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The Influence of Academic Leadership on the Effectiveness of Digital Formative Assessment in Improving Student Learning Outcomes in Elementary Schools

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ABSTRACT

This study examines how academic leadership influences the effectiveness of digital formative assessment in improving student learning outcomes in elementary education. The research was conducted at SDN Salakkembang Tulungagung using a qualitative case study design involving one principal and six teachers selected purposively. Data were collected through semi-structured interviews, classroom observations, and document analysis, then analyzed using thematic analysis. The findings show that academic leadership was enacted through instructional supervision, mentoring, and continuous professional development that strengthened teachers' capacity in designing and implementing digital formative assessment. Teachers integrated digital tools into daily instruction through interactive quizzes, real-time feedback, and data-informed learning activities. Students demonstrated improved conceptual understanding, increased engagement, and stronger motivation during learning processes. They were able to identify errors, revise their work, and participate actively in assessment activities. The alignment between leadership practices and assessment implementation created a structured, responsive, and student-centered learning environment. The study indicates that academic leadership plays a key role in enhancing the effectiveness of digital formative assessment and improving student learning outcomes in elementary schools.

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1. INTRODUCTION

The transition toward digital learning in elementary education has reshaped the way assessment is designed and implemented in classroom practice. Digital formative assessment introduces a continuous approach to evaluating student learning through interactive platforms, real-time feedback, and data-driven insights. These tools allow teachers to monitor student progress during the learning process rather than relying solely on summative evaluation at the end of instruction. In elementary classrooms, formative assessment plays a critical role in identifying learning gaps, guiding instruction, and supporting skill development. Despite the availability of digital tools, many schools continue to rely on traditional assessment methods that emphasize final scores and standardized testing. Such practices often limit opportunities for students to receive timely feedback and reduce the effectiveness of assessment as a learning tool. This gap between potential and practice highlights the need for leadership that can guide the integration of digital formative assessment into classroom instruction. Research indicates that effective use of formative assessment improves student achievement when feedback is timely, specific, and aligned with learning goals (Black & Wiliam, 2009; Wiliam, 2011). This situation raises a critical question regarding how academic leadership can influence the effectiveness of digital formative assessment in improving student learning outcomes in elementary schools.

Academic leadership serves as a central factor in shaping instructional quality and assessment practices within schools. Principals are responsible for creating conditions that support effective teaching, including the integration of assessment strategies that enhance learning. Academic leadership involves setting clear expectations, providing instructional guidance, and facilitating professional development for teachers. In the context of digital formative assessment, leadership requires an understanding of both pedagogical principles and technological tools. Principals must guide teachers in selecting appropriate digital platforms, designing meaningful assessment tasks, and interpreting assessment data to inform instruction. Teachers often face challenges in integrating technology into assessment practices due to limited experience or confidence. Leadership that emphasizes mentoring and collaborative learning can address these challenges by building teachers' capacity and encouraging experimentation. Studies have shown that instructional leadership has a strong influence on classroom practices and student achievement, particularly when leaders focus on teaching and learning processes (Hallinger & Heck, 2010; Robinson, 2011). This leads to an important question regarding how academic leadership is enacted in supporting teachers to implement digital formative assessment effectively in classroom practice.

The interaction between leadership and assessment becomes increasingly relevant when examined through its impact on student outcomes. Formative assessment is designed to support learning by providing continuous feedback that helps students understand their strengths and areas for improvement. Digital tools enhance this process by enabling immediate feedback, tracking progress over time, and facilitating interactive learning experiences. Students can engage in self-assessment, peer evaluation, and reflective activities that promote deeper understanding of content. The use of digital formative assessment also allows for differentiated instruction, as teachers can adjust learning activities based on real-time data. This adaptability is particularly important in elementary education, where students demonstrate diverse learning needs and developmental levels. Research suggests that formative assessment practices contribute to improved academic performance and increased student engagement when implemented consistently and effectively (Heritage, 2010; Nicol & Macfarlane-Dick, 2006).

Leadership-driven implementation of digital formative assessment plays a significant role in ensuring that these practices are sustained and aligned with instructional goals. Principals who actively engage in instructional leadership create coherence between curriculum, teaching, and assessment. This coherence supports teachers in designing learning experiences that integrate assessment seamlessly into instruction. Leadership also influences the availability of resources, training opportunities, and support systems necessary for effective implementation. Schools that demonstrate strong academic leadership tend to develop a culture of continuous improvement, where assessment is used as a tool for learning rather than merely for evaluation. Evidence indicates that leadership practices focused on assessment literacy and data use contribute to improved student outcomes (Datnow & Hubbard, 2016).

