

# Transformational School Leadership in Promoting Project-Based Learning to Enhance Literacy and Numeracy in Elementary Schools

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## ABSTRACT

This study investigates the role of transformational school leadership in promoting project-based learning to enhance literacy and numeracy in an elementary school context. A qualitative case study was conducted at SDN Ngubalan 01 Kalidawir, Tulungagung, Indonesia, 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 the principal enacted transformational leadership through vision building, mentoring, and continuous instructional support, which encouraged teachers to implement project-based learning. Classroom practices integrated reading, writing, and numerical problem-solving within contextual activities, leading to increased student engagement and participation. Students demonstrated improved reading comprehension, structured writing, and accuracy in basic arithmetic tasks. The alignment between leadership practices and instructional innovation contributed to meaningful learning experiences and strengthened foundational skills. The study concludes that sustained leadership involvement is essential for ensuring the effectiveness of project-based learning in improving literacy and numeracy outcomes in elementary education.

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## 1. INTRODUCTION

The demand for strengthening literacy and numeracy in elementary schools continues to shape the direction of basic education policy and classroom practice. These competencies are closely associated with students' long-term academic success and their ability to participate in social and economic life. Classroom realities still show the persistence of teacher-centered instruction, where students receive information passively and have limited opportunities to engage in meaningful learning experiences. Such conditions restrict the development of higher-order thinking skills and reduce students' motivation to learn. Project-based learning offers an alternative by situating knowledge within authentic contexts that require inquiry, collaboration, and problem-solving. Through this approach, students engage in tasks that integrate reading, writing, and numerical reasoning in ways that reflect real-life situations. The implementation of project-based learning has been associated with improved student engagement and deeper understanding of content, particularly when learners are given autonomy and opportunities to construct knowledge actively (Bell, 2010; Krajcik & Blumenfeld, 2006). The effectiveness of this approach raises an important question regarding the role of school leadership in fostering an environment that supports such pedagogical transformation.

Leadership in schools serves as a critical factor in determining the quality of teaching and learning processes. Principals influence instructional practices through vision setting, professional support, and the establishment of a collaborative culture among teachers. Transformational leadership, characterized by

inspiration, intellectual stimulation, and individualized consideration, provides a framework for encouraging teachers to adopt innovative instructional strategies. This leadership model supports teachers in developing confidence and competence to implement new approaches such as project-based learning. Evidence suggests that transformational leadership contributes to improved teacher performance and organizational commitment, which in turn affect classroom practices and student learning experiences (Leithwood & Jantzi, 2005; Sun & Leithwood, 2015). Within elementary school contexts, principals who demonstrate strong instructional focus and provide continuous professional guidance create conditions that enable teachers to experiment with new learning models. The enactment of such leadership practices raises questions about how principals translate their vision into concrete actions that facilitate the integration of project-based learning in everyday classroom activities.

The relationship between leadership and pedagogy becomes particularly significant when examined in relation to student learning outcomes. Literacy and numeracy development requires sustained practice, meaningful engagement, and instructional strategies that connect abstract concepts with practical applications. Project-based learning has been shown to support these needs by providing structured opportunities for students to apply knowledge in context, collaborate with peers, and reflect on their learning processes. Research indicates that students participating in project-based environments demonstrate improvements in both academic achievement and critical thinking skills (Holm, 2011; Hmelo-Silver, 2004). Leadership-driven instructional change plays a key role in ensuring that such approaches are implemented consistently and effectively across classrooms. The interaction between transformational leadership and innovative pedagogy invites further examination of how these elements collectively influence students' literacy and numeracy development. This study focuses on understanding that interaction within the specific context of an elementary school, with attention to how leadership practices shape teaching strategies and ultimately contribute to student learning outcomes.

## 2. METHOD

This study employed a qualitative case study design to examine how transformational leadership supports the implementation of project-based learning in a real educational setting. A qualitative approach was selected to capture in-depth insights into leadership practices, teacher experiences, and classroom dynamics within their natural context. The case study design enabled a holistic understanding of interactions between school leadership and instructional processes, particularly in relation to literacy and numeracy development. The research was conducted at SDN Ngubalan 01 Kalidawir, Tulungagung, Indonesia, which has begun integrating project-based learning into classroom activities. This setting provided a relevant context for exploring how leadership practices influence pedagogical innovation at the elementary school level (Yin, 2018; Creswell & Poth, 2018).

Participants in this study included the school principal and six classroom teachers who were actively involved in implementing project-based learning. A purposive sampling technique was applied to ensure that participants possessed relevant experience and knowledge related to the research focus. The principal was selected due to their central role in shaping school policies and instructional direction, while teachers were chosen based on their engagement with innovative teaching practices. This selection allowed the study to gather diverse perspectives on leadership influence and instructional adaptation within the same institutional environment (Patton, 2015).

