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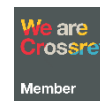
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# Needs analysis for developing teacher leadership based gamified teaching materials to foster mental resilience in remote schools

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## ABSTRACT

This study aims to identify the needs for developing teacher leadership-based gamified teaching materials to strengthen students' mental resilience in remote school settings. Employing a Research and Development (R&D) approach using the ADDIE model, the study focuses on the analysis phase as a preliminary investigation. A qualitative descriptive design was used, with data collected through classroom observations, analysis of instructional documents, and semi-structured interviews with teachers and students in five junior high schools in remote areas of Madura. The findings indicate that learning practices remain predominantly conventional and text-based, offering limited opportunities to foster student engagement and mental resilience. Although instructional documents meet curriculum standards, they lack visual, progressive, and challenge-oriented activities. Both teachers and students express a strong need for interactive learning media that support teacher leadership while enhancing students' confidence, persistence, and psychological safety. These results highlight a significant gap between current instructional practices and the pedagogical requirements for developing students' mental resilience, providing a strong foundation for the development of context-appropriate gamified teaching materials for remote schools.



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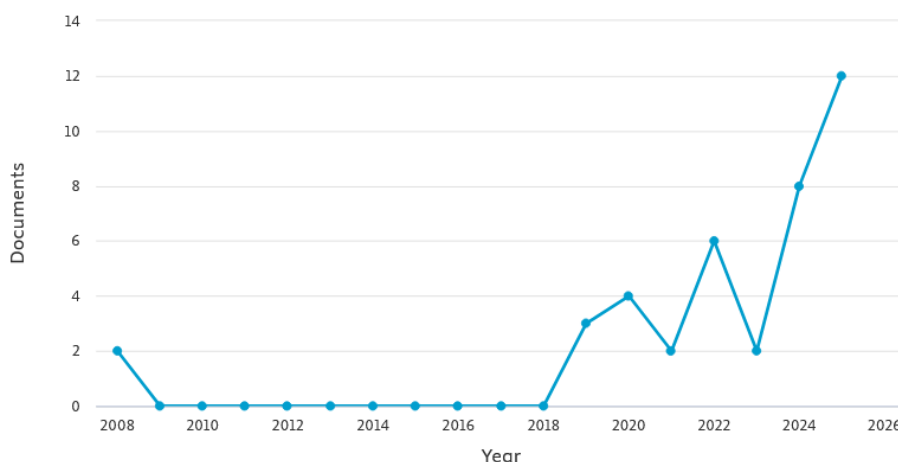
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## Introduction

Education represents a strategic space for shaping a generation that is not only intellectually capable but also emotionally and socially mature. Children, as emphasized in educational discourse, are a mandate that must be developed in accordance with their talents and interests so that they may grow into individuals who contribute meaningfully to society (Kadek et al., 2021; Adeoye., 2024; Ahmad, M. I. S., et al., 2023). At this formative stage, learning experiences provided through schools play a crucial role in equipping students with the capacity to navigate social pressures and developmental

challenges, particularly in an era marked by rapid change (Himawan, 2013; Wirawati & Rahman, 2020). Consequently, formal education is increasingly expected to address not only academic achievement, but also students' adaptive and psychological capacities as essential foundations for lifelong learning.

The era of digital disruption has fundamentally transformed adolescents' social, cognitive, and emotional environments (Auliyah & Flurentin, 2016; Ketrampilan & Siswa, 2010; Laili Etika Rahmawati & Vitria Indriyani Setyaningsih, 2021; Susanto & Sunarsih, 2015). While digital technologies expand access to information and learning resources, they simultaneously introduce new pressures, including constant stimulation, fragmented attention, intensified social comparison, and exposure to psychologically demanding content. These conditions have increased adolescents' emotional vulnerability, making the ability to cope with stress, uncertainty, and failure an increasingly critical educational concern. Within this context, schools are challenged to create learning environments that not only transmit knowledge but also support students' psychological readiness to face continuous change.