The integration of digital formative assessment also reflects broader changes in educational paradigms. Traditional assessment models often position students as passive recipients of evaluation, while formative approaches encourage active participation and reflection. Digital platforms provide opportunities for students to interact with content, receive feedback, and monitor their own progress. These experiences support the development of self-regulated learning skills, which are essential for long-term academic success. Teachers are required to shift their roles from evaluators to facilitators who guide students in understanding feedback and improving their performance. Leadership becomes essential in supporting this transformation by providing direction, resources, and continuous encouragement. The success of digital assessment initiatives depends on the ability of school leaders to align technological innovation with pedagogical practices.

The focus on improving student learning outcomes in elementary education underscores the importance of effective assessment practices. Learning outcomes are influenced by multiple factors, including teaching quality, student engagement, and feedback mechanisms. Digital formative assessment offers a means to enhance these factors by creating a responsive and interactive learning environment. Students benefit from immediate feedback, opportunities for reflection, and personalized learning pathways. The role of leadership is crucial in ensuring that these benefits are realized in classroom practice. Academic leadership provides a framework for integrating assessment with instruction and fostering a culture that values continuous learning and improvement.

This study aims to explore how academic leadership influences the effectiveness of digital formative assessment in improving student learning outcomes in an elementary school context. The research focuses on SDN Salakkembang Tulungagung as a case that illustrates the interaction between leadership practices and assessment implementation. The study addresses three key questions related to leadership enactment, classroom implementation, and student outcomes. These questions guide the analysis of how academic leadership supports the integration of digital formative assessment and its impact on learning. The findings are expected to contribute to a deeper understanding of how leadership can enhance assessment practices and improve the quality of education in elementary schools.

2. METHOD

This study employed a qualitative case study design to investigate academic leadership practices and the implementation of digital formative assessment within a real school context. A qualitative approach was selected to capture detailed insights into participants' experiences, perceptions, and interactions related to leadership and assessment practices. The case study design allowed an in-depth exploration of a bounded system, focusing on one elementary school as a representative setting where digital formative assessment was implemented. The research was conducted at SDN Salakkembang Tulungagung, which has adopted digital tools in classroom assessment practices. This context provided a meaningful environment for examining how leadership influences instructional and assessment processes in everyday situations. Case study research is appropriate for understanding complex educational phenomena within natural settings where multiple variables interact (Yazan, 2015).

Participants consisted of one school principal and six classroom teachers who were directly involved in implementing digital formative assessment. A purposive sampling technique was applied to ensure that participants had relevant experience and knowledge aligned with the research focus. The principal was selected due to their central role in academic leadership and decision-making processes, while teachers were chosen based on their active engagement in designing and using digital assessment tools. This sampling strategy enabled the study to gather rich and context-specific data from individuals who were closely connected to the phenomenon under investigation. Purposeful sampling is widely used in qualitative research to obtain information-rich cases that provide deep understanding rather than broad generalization (Etikan, Musa, & Alkassim, 2016).

Data collection was conducted using multiple techniques to enhance the depth and credibility of the findings. Semi-structured interviews were carried out to explore participants' perspectives on leadership practices, assessment strategies, and classroom implementation. Classroom observations were conducted to document real-time interactions, the use of digital tools, and student engagement during assessment activities. Documentation analysis included lesson plans, assessment records, and samples of student work, which provided additional evidence of instructional and assessment practices. The combination of these methods enabled a comprehensive understanding of the relationship between leadership and digital formative assessment. The use of multiple data sources supports triangulation, which strengthens the validity of qualitative research findings (Nowell, Norris, White, & Moules, 2017).

Data analysis followed a thematic analysis approach involving systematic processes of coding, categorization, and interpretation. All collected data were transcribed and reviewed repeatedly to identify patterns and recurring themes related to leadership and assessment practices. Codes were grouped into broader categories that reflected key aspects of academic leadership and digital formative assessment. The interpretation process focused on linking empirical findings with relevant theoretical perspectives. To ensure trustworthiness, the study applied triangulation across data sources and conducted member checking by sharing findings with participants for validation. These procedures enhanced the credibility, dependability, and confirmability of the research results.