Data were collected through multiple techniques to enhance the richness and validity of the findings. Semi-structured interviews were conducted to explore participants' perceptions of leadership practices and their impact on teaching and learning. Classroom observations were carried out to document the implementation of project-based learning and student engagement in literacy and numeracy activities. Documentation analysis included lesson plans, student assignments, and assessment records, which provided additional evidence of instructional practices and learning outcomes. The use of multiple data sources enabled a comprehensive understanding of the phenomenon under investigation (Merriam & Tisdell, 2016).

Data analysis followed a thematic analysis approach, which involved systematic procedures of data reduction, coding, categorization, and interpretation. Transcribed data were reviewed repeatedly to identify emerging patterns related to leadership practices and instructional strategies. Codes were grouped into themes that reflected the alignment between transformational leadership and project-based learning implementation. The interpretation process focused on connecting empirical findings with existing theoretical perspectives. To ensure the trustworthiness of the study, several strategies were applied, including data triangulation across interviews, observations, and documents, as well as member checking to confirm the accuracy of participants' statements. These procedures strengthened the credibility and dependability of the research findings (Lincoln & Guba, 1985).

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### 3. RESULTS AND DISCUSSION

#### **Transformational Leadership Practices in Supporting Project-Based Learning**

The findings indicate that the principal at SDN Ngubalan 01 Kalidawir enacted transformational leadership through a clear articulation of school vision that emphasized innovation in teaching and learning. This vision was communicated consistently during formal meetings and informal interactions, shaping teachers' understanding of the importance of project-based learning in strengthening literacy and numeracy skills. The principal positioned instructional improvement as a shared responsibility, encouraging teachers to move beyond routine practices toward more student-centered approaches. Such leadership behavior reflects the core dimension of transformational leadership that focuses on inspiring followers to achieve collective goals and adopt new perspectives in their professional roles (Bass & Riggio, 2006).

Regular academic meetings served as a strategic platform for discussing instructional challenges and sharing best practices related to project-based learning. Teachers described these meetings as spaces for reflection and collaborative problem-solving, where they could exchange ideas on designing meaningful learning projects. The principal facilitated discussions that connected curriculum objectives with practical classroom implementation, ensuring that innovation remained aligned with national education standards. This approach strengthened teachers' instructional capacity and fostered a sense of professional community within the school. Research has shown that leadership practices that promote collaboration and professional dialogue contribute significantly to school improvement and instructional quality (Robinson, Lloyd, & Rowe, 2008).

The principal also demonstrated individualized support through mentoring and continuous feedback. Teachers received guidance on lesson planning, classroom management, and assessment strategies related to project-based learning. Observational data revealed that the principal frequently visited classrooms, not as an evaluator but as a learning partner who provided constructive suggestions. This practice enhanced teachers' confidence and willingness to experiment with new methods. The presence of supportive leadership reduced the fear of failure often associated with instructional innovation. Such conditions align with the concept of intellectual stimulation in transformational leadership, where leaders encourage creativity and critical thinking among teachers (Avolio & Yammarino, 2013).

Professional collaboration emerged as a key outcome of leadership intervention. Teachers engaged in peer discussions, joint lesson planning, and reflection sessions that focused on improving student engagement and learning outcomes. This collaborative culture enabled the sharing of successful project-based learning practices, particularly those integrating literacy and numeracy tasks into real-life contexts. Teachers reported that collaborative planning allowed them to design more structured and meaningful projects, which increased student participation. The role of leadership in building professional learning communities has been widely recognized as a factor that enhances teacher effectiveness and student achievement (Vescio, Ross, & Adams, 2008).

The influence of transformational leadership was also evident in teachers' attitudes toward instructional change. Interviews revealed a shift in mindset from compliance with administrative directives to active engagement in pedagogical innovation. Teachers expressed a sense of ownership over their teaching practices and demonstrated increased motivation to improve student learning experiences. This shift suggests that leadership not only affects structural aspects of schooling but also shapes teachers' beliefs and professional identity. Empirical studies support the view that transformational leadership has a positive impact on teacher commitment and instructional quality (Day et al., 2016).

The integration of leadership practices with project-based learning created a supportive environment for enhancing literacy and numeracy. Teachers designed projects that required students to read instructions, analyze information, and apply numerical reasoning in solving contextual problems. Classroom observations indicated that students were more engaged and demonstrated greater persistence in completing tasks. The alignment between leadership vision and instructional practice ensured that project-based learning was implemented consistently across classrooms. This consistency contributed to the development of foundational skills in a meaningful and sustainable manner.