**Figure 1.** Topic-Related Publication Trends

This challenge is reflected in the limited body of scholarly work that explicitly addresses the intersection between learning innovation, teacher leadership, and students' mental resilience. As illustrated in Figure 1, only 39 documents have examined this topic to date, with a noticeable increase in publications emerging only in recent years. This pattern indicates that the field remains relatively underexplored, underscoring a substantial opportunity for further systematic investigation and theoretical development. The scarcity of research also suggests that existing educational practices may not yet be grounded in a comprehensive understanding of how pedagogical strategies, leadership practices, and psychological needs interact, particularly in marginalized contexts.

Within contemporary educational discourse, character development can no longer be understood merely as the transmission of moral values. The *Pancasila Student Profile* framework conceptualizes character as a set of adaptive competencies, including independence, critical reasoning, creativity, and social responsibility. Embedded within these competencies is mental resilience, understood as the capacity to regulate emotions, persist through difficulty, learn from setbacks, and maintain a constructive orientation toward future challenges. Mental resilience thus functions as a practical psychological capacity that shapes how students engage with academic demands, social expectations, and learning setbacks in everyday classroom experiences.

However, empirical evidence consistently points to a widening gap between these normative expectations and adolescents' lived realities. Many students experience heightened stress, anxiety, emotional fatigue, and declining self-confidence, driven by academic pressure, identity negotiation, and digitally mediated social dynamics. This gap indicates that existing learning practices may not yet sufficiently support the development of mental resilience, particularly when resilience is treated as an implicit outcome rather than an explicit pedagogical concern.

These challenges become more pronounced in remote schools. Limited educational infrastructure, restricted access to learning media, and minimal pedagogical innovation place students in remote areas

at a structural disadvantage, both academically and psychologically (Evianah, 2023a, 2023b; Wasisto, 2023). In such settings, instructional practices often rely on conventional methods that provide limited opportunities for student engagement, autonomy, and emotional support. As a result, students in remote schools may face compounded risks related to low motivation and fragile mental resilience, further widening educational disparities between central and peripheral regions.

Within this context, teacher leadership emerges as a critical factor shaping the quality of learning environments. Teachers in remote schools frequently assume multiple roles not only as instructors, but also as mentors, emotional supports, and community figures. Teacher leadership therefore extends beyond classroom management to include the ability to shape learning climates, model adaptive responses to challenges, and foster supportive teacher student relationships (Drago-Severson, E. 2012; Back, 2016). Nevertheless, much of the existing literature discusses teacher leadership in normative or managerial terms, with limited attention to how leadership practices are enacted in daily instructional processes, especially under conditions of limited resources.

At the same time, pedagogical innovation has gained increasing attention as a potential means of addressing engagement and resilience-related challenges. Gamification has been widely discussed as an instructional approach capable of enhancing student involvement through structured challenges, feedback, and motivational elements (Ariani, 2020; Rembulan, 2018). Prior studies suggest that gamification may support perseverance, self-regulation, and sustained engagement capacities closely related to mental resilience. However, most existing research examines gamification either in technologically well-supported environments or focuses primarily on learning motivation and achievement, without situating it within a broader framework of teacher leadership or contextual constraints.

For remote schools, the relevance of gamification cannot be assumed without careful examination of contextual realities. Studies indicate that teachers in 3T areas face limitations related to infrastructure, digital literacy, and access to instructional resources that align with local socio-cultural conditions (Syafii, 2018; Vania et al., 2021). Without a grounded understanding of actual learning conditions, teacher capacities, and students' psychological needs, instructional innovations risk being misaligned with classroom realities and local constraints.

Existing studies related to gamification, teacher leadership, and instructional material development (Astuti, 2020; Carolina et al., 2017; Kadek et al., 2021; Reddy et al., 2020; Suroyani, 2016; Susanti & Risnanosanti, 2019) have largely addressed these dimensions in isolation. Few studies have systematically examined how teacher leadership practices, students' mental resilience needs, and the potential for gamified teaching materials intersect within remote school contexts. This gap highlights the need for preliminary, exploratory research that maps these interconnected dimensions before instructional design and development are undertaken.