3. RESULTS AND DISCUSSION

Academic Leadership Practices in Supporting Digital Formative Assessment

The findings indicate that the principal at SDN Salakkembang Tulungagung enacted academic leadership through a sustained focus on improving assessment practices within everyday instruction. This focus was articulated in school meetings, reinforced during instructional supervision, and reflected in routine interactions with teachers. The principal positioned formative assessment as an integral component of teaching rather than a separate activity conducted after instruction. Teachers described the direction as clear and actionable, guiding them to integrate digital tools into assessment processes that monitor learning progress continuously. The emphasis on assessment for learning encouraged teachers to reconsider their practices and align them with student-centered approaches. Evidence from instructional leadership research shows that leaders who prioritize teaching and assessment processes contribute to improved classroom practices and student achievement (Leithwood, Harris, & Hopkins, 2020).

Leadership practices included structured mentoring that supported teachers in designing and implementing digital formative assessment. The principal conducted classroom observations followed by reflective discussions that focused on assessment design, feedback strategies, and student engagement. Teachers reported that feedback from the principal was specific and oriented toward improvement, which helped them refine their practices. Mentoring sessions addressed how to construct meaningful assessment tasks, interpret student responses, and use data to guide instruction. This approach reduced uncertainty related to the use of digital tools and encouraged teachers to experiment with new assessment strategies. Research indicates

that leadership practices that include coaching and feedback have a positive impact on instructional quality and teacher learning (Kraft, Blazar, & Hogan, 2018).

Professional development activities were organized to strengthen teachers' capacity in using digital formative assessment. The principal facilitated workshops that introduced teachers to various digital platforms, including online quizzes, interactive response systems, and learning management tools. Teachers engaged in hands-on activities that allowed them to design assessment tasks and simulate classroom implementation. Follow-up sessions provided opportunities for reflection and sharing of experiences. Teachers noted that continuous professional learning helped them develop confidence and competence in integrating digital assessment into their teaching. Sustained professional development has been identified as a key factor in improving teachers' ability to use assessment effectively (Desimone & Garet, 2015).

The principal also encouraged collaboration among teachers as part of the leadership strategy. Teachers participated in regular discussions, peer observations, and joint planning sessions focused on assessment practices. These collaborative activities enabled teachers to exchange ideas, review student work, and identify effective strategies for using digital tools. Teachers reported that collaboration reduced isolation and provided practical solutions to challenges encountered during implementation. The development of a collaborative professional culture contributed to shared understanding and collective responsibility for improving assessment practices. Studies have shown that teacher collaboration enhances instructional effectiveness and supports school improvement efforts (Goddard, Goddard, Kim, & Miller, 2015).

Leadership support extended to the selection and use of digital platforms for formative assessment. The principal guided teachers in choosing tools that align with curriculum objectives and student needs. Teachers were encouraged to use platforms that provide immediate feedback, track student progress, and support interactive learning. The principal ensured that technology use remained focused on pedagogical goals rather than technical features. This alignment helped teachers integrate assessment seamlessly into their lessons and maintain coherence between instruction and evaluation. Leadership that emphasizes alignment between technology and pedagogy is associated with more effective implementation of digital practices (Spillane, Halverson, & Diamond, 2004).

Teachers expressed increased confidence in implementing digital formative assessment as a result of leadership support. Interviews revealed a shift in teachers' attitudes from hesitation to active engagement in using digital tools. Teachers demonstrated willingness to explore new applications, adapt assessment strategies, and reflect on their practices. This change reflects the influence of leadership on teacher beliefs and motivation. When teachers perceive leadership as supportive and responsive, they are more likely to adopt innovative practices. Research suggests that teacher self-efficacy is influenced by leadership behaviors that provide encouragement, resources, and opportunities for professional growth (Tschannen-Moran & Gareis, 2015).

The leadership approach also contributed to the development of a school culture that values continuous improvement in assessment practices. Teachers engaged in cycles of planning, implementation, reflection, and revision, which enhanced the quality of digital formative assessment. Classroom observations indicated that assessment activities became more interactive, with students actively participating in quizzes, discussions, and feedback sessions. The principal monitored implementation through regular visits and discussions, which reinforced accountability and consistency. This ongoing process of improvement ensured that assessment practices remained aligned with learning objectives and responsive to student needs.