The discussion highlights that transformational leadership operates as a catalyst for instructional innovation in elementary education. The principal's role extended beyond administrative management to active involvement in teaching and learning processes. Leadership practices that emphasized vision, support, and collaboration enabled teachers to adopt project-based learning effectively. These findings are consistent with previous research indicating that leadership focused on teaching and learning has a direct influence on student outcomes (Hallinger, 2011). The case of SDN Ngubalan 01 Kalidawir illustrates how leadership-driven change can create a learning environment that supports both teacher development and student achievement.

#### **Implementation of Project-Based Learning to Enhance Literacy and Numeracy**

The implementation of project-based learning at SDN Ngubalan 01 Kalidawir was characterized by the integration of literacy and numeracy within thematic and contextual learning activities. Teachers designed

projects that required students to read various sources, write reflections, and apply basic mathematical reasoning in solving real-life problems. Learning tasks were structured around themes familiar to students, such as local community activities, environmental issues, and daily economic practices. Students engaged in collecting simple data, organizing information, and presenting their findings through written and oral formats. This design enabled the simultaneous development of reading comprehension, writing skills, and numeracy competence within a single learning experience. Such integration reflects the principles of project-based learning, where knowledge is constructed through authentic tasks that connect classroom learning with real-world contexts (Thomas, 2000).

Classroom observations revealed a notable shift in student engagement during project implementation. Students participated actively in group discussions, shared ideas, and demonstrated curiosity when exploring project topics. They showed greater persistence in completing tasks that required problem-solving and collaboration. Activities such as measuring objects, calculating totals, and interpreting simple data tables became part of meaningful learning experiences rather than isolated exercises. This engagement suggests that project-based learning creates a learning environment that supports deeper understanding and active participation. Research indicates that when students are involved in inquiry-based tasks, they are more likely to develop conceptual understanding and retain knowledge over time (Barron & Darling-Hammond, 2008).

Teachers adapted learning materials to reflect students' lived experiences, which increased the relevance of literacy and numeracy tasks. Reading materials included local stories, short informational texts, and simple reports related to the project themes. Writing activities required students to document observations, summarize findings, and express ideas in their own words. Numeracy tasks were embedded in activities such as counting, measuring, comparing quantities, and performing basic calculations. This contextualization allowed students to see the practical value of literacy and numeracy in everyday life. The alignment between content and context contributed to improved comprehension and application of knowledge. Studies have shown that contextual learning enhances students' ability to transfer skills across different situations (Condliffe et al., 2017).

The role of teachers evolved significantly during the implementation process. Teachers shifted from delivering information to facilitating learning experiences that encouraged student autonomy and collaboration. They guided students in formulating questions, organizing tasks, and reflecting on their learning progress. Classroom interactions became more dialogic, with students expressing opinions and responding to peers' ideas. Teachers provided scaffolding when necessary, ensuring that students could complete tasks while gradually developing independence. This change in instructional approach aligns with constructivist perspectives, where learning is viewed as an active process of meaning-making supported by social interaction (Hmelo-Silver, Duncan, & Chinn, 2007).

The transformation in teaching practice also influenced classroom assessment strategies. Teachers used performance-based assessment to evaluate students' literacy and numeracy skills within project activities. Assessment focused on students' ability to read and interpret information, communicate ideas clearly, and apply numerical reasoning in solving problems. Student work, including written reports and project presentations, served as evidence of learning progress. This approach provided a more comprehensive picture of student achievement compared to traditional testing methods. Authentic assessment practices are recognized as effective in capturing complex learning outcomes associated with project-based learning (Wiggins, 2011).

The implementation of project-based learning contributed to improved student participation and comprehension. Students demonstrated increased confidence in reading aloud, writing short texts, and performing basic calculations. They were able to connect new knowledge with prior experiences, which facilitated deeper understanding. Group activities supported peer learning, allowing students to exchange ideas and learn from one another. The classroom environment became more dynamic, with students actively involved in constructing knowledge rather than receiving information passively. Evidence from prior studies suggests that project-based learning can positively impact academic achievement, particularly when it is implemented consistently and supported by effective instructional practices (Han, Capraro, & Capraro, 2015).