This study is positioned as an initial exploratory investigation. Employing a qualitative descriptive design with a needs analysis approach, the study examines learning conditions, teacher leadership practices, and students' mental resilience needs in remote schools. Rather than evaluating the effectiveness of instructional interventions, this research aims to provide an empirical foundation for the subsequent development of teacher leadership-based gamified teaching materials that are contextually relevant and pedagogically grounded. By clarifying existing conditions and unmet needs, this study contributes to a more informed, responsible, and context-sensitive design process for addressing educational challenges in remote areas.

## Method

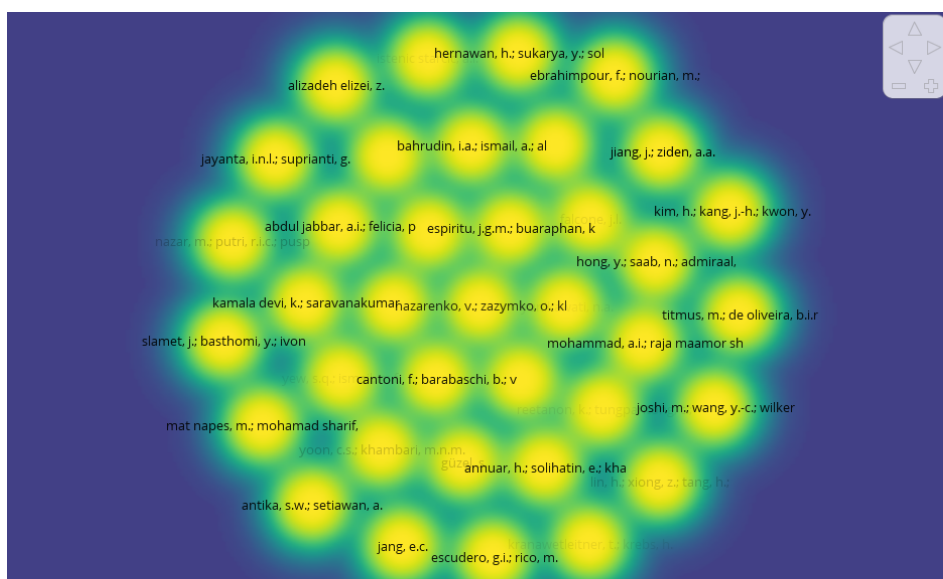
This study was conducted within a Research and Development (R&D) framework using the ADDIE development model (Cahyadi, 2019). However, the scope of the present article is intentionally limited to the first stage of the model, namely the analysis phase, which functions as an initial exploratory stage prior to instructional design and development. At this stage, the research does not aim to design, implement, or evaluate teaching materials, but rather to generate a comprehensive understanding of learning needs that will serve as the foundation for developing teacher leadership-based gamified

teaching materials. This delimitation is methodologically purposeful, as a rigorous analysis of needs is essential before proceeding to subsequent stages of development.

Accordingly, the study employed a qualitative descriptive design using a needs analysis approach to explore three central aspects: factual learning conditions, teacher leadership practices, and students' mental resilience needs within remote school contexts. This approach allowed the researcher to examine educational phenomena as they naturally occur, emphasizing contextual depth rather than measurement of outcomes or instructional effectiveness.

The research was conducted in junior high schools located in the Madura region, which represent remote educational settings characterized by distinctive social, economic, and geographical conditions that demand adaptive learning strategies. During the initial observation stage, classroom learning activities were examined in several schools to understand instructional dynamics, infrastructural limitations, and the challenges encountered by teachers and students in daily learning processes. These observations provided preliminary insights into the readiness of the learning environment to accommodate gamification-based instructional innovations and to support the strengthening of students' mental resilience.