The discussion highlights that academic leadership functions as a key driver in the effective implementation of digital formative assessment. The principal's role extended beyond administrative tasks to active involvement in instructional processes, particularly in guiding assessment practices. Leadership actions that combined vision, mentoring, professional development, and collaboration created conditions that enabled teachers to implement digital assessment effectively. These conditions supported the integration of assessment into daily instruction and enhanced the quality of feedback provided to students.

The findings suggest that successful implementation of digital formative assessment depends on coherent leadership practices that connect vision, teacher development, and classroom application. The principal's leadership ensured that assessment practices were aligned with instructional goals and supported by appropriate resources and professional learning opportunities. The interaction between leadership and teacher collaboration strengthened the school's capacity to sustain innovation in assessment. This perspective aligns with research indicating that leadership influences student outcomes through its impact on teaching quality and school climate (Leithwood et al., 2020). The case of SDN Salakkembang Tulungagung illustrates how academic leadership can create a learning environment that supports continuous assessment and improved student learning outcomes.

Implementation of Digital Formative Assessment in Classroom Practice

The implementation of digital formative assessment at SDN Salakkembang Tulungagung was embedded within daily instructional routines rather than treated as an additional activity. Teachers integrated assessment

into lesson flow through the use of online quizzes, interactive tasks, and digital response systems that captured student understanding in real time. These tools were used at different stages of learning, including initial exploration, guided practice, and consolidation of concepts. Students engaged with assessment activities through mobile devices and classroom-based digital platforms, which allowed teachers to gather immediate evidence of learning. This integration ensured that assessment became part of the learning process and supported continuous monitoring of student progress. Research on formative assessment emphasizes that embedding assessment within instruction enhances its effectiveness in supporting learning (Bennett, 2011).

Teachers designed assessment tasks that aligned with learning objectives and encouraged active participation. Online quizzes included multiple-choice, short-answer, and matching formats that tested comprehension and application of concepts. Interactive tasks required students to analyze information, solve problems, and collaborate with peers in digital environments. These activities promoted deeper engagement with content and supported the development of higher-order thinking skills. The use of digital tools enabled teachers to vary assessment formats, which addressed different learning preferences and increased student involvement. Studies have shown that varied assessment methods contribute to more accurate understanding of student learning and support diverse learners (Shute & Rahimi, 2017).

Immediate feedback emerged as a key feature of digital formative assessment. Students received instant responses to their answers, including indications of correctness and explanations for improvement. This feedback allowed students to identify errors, reflect on their understanding, and revise their work during the learning process. Teachers also provided additional feedback through digital platforms, offering guidance and suggestions tailored to individual student needs. The presence of timely and specific feedback supported learning by reinforcing correct understanding and addressing misconceptions. Evidence indicates that feedback is most effective when it is immediate, actionable, and connected to learning goals (Hattie & Clarke, 2018).

Teachers used data generated from digital assessments to monitor student progress and inform instructional decisions. Assessment platforms provided detailed reports on student performance, including accuracy rates, response patterns, and completion times. Teachers analyzed this data to identify students who required additional support and to adjust lesson plans accordingly. Instructional strategies were modified based on evidence, allowing teachers to address learning gaps and provide targeted interventions. This data-driven approach enhanced the responsiveness of teaching and ensured that instruction remained aligned with student needs. Research highlights that the use of assessment data can improve teaching effectiveness and student outcomes when applied systematically (Schildkamp, Poortman, & Handelzalts, 2016).

Learning activities were structured to promote reflection and self-assessment among students. Teachers encouraged students to review their results, consider feedback, and set goals for improvement. Reflection activities included discussing errors, comparing answers with peers, and identifying strategies for better performance. These practices supported the development of metacognitive skills, which enable students to regulate their own learning processes. Students became more aware of their strengths and areas for improvement, which contributed to independent learning. Self-assessment has been recognized as a valuable component of formative assessment that enhances student engagement and responsibility (Panadero, Brown, & Strijbos, 2016).

The role of teachers shifted toward facilitation as digital formative assessment became part of classroom practice. Teachers guided students in interpreting feedback, encouraged discussion, and supported problem-solving activities. Classroom interactions became more dialogic, with students actively participating in evaluating their learning. Teachers provided scaffolding when necessary, ensuring that students could complete tasks while gradually developing independence. This facilitative approach aligned with learner-centered pedagogy, where students are actively involved in constructing knowledge. Research indicates that facilitation and scaffolding are essential for effective implementation of formative assessment in digital environments (Nicol, Thomson, & Breslin, 2014).