The discussion highlights that the successful implementation of project-based learning depends on the alignment between instructional design, teacher roles, and learning context. Teachers at SDN Ngubalan 01 Kalidawir demonstrated the ability to adapt curriculum content into meaningful projects that integrate literacy and numeracy. Their role as facilitators enabled students to engage actively in the learning process, which contributed to improved outcomes. The findings reinforce the idea that project-based learning serves as an effective approach for developing foundational competencies in elementary education when supported by appropriate pedagogical strategies. The integration of contextual learning, active participation, and authentic assessment creates a comprehensive framework for enhancing literacy and numeracy skills among elementary school students.

### **Impact on Students' Literacy and Numeracy Development**

The findings indicate that the implementation of project-based learning at SDN Ngubalan 01 Kalidawir contributed to observable improvements in students' literacy and numeracy development. Students

demonstrated stronger reading comprehension through their ability to identify main ideas, interpret short texts, and relate information to project themes. Written outputs showed clearer sentence structure and more coherent organization of ideas. Students were able to present their findings in both written and oral forms with increased confidence. These outcomes suggest that literacy development was supported through repeated engagement with meaningful reading and writing tasks embedded in project activities. Empirical studies have shown that literacy skills improve when students engage in authentic learning experiences that require interpretation and communication of ideas (Graham & Perin, 2007).

Numeracy development was also evident in students' ability to perform basic arithmetic operations and apply them in contextual situations. Students engaged in activities such as measuring objects, calculating totals, and comparing quantities during project implementation. They demonstrated improved accuracy in solving mathematical problems and greater confidence in explaining their reasoning. Classroom observations revealed that students were able to connect numerical concepts with real-life applications, which strengthened their conceptual understanding. This finding aligns with research indicating that contextual and problem-based learning approaches enhance students' mathematical reasoning and application skills (Boaler, 2016).

Student work provided further evidence of cognitive development in both literacy and numeracy domains. Project reports showed improved organization, including the use of headings, structured paragraphs, and logical sequencing of ideas. Numerical data presented in tables and simple charts reflected students' growing ability to manage and interpret information. These products indicated that students were not only acquiring basic skills but also developing the capacity to integrate multiple competencies within a single task. Such integration is essential in elementary education, where foundational skills serve as the basis for more advanced learning. Studies suggest that interdisciplinary learning approaches contribute to deeper understanding and knowledge retention (Drake & Reid, 2018).

The learning process also influenced students' engagement and motivation. Students participated actively in discussions, asked questions, and collaborated with peers during project activities. This active involvement created a classroom environment where learning was perceived as meaningful and relevant. Students showed persistence in completing tasks, even when faced with challenges. Increased motivation was reflected in their willingness to explore new ideas and revise their work based on feedback. Motivation plays a critical role in literacy and numeracy development, as students who are engaged are more likely to invest effort in learning tasks and achieve better outcomes (Ryan & Deci, 2020).

The role of leadership support emerged as a significant factor in sustaining these positive outcomes. The principal's continuous encouragement and supervision ensured that project-based learning was implemented consistently across classrooms. Teachers received guidance and feedback that helped them refine their instructional practices. This consistency created a stable learning environment where students could benefit from structured and well-designed learning experiences. Leadership involvement also contributed to the availability of resources and the alignment of instructional strategies with school goals. Research highlights that effective school leadership has a direct and indirect impact on student achievement through its influence on teaching quality and school climate (Leithwood, Harris, & Hopkins, 2020).

The interaction between leadership and instructional innovation shaped the overall effectiveness of project-based learning. Teachers were able to design learning experiences that addressed both literacy and numeracy while maintaining alignment with curriculum standards. Students benefited from a coherent approach to learning, where activities were interconnected and focused on skill development. The sustained implementation of such practices created opportunities for continuous improvement in student performance. This finding supports the view that instructional innovation requires strong leadership to ensure its success and long-term impact (Fullan, 2014).

The results suggest that project-based learning, when supported by transformational leadership, can significantly enhance foundational skills in elementary education. Students developed the ability to read, write, and apply numerical reasoning in ways that are meaningful and relevant to their daily lives. The improvement in literacy and numeracy reflects not only the effectiveness of the instructional approach but also the importance of leadership in creating conditions for successful learning. The case of SDN Ngubalan 01 Kalidawir illustrates how leadership and pedagogy can work together to produce positive educational outcomes.

#### 4. CONCLUSION

The findings of this study demonstrate that transformational school leadership plays a central role in fostering instructional innovation in elementary education. The principal's ability to articulate a clear vision and provide continuous professional support created a school environment that encouraged teachers to adopt project-based learning. Leadership practices were reflected in regular academic discussions, mentoring activities, and collaborative planning among teachers. These actions shaped a professional culture oriented toward improvement and experimentation in teaching practices. Teachers responded to this leadership

approach with increased motivation and confidence, which influenced their willingness to design meaningful and context-based learning experiences. The presence of strong leadership support ensured that instructional changes were not implemented sporadically but became part of a sustained effort to improve learning quality.

