment in government schools in Odisha may be structurally misaligned with the development of lifelong learning skills. International evidence highlights that authentic formative assessment tasks, such as real-world problem scenarios, project-based assessments, and reflective journals, can enhance critical thinking and problem-solving (Torrance, 2012; Andrade & Heritage, 2017). The absence of such practices in the present context helps explain the weak linkage between assessments and these skills.

Self-Directed Learning Skills: In contrast, formative assessments were found to encourage self-directed learning by motivating students to plan, organize, and monitor their learning. This finding is in line with Zimmerman's (2002) framework on self-regulated learning, which underscores that external triggers such as assessments can foster students' intrinsic responsibility for learning. The study also supports Panadero et al. (2018), who found that formative feedback and assessment practices can promote metacognitive awareness and learning strategies among learners. However, the positive effect on self-directed learning appeared limited to short-term exam preparation rather than sustained lifelong learning practices. This highlights the need to shift from assessment-driven motivation to intrinsic engagement in learning activities.

Implications for Policy and Practice

The findings of this study have several important implications:

1. *Re-design of Formative Assessments*: Policymakers and curriculum developers should move beyond syllabus-based test items and incorporate authentic, inquiry-based, and project-oriented assessments that stimulate problem-solving and critical thinking.
2. *Self-directed learning*: Self-directed learning can be strengthened and transitioned from exam-preparation behaviour to a sustainable lifelong learning attitude by encouraging students to create learning goals, reflect on their progress, and assess their own work.

Implications for Future Research

This study may lead to further researches on-

1. *Longitudinal Studies*: Long-term studies could explore how continuous formative assessment practices influence lifelong learning skills over time, capturing sustained changes in self-directed learning, critical thinking, and problem-solving abilities among students.
2. *Expanded Sample and Contexts*: Research should include larger and more diverse samples across multiple schools, including private, urban, and rural contexts, to increase the generalizability of findings.
3. *Comparative Studies*: Future research could inspect differences across subjects, assessment formats, and teaching approaches to determine which specific strategies most effectively support enhancing lifelong learning skills.

Delimitation: *The study's findings are not as broadly applicable because it was restricted to one government high school in Odisha and had a small sample size (N=42). To validate these findings, larger and more varied samples from other school contexts should be used in future research. Furthermore, longitudinal research may shed further light on the long-term effects of formative assessments on lifelong learning skills.*

CONCLUSION

The present study investigated the effectiveness of formative assessment in promoting lifelong learning skills among secondary school students in Odisha. By addressing both practical and research-oriented implications, this study emphasizes that reimagining formative assessment is critical for fostering lifelong learning skills. Policymakers, educators, and researchers must collaboratively work to ensure that assessments move beyond rote evaluation, becoming instruments that truly cultivate autonomous, reflective, and adaptable learners prepared for the challenges of the 21st century. The study concludes by highlighting the significance of rethinking formative assessment as a tool for development rather than just evaluation. By doing this, schools may better develop students' capacity for lifelong learning and prepare them to meet the challenges of the twenty-first century as independent, thoughtful, and flexible learners.

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