Student engagement increased as a result of interactive and responsive assessment practices. Students participated actively in tasks, responded to questions, and collaborated with peers during digital activities. The use of gamified elements such as scores and progress indicators contributed to sustained motivation. Students demonstrated persistence in completing tasks and revising their work based on feedback. Engagement was also influenced by the relevance of tasks, as teachers designed activities that connected with students' experiences. Increased engagement is associated with improved learning outcomes, as students are more likely to invest effort and attention in meaningful tasks (Henrie, Halverson, & Graham, 2015).

The integration of digital formative assessment also supported continuous learning beyond the classroom. Students accessed assessment activities outside school hours, allowing them to practice and review content at their own pace. This flexibility enabled students to reinforce learning and prepare for subsequent lessons. Teachers encouraged independent practice by assigning digital tasks that students could complete at home. The availability of learning resources and assessment tools extended the learning environment and supported sustained engagement. Mobile and digital learning environments have been shown to enhance learning continuity and support skill development (Ifenthaler & Schweinbenz, 2016).

The implementation process highlighted the importance of aligning assessment practices with instructional goals and classroom context. Teachers ensured that digital tools were used purposefully to support learning rather than as isolated technological features. Assessment activities were integrated with discussion, explanation, and reflection to create a comprehensive learning experience. This alignment maintained focus on educational objectives and enhanced the effectiveness of digital formative assessment. The findings suggest that successful implementation depends on the coherence between pedagogy, assessment design, and technology use.

The discussion indicates that digital formative assessment can transform classroom practice by making assessment more interactive, responsive, and aligned with learning processes. Teachers at SDN Salakkembang Tulungagung demonstrated the ability to integrate digital tools into instruction in ways that support continuous learning and student engagement. Their role as facilitators enabled students to actively participate in assessment and develop reflective learning habits. The combination of real-time feedback, data-informed instruction, and interactive tasks created a learning environment that supports improved student outcomes.

Impact on Student Learning Outcomes

The findings indicate that students at SDN Salakkembang Tulungagung experienced clear improvement in learning outcomes following the integration of digital formative assessment into classroom practice. Students demonstrated stronger conceptual understanding through their ability to explain ideas, apply knowledge in tasks, and complete assignments with higher accuracy. They engaged with assessment activities that required them to respond to questions, analyze information, and solve problems using digital tools. The availability of immediate feedback allowed students to recognize errors and revise their responses during the learning process. This iterative cycle of response and revision contributed to deeper understanding and retention of content. Evidence suggests that formative assessment improves academic achievement when students are actively involved in using feedback to guide their learning (Kingston & Nash, 2011).

Students also showed increased ability to identify mistakes and make corrections independently. Digital assessment platforms provided detailed feedback that highlighted incorrect responses and offered explanations for improvement. Students used this information to reflect on their performance and adjust their strategies. Classroom observations indicated that students became more attentive to the quality of their work and more willing to revise their answers. This process supported the development of metacognitive skills, which enable learners to monitor and regulate their own learning. Research highlights that metacognitive engagement is associated with improved academic performance and deeper learning (Zimmerman & Moylan, 2009).

Classroom engagement increased as students participated actively in assessment activities. Students responded to digital quizzes, engaged in discussions, and collaborated with peers during problem-solving tasks. The interactive nature of digital formative assessment created a dynamic learning environment where students were involved in evaluating their understanding. Participation was not limited to answering questions but extended to discussing feedback, comparing results, and exploring alternative solutions. Increased engagement contributed to improved focus and persistence in completing tasks. Engagement is recognized as a critical factor that influences learning outcomes, as students who are actively involved in learning are more likely to achieve better results (Fredricks, Filsecker, & Lawson, 2016).

Digital formative assessment supported active learning by positioning students as participants in the evaluation process. Students were encouraged to review their responses, interpret feedback, and make decisions about how to improve their work. This involvement promoted a sense of ownership over learning and increased responsibility for outcomes. Students developed confidence in expressing their ideas and attempting challenging tasks, knowing that feedback would guide their improvement. Active involvement in assessment processes has been shown to enhance learning by encouraging reflection and deeper cognitive processing (Carless & Boud, 2018).