The implementation of project-based learning contributed to significant changes in classroom practices and student engagement. Teachers shifted from teacher-centered instruction to facilitative roles that emphasized student participation, inquiry, and collaboration. Learning activities integrated literacy and numeracy skills within real-life contexts, allowing students to develop competencies through authentic experiences. Students became more active in discussions, demonstrated curiosity, and showed persistence in completing tasks. Their ability to read, write, and apply numerical reasoning improved as they engaged with structured projects that required interpretation, communication, and problem-solving. Assessment practices also evolved, with teachers focusing on performance-based evaluation that captured students' learning processes and outcomes. These changes indicate that instructional innovation, when supported by appropriate pedagogical strategies, can enhance foundational skills effectively.

The study highlights the importance of aligning leadership practices with instructional approaches to achieve meaningful educational outcomes. Transformational leadership provided the necessary support system for the successful implementation of project-based learning, which in turn influenced students' literacy and numeracy development. The interaction between leadership and pedagogy created a coherent learning environment where teachers and students worked collaboratively toward shared goals. The case of SDN Ngubalan 01 Kalidawir illustrates that sustainable improvement in elementary education requires leadership that is actively involved in teaching and learning processes. Future efforts should focus on strengthening leadership capacity and expanding the use of innovative learning models across different educational settings to ensure broader impact on student achievement.

## REFERENCES

- Avolio, B. J., & Yammarino, F. J. (2013). *Transformational and charismatic leadership: The road ahead* (2nd ed.). Emerald Group Publishing.
- Barron, B., & Darling-Hammond, L. (2008). *Teaching for meaningful learning: A review of research on inquiry-based and cooperative learning*. Edutopia.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Psychology Press.
- Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 83(2), 39–43. <https://doi.org/10.1080/00098650903505415>
- Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. Jossey-Bass.
- Condliffe, B., Quint, J., Visher, M. G., Bangser, M. R., Drohojowska, S., Saco, L., & Nelson, E. (2017). Project-based learning: A literature review. MDRC. <https://doi.org/10.7916/D8RN36ZN>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage Publications.
- Day, C., Gu, Q., & Sammons, P. (2016). The impact of leadership on student outcomes: How successful school leaders use transformational and instructional strategies. *Educational Administration Quarterly*, 52(2), 221–258. <https://doi.org/10.1177/0013161X15616863>
- Drake, S. M., & Reid, J. L. (2018). Integrated curriculum as an effective way to teach 21st century capabilities. *Asia Pacific Journal of Educational Research*, 1(1), 31–50.
- Fullan, M. (2014). *The principal: Three keys to maximizing impact*. Jossey-Bass.
- Graham, S., & Perin, D. (2007). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools*. Alliance for Excellent Education.
- 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>
- Han, S., Capraro, R., & Capraro, M. M. (2015). How science, technology, engineering, and mathematics project-based learning affects high-need students in the U.S. *Learning and Individual Differences*, 51, 157–166. <https://doi.org/10.1016/j.lindif.2015.11.002>
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235–266. <https://doi.org/10.1023/B:EDPR.0000034022.16470.f3>
- Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning. *Educational Psychologist*, 42(2), 99–107. <https://doi.org/10.1080/00461520701263368>
- Holm, M. (2011). Project-based instruction: A review of the literature on effectiveness in prekindergarten through 12th grade classrooms. *Rivier Academic Journal*, 7(2), 1–13.
- Krajcik, J. S., & Blumenfeld, P. C. (2006). Project-based learning. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 317–334). Cambridge University Press. <https://doi.org/10.1017/CBO9780511816833.020>
- Leithwood, K., & Jantzi, D. (2005). Transformational leadership. In B. Davies (Ed.), *The essentials of school leadership* (pp. 31–43). Sage Publications.
- 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>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.
- Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage Publications.
- Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635–674. <https://doi.org/10.1177/0013161X08321509>
- 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>

- Sun, J., & Leithwood, K. (2015). Direction-setting school leadership practices: A meta-analytical review of evidence about their influence. *School Effectiveness and School Improvement*, 26(4), 499–523. <https://doi.org/10.1080/09243453.2015.1005106>
- Thomas, J. W. (2000). A review of research on project-based learning. Autodesk Foundation.
- Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education*, 24(1), 80–91. <https://doi.org/10.1016/j.tate.2007.01.004>
- Wiggins, G. (2011). *Educative assessment: Designing assessments to inform and improve student performance*. Jossey-Bass.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage Publications.