In addition to observation, document analysis was carried out on instructional and institutional materials, including lesson plans, learning modules, and school policy documents related to character development and students' psychosocial well-being. The document analysis focused on how learning was planned, the extent to which elements of teacher leadership were reflected in instructional design, and the degree of institutional attention to students' mental resilience. The findings from this analysis helped clarify the gap between planned instructional intentions and actual classroom practices.



**Figure 2.** Author Co-occurrence Network of Studies on Gamification

As part of the preliminary analysis phase, a bibliometric analysis was also conducted using Scopus-indexed publications. Figure 2 presents an author co-occurrence network that visualizes key authors, patterns of scholarly collaboration, and the density of research contributions related to teacher leadership, gamification, and mental resilience. This mapping was used to assess the maturity and distribution of existing studies and to support the systematic positioning of the present research within the relevant academic landscape, thereby strengthening the conceptual basis of the needs analysis.

Furthermore, interviews were conducted with ten informants, consisting of teachers and students from the selected remote junior high schools in Madura, to obtain more in-depth and contextualized data. Interviews with teachers focused on exploring teacher leadership practices within classroom contexts, challenges in managing learning in resource-limited settings, readiness to integrate gamification into instruction, and teachers' perceptions of students' mental resilience. Meanwhile, interviews with students aimed to capture their lived learning experiences, perceived psychosocial barriers, learning motivation, and responses to the potential use of gamified teaching materials. The

inclusion of these informants enabled the study to access firsthand perspectives from key learning actors, thereby enriching and validating the findings derived from observations and document analysis.

All data obtained from classroom observations, document analysis, bibliometric mapping, and interviews with the ten informants were analyzed using a qualitative descriptive approach. The data were systematically organized, compared, and synthesized with theoretical perspectives on teacher leadership, gamification, and mental resilience. This analytic process resulted in a comprehensive portrayal of instructional needs, pedagogical gaps, and contextual challenges in junior high schools located in remote areas of Madura. The outcomes of this analysis phase provide a robust empirical and conceptual foundation for the subsequent design stage within the ADDIE model, ensuring that the development of teacher leadership-based gamified teaching materials is grounded in clearly identified needs and authentic learning conditions.

## Results and Discussions

Initial observations conducted in several junior high schools located in remote areas of Madura reveal that the learning process is still predominantly characterized by simple and repetitive instructional patterns. Classroom activities largely rely on lecture-based delivery and routine assignments, with minimal variation in learning strategies. The scarcity of learning facilities, particularly technology-based media, limits teachers' instructional choices and constrains opportunities for interactive or student-centered learning. As a consequence, student engagement tends to remain low, and the learning environment provides limited space for students to develop adaptive skills, persistence, and confidence in facing academic challenges.

From the students' perspective, the observations indicate that many learners are not accustomed to learning activities that require initiative, creativity, or problem-solving. When presented with tasks that demand higher cognitive effort or independent thinking, some students exhibit hesitation, avoidance, or a rapid sense of failure. These behavioral patterns suggest that students' mental resilience has not been optimally nurtured, particularly in relation to coping with learning pressure, regulating emotions, and recovering from setbacks. The dominance of repetitive and low-challenge learning routines appears to reinforce this condition, as students rarely encounter structured opportunities to practice perseverance and adaptive responses.

The learning situation further demonstrates a clear need for instructional approaches that can gradually build students' courage and readiness to face academic difficulties. In this context, gamification emerges as a pedagogical approach with strong potential, as it offers progressive challenges, tiered task structures, and immediate feedback that can support students' engagement and psychological endurance. However, the absence of teaching materials that systematically incorporate gamification principles results in learning experiences that remain relatively flat, lacking a coherent challenge-reward structure capable of training students' mental resilience over time.

Observations of teachers reveal a strong commitment to supporting student learning despite existing constraints. Teachers generally demonstrate effective classroom management and a high sense of responsibility toward students. Nevertheless, the enactment of teacher leadership in the form of initiating creative and innovative learning strategies remains limited. This limitation does not stem from a lack of motivation, but rather from restricted access to pedagogical resources, limited exposure to innovation-oriented training, and the absence of practical instructional tools that can support pedagogical leadership in daily classroom practice.