Motivation increased as students interacted with digital tools that provided immediate results and visible progress indicators. Features such as scores, feedback messages, and progress tracking created a sense of achievement and encouraged continued participation. Students demonstrated persistence in completing tasks and showed willingness to attempt multiple revisions to improve their performance. Motivation was also influenced by the relevance and interactivity of assessment tasks, which made learning more engaging. Intrinsic motivation plays an important role in learning, as students who are motivated are more likely to invest effort and achieve higher levels of performance (Ryan & Deci, 2020).

Confidence in learning also improved as students experienced success through guided assessment practices. Students became more comfortable with making mistakes and using feedback to improve their understanding. This shift in attitude reduced anxiety associated with evaluation and created a supportive learning environment. Students were more willing to participate in discussions and share their ideas, which contributed to collaborative learning. Confidence is closely related to self-efficacy, which influences students' willingness to engage in tasks and persist in learning activities (Bandura, 1997).

The alignment between academic leadership and assessment practices played a significant role in sustaining these positive outcomes. The principal ensured that digital formative assessment was implemented consistently across classrooms through guidance, monitoring, and professional support. Teachers applied structured approaches that integrated assessment with instruction, which created coherence in learning experiences. This alignment reduced inconsistencies in practice and ensured that students benefited from continuous feedback and supportive learning conditions. Research indicates that leadership contributes to student outcomes through its influence on instructional quality and school climate (Hallinger, 2011).

The use of digital assessment data further supported improvements in learning outcomes. Teachers analyzed performance data to identify patterns of understanding and areas where students required additional support. This information guided instructional adjustments and enabled targeted intervention for students who faced difficulties. Students received personalized feedback that addressed their specific needs, which enhanced the effectiveness of learning. Data-informed instruction has been associated with improved student achievement when used to guide teaching decisions (Mandinach & Gummer, 2016).

Collaborative learning also contributed to improved outcomes, as students worked together to interpret feedback and solve problems. Peer interaction allowed students to share strategies, clarify misunderstandings, and support one another in completing tasks. These interactions strengthened understanding and reinforced learning through dialogue. Social learning processes play a key role in cognitive development, as students construct knowledge through interaction with others (Vygotsky, 1978).

The findings indicate that digital formative assessment, when supported by effective leadership and instructional practices, can significantly enhance student learning outcomes in elementary education. Students demonstrated improved understanding, increased engagement, stronger motivation, and greater confidence in their learning. The combination of continuous feedback, active participation, and data-informed instruction created a learning environment that supports ongoing improvement. The case of SDN Salakkembang Tulungagung illustrates that assessment practices integrated with leadership and pedagogy can produce meaningful and sustainable gains in student achievement.

4. CONCLUSION

Academic leadership demonstrates a central role in shaping the effectiveness of digital formative assessment within elementary education. The findings reveal that leadership practices grounded in instructional focus, mentoring, and professional support create conditions that enable teachers to integrate assessment into daily learning. The principal's involvement in guiding assessment design, facilitating collaboration, and providing continuous feedback strengthens teachers' confidence and competence in using digital tools. This leadership approach encourages a shift from assessment as a final measurement toward assessment as an ongoing learning process. Teachers respond to this direction by developing more interactive and responsive instructional strategies that align with learning objectives. A coherent relationship between leadership vision and classroom practice emerges, allowing assessment to function as a meaningful component of instruction rather than an isolated activity.

The implementation of digital formative assessment contributes significantly to improved student learning outcomes. Students engage actively in learning through interactive tasks, immediate feedback, and opportunities for reflection. They demonstrate stronger understanding, improved accuracy in completing tasks, and increased ability to regulate their own learning. Motivation and confidence grow as students experience continuous support and constructive feedback during the learning process. The presence of structured assessment practices supported by leadership creates a consistent learning environment that promotes participation and persistence. The findings indicate that alignment between academic leadership and assessment practices is essential for achieving sustainable improvement in student outcomes. The case of SDN Salakkembang Tulungagung shows that leadership-driven assessment innovation can enhance both instructional quality and student achievement. Future efforts need to focus on strengthening teachers' digital assessment literacy and expanding the integration of technology to support continuous and meaningful learning in elementary education.

REFERENCES

Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.

Bennett, R. E. (2011). Formative assessment: A critical review. Assessment in Education: Principles, Policy & Practice, 18(1), 5–25. https://doi.org/10.1080/0969594X.2010.513678

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. Educational Assessment, Evaluation and Accountability, 21(1), 5–31. https://doi.org/10.1007/s11092-008-9068-5

Carless, D., & Boud, D. (2018). The development of student feedback literacy. Assessment & Evaluation in Higher Education, 43(8), 1315–1325. https://doi.org/10.1080/02602938.2018.1463354

Datnow, A., & Hubbard, L. (2016). Teacher capacity for and beliefs about data-driven decision making: A literature review of international research. Journal of Educational Change, 17(1), 7–28. https://doi.org/10.1007/s10833-015-9264-2
Desimone, L. M., & Garet, M. S. (2015). Best practices in teachers' professional development. Psychology, Society & Education, 7(3), 252–263. https://doi.org/10.25115/psye.v7i3.515
Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1–4. https://doi.org/10.11648/j.ajtas.20160501.11
Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment. Learning and Instruction, 43, 1–4. https://doi.org/10.1016/j.learninstruc.2016.02.001
Goddard, Y. L., Goddard, R. D., Kim, E. S., & Miller, R. (2015). A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs. American Journal of Education, 121(4), 501–530. https://doi.org/10.1086/681925
Hallinger, P. (2011). Leadership for learning: Lessons from 40 years of empirical research. Journal of Educational Administration, 49(2), 125–142. https://doi.org/10.1108/09578231111116699
Hallinger, P., & Heck, R. H. (2010). Collaborative leadership and school improvement. Educational Management Administration & Leadership, 38(6), 654–678. https://doi.org/10.1177/1741143210379060
Hattie, J., & Clarke, S. (2018). Visible learning: Feedback. Routledge.
Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning. Computers & Education, 90, 36–53. https://doi.org/10.1016/j.compedu.2015.09.005
Heritage, M. (2010). Formative assessment: Making it happen in the classroom. Corwin Press.
Ifenthaler, D., & Schweinbenz, V. (2016). Students' acceptance of tablet PCs in classroom instruction. Educational Technology & Society, 19(4), 278–289.
Kingston, N., & Nash, B. (2011). Formative assessment: A meta-analysis. Review of Educational Research, 81(3), 459–488. https://doi.org/10.3102/0034654311402587
Kraft, M. A., Blazar, D., & Hogan, D. (2018). The effect of teacher coaching on instruction and achievement. Review of Educational Research, 88(4), 547–588. https://doi.org/10.3102/0034654318759268
Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. School Leadership & Management, 40(1), 5–22. https://doi.org/10.1080/13632434.2019.1596077
Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate? Teachers College Record, 118(11), 1–25.
Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning. Studies in Higher Education, 31(2), 199–218. https://doi.org/10.1080/03075070600572090
Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education. Assessment & Evaluation in Higher Education, 39(1), 102–122. https://doi.org/10.1080/02602938.2013.795518
Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. International Journal of Qualitative Methods, 16(1), 1–13. https://doi.org/10.1177/1609406917733847
Panadero, E., Brown, G. T. L., & Strijbos, J. W. (2016). The future of student self-assessment. Frontiers in Psychology, 7, 184. https://doi.org/10.3389/fpsyg.2016.00184
Robinson, V. M. J. (2011). Student-centered leadership. Jossey-Bass.
Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective. Contemporary Educational Psychology, 61, 101860. https://doi.org/10.1016/j.cedpsych.2020.101860
Schildkamp, K., Poortman, C., & Handelzalts, A. (2016). Data teams for school improvement. School Effectiveness and School Improvement, 27(2), 228–254. https://doi.org/10.1080/09243453.2015.1056192
Shute, V. J., & Rahimi, S. (2017). Review of computer-based assessment for learning. Journal of Computer Assisted Learning, 33(1), 1–19. https://doi.org/10.1111/jcal.12165
Spillane, J. P., Halverson, R., & Diamond, J. B. (2004). Towards a theory of leadership practice. Journal of Curriculum Studies, 36(1), 3–34. https://doi.org/10.1080/0022027032000106726
Tschannen-Moran, M., & Gareis, C. R. (2015). Faculty trust in the principal. Educational Administration Quarterly, 51(3), 427–469. https://doi.org/10.1177/0013161X14556178
Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
Wiliam, D. (2011). Embedded formative assessment. Solution Tree Press.
Yazan, B. (2015). Three approaches to case study methods in education. The Qualitative Report, 20(2), 134–152.
Zimmerman, B. J., & Moylan, A. R. (2009). Self-regulation: Where metacognition and motivation intersect. In D. J. Hacker et al. (Eds.), Handbook of metacognition in education (pp. 299–315). Routledge.