Teachers face considerable administrative demands and technical constraints that significantly reduce the time available for designing innovative teaching materials. Under these conditions, teachers require instructional instruments that are practical, easy to implement, and capable of supporting learning innovation without adding to their workload. Such instruments are essential for enabling teachers to function more effectively as learning leaders who can guide students through challenging learning processes while fostering a supportive and resilient classroom climate.

The school environment in remote areas also shapes a distinctive learning dynamic. Limited internet access, minimal school facilities, and diverse socio-economic backgrounds restrict the optimal

implementation of digitally intensive learning models. Despite these limitations, teachers often rely on creativity and strong emotional relationships with students. This emotional closeness represents a valuable foundation for the development of mental resilience, as students tend to feel acknowledged, supported, and understood. However, these relational strengths have not yet been systematically translated into structured learning activities that intentionally cultivate resilience-related competencies.

**Table 1.** Data Triangulation of Needs Analysis Findings

Aspect Analyzed	Observation Findings	Document Analysis Findings	Interview Findings (Teachers & Students)	Triangulated Interpretation
Learning Conditions	Learning is dominated by lectures and routine assignments; limited variation and interaction; minimal use of media.	Lesson plans and modules focus on content delivery; lack of experiential and interactive learning activities.	Teachers and students perceive learning as monotonous and less engaging.	Learning practices remain conventional and content-oriented, indicating a strong need for more engaging and experiential instructional approaches.
Availability of Learning Media	Learning media are limited to textbooks, worksheets, and whiteboards; minimal technological support.	No gamification-based or interactive teaching materials are found in learning documents.	Teachers report lack of access to innovative media; students express interest in game-based activities.	There is a clear gap between existing media and students' learning needs, highlighting the necessity for low-tech, gamified teaching materials.
Student Mental Resilience	Students hesitate when facing complex tasks; tend to give up easily; low confidence observed.	Learning documents do not explicitly include activities aimed at strengthening resilience or self-regulation.	Teachers observe low persistence; students admit fear of making mistakes and losing motivation.	Students' mental resilience is not optimally supported by current instructional practices, requiring structured challenges and gradual learning support.
Teacher Leadership Practices	Teachers manage classrooms well but rarely initiate innovative strategies due to constraints.	Teacher leadership values are not operationalized in instructional planning.	Teachers express willingness to innovate but lack practical tools and guidance.	Teacher leadership exists at a motivational level but needs instructional media support to be enacted pedagogically.
Learning Innovation Readiness	Students respond positively to simple games, quizzes, and challenges.	No structured innovation model is embedded in instructional documents.	Both teachers and students show enthusiasm for gamification-based learning.	The learning environment shows readiness for innovation, provided that materials are practical, structured, and contextually adapted.

Importantly, observations indicate that students respond very positively to learning activities that involve elements of play, simple competitions, and manageable challenges. This enthusiasm suggests that gamification is highly relevant to the learning context of junior high schools in Madura. The core

issue lies not in students' readiness, but in the absence of teaching materials that integrate gamification elements with teacher leadership values. Specifically, existing materials do not guide students to collaboratively face difficulties, persist through challenges, or maintain self-motivation within a structured learning framework.

To strengthen the credibility of these findings, data triangulation was conducted by integrating evidence from classroom observations, document analysis, and interviews with teachers and students. The results of this triangulation are systematically summarized in Table 1, which presents convergent patterns across data sources regarding learning conditions, availability of instructional media, student mental resilience, teacher leadership practices, and readiness for learning innovation.

As shown in Table 1, the triangulated findings consistently indicate that learning practices remain conventional and content-oriented, instructional media are limited and non-interactive, students' mental resilience is insufficiently supported, and teacher leadership has not yet been fully operationalized through pedagogical tools. At the same time, both teachers and students demonstrate a clear openness to instructional innovation, provided that it is contextually appropriate, low-tech, and practically applicable. The triangulated findings confirm a substantial gap between existing learning practices and the pedagogical conditions required to foster students' mental resilience in remote schools. This gap highlights the urgent need for the development of teacher leadership-based gamified teaching materials that are capable of introducing structured challenges, supporting gradual skill development, and empowering teachers to enact their leadership roles more effectively within the constraints of remote learning environments.

**Table 2.** Results of Document Analysis

Document Type	Key Findings	Identified Limitations	Implications for Teaching Material Development
Teacher-Made Lesson Plans	Lesson structures generally comply with national curriculum standards and ministerial regulations.	Learning activities emphasize content delivery and task completion, with no explicit strategies to foster students' mental resilience.	Gamification elements and teacher leadership strategies need to be embedded to operationalize resilience-oriented learning activities.
Learning Modules	Learning content adequately covers basic competencies and subject matter requirements.	Presentation is predominantly text-based, with limited visual support and minimal opportunities for interaction or active engagement.	Materials should be redesigned to be more visual, interactive, and oriented toward critical, creative, and collaborative learning.
School Regulations	Institutional policies support character education and student discipline.	No specific programs or instructional mechanisms are directed toward strengthening students' mental resilience.	Teaching materials should function as practical tools to translate policy intentions into classroom-based resilience-building activities.
Student Worksheets (LKS)	Worksheets provide basic exercises aligned with lesson content.	Tasks are repetitive and uniform, lacking progressive difficulty levels or motivational structure.	Worksheets should be transformed into game-level-based activities that incorporate progression, feedback, and motivation-enhancing elements.

Table 2 presents the results of the document analysis, revealing a consistent pattern across instructional and institutional documents used in remote junior high schools in Madura. Overall, instructional tools are predominantly oriented toward the delivery of basic learning content and compliance with formal curriculum requirements. Teacher-made lesson plans generally demonstrate structural alignment with national standards; however, the learning activities outlined remain largely procedural and content-focused. Strategies that explicitly aim to foster students' mental resilience

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such as perseverance, emotional regulation, or adaptive responses to learning challenges are rarely articulated. As a result, instructional planning tends to emphasize task completion rather than the cultivation of learning processes that support psychological endurance.

A similar pattern is evident in the learning modules analyzed. Although the modules adequately cover basic competencies, they rely heavily on long textual explanations with limited visual elements and minimal interactive tasks. This presentation constrains students' opportunities to engage in critical, creative, and collaborative learning, thereby reducing the potential to stimulate motivation, curiosity, and self-regulation. Student worksheets (LKS) further reinforce this tendency, as they primarily consist of repetitive exercises with uniform levels of difficulty. The absence of progressive challenge levels and feedback mechanisms limits students' experiences of gradual mastery, persistence, and learning confidence.

At the institutional level, school regulations reflect an explicit concern for character education and discipline. However, this concern remains largely normative and has not been translated into concrete instructional programs or learning tools specifically designed to strengthen students' mental resilience. Taken together, the findings summarized in Table 2 indicate that existing learning documents prioritize curriculum coverage over the quality of learning experiences. This condition highlights a clear need for teacher leadership based gamified teaching materials that can integrate structured challenges, visual engagement, and resilience-oriented learning activities while remaining adaptable to the constraints of remote school contexts. Learning modules are generally presented in extended textual formats with limited visual representation and minimal interactive components. This mode of presentation constrains students' opportunities for active engagement and reduces the potential for stimulating motivation, curiosity, and self-regulation skills. A similar pattern is observed in student worksheets (LKS), which predominantly consist of repetitive exercises with uniform levels of difficulty. The absence of progressive challenge structures and feedback mechanisms limits students' experiences of effort, persistence, and gradual mastery. As reflected in Table 2, these characteristics indicate that existing instructional materials do not adequately support the development of students' progressive mental flexibility or learning endurance.

At the institutional level, school regulatory documents reflect an awareness of character development and discipline as educational priorities. However, this concern remains largely normative and is not translated into specific instructional programs or classroom practices aimed at strengthening students' mental resilience. This disconnect points to a gap between policy intentions and pedagogical implementation. Taken together, the document analysis reveals that while existing learning tools fulfill formal instructional requirements, they have not yet been designed to intentionally cultivate resilience-oriented learning experiences. These findings underscore the need for teaching materials that integrate structured challenges, visual engagement, and adaptive learning pathways grounded in teacher leadership practices.

Insights from teacher interviews further deepen the understanding of these conditions. Consistent with the findings from observations and document analysis, teachers reported persistent difficulties in sustaining students' motivation and perseverance during learning activities. Many students were described as withdrawing quickly when confronted with tasks perceived as difficult. As one teacher explained (T-01), "When the task is slightly more challenging, many students immediately say they cannot do it and stop trying." Another teacher similarly noted (T-03), "They are afraid of being wrong, so they prefer to stay silent rather than try." These recurring accounts, which are summarized in Table 3, suggest that low persistence and fear of failure are not isolated incidents, but structural patterns within classroom learning that require more supportive and systematically designed pedagogical responses.

Regarding teacher leadership, the interviews reveal a strong awareness among teachers of their responsibility to guide, motivate, and provide emotional support for students. Teachers recognized that their role extends beyond delivering subject matter to shaping learning environments that encourage confidence and resilience. However, this leadership awareness has not yet been fully operationalized in classroom practice due to the absence of appropriate instructional media. As one participant stated (T-02), "We understand that teachers should lead learning, not just deliver material, but we don't have tools that help us do that in class." This gap between conceptual understanding and practical

enactment, as outlined in Table 3, highlights the importance of teaching materials that function not only as carriers of content, but also as tools that enable teachers to exercise pedagogical leadership in everyday learning activities.

**Table 3.** Summary of Teacher Interview Findings in the Needs Analysis Stage

Interview Focus	Key Interpretations from Teachers' Responses	Implications for Teaching Material Development
Learning Challenges	Teachers experience difficulty in sustaining students' learning motivation; many students give up easily when facing complex or unfamiliar tasks.	Teaching materials should incorporate reward systems, progressive levels, and structured challenges to encourage persistence and sustained engagement.
Teacher Leadership Role	Teachers recognize their role as guides and mentors but lack practical media to lead instructional innovation in daily classroom practice.	Teaching materials must include clear guidance for applying teacher leadership principles within gamified learning activities.
Use of Learning Media	Instructional media are limited to textbooks, worksheets, and whiteboards, reflecting structural constraints in remote schools.	Development of print-based or low-tech gamified teaching materials that are easy to use and accessible in limited-resource settings.
Readiness for Innovation	Teachers show strong enthusiasm for instructional innovation; however, limited internet access restricts the use of fully digital learning media.	Teaching materials should be flexible, low-tech, and independent of advanced digital infrastructure.
Students' Psychological Conditions	Students display low confidence, anxiety when working independently, and a tendency to become discouraged when facing difficulty.	Teaching materials need to explicitly integrate mental resilience components, such as confidence-building, self-regulation, and gradual challenge progression.

In terms of media utilization, teachers reported continued reliance on conventional instructional tools such as textbooks, worksheets, and whiteboards. The use of digital media remains limited due to infrastructural constraints, particularly unstable internet access. As one teacher explained (T-04), "Most of the time we only use books and the board. Internet access is unstable, so digital media is not always possible." Despite these limitations, teachers expressed openness and enthusiasm toward instructional innovation, provided that learning media are practical and contextually appropriate. Another participant emphasized (T-05), "We are very interested in trying new methods, as long as they do not depend too much on technology." These perspectives reinforce the need for low-tech, flexible gamified teaching materials that can be implemented effectively without increasing teachers' workload or reliance on digital infrastructure.

Teachers also drew attention to students' psychological conditions during learning. Many students were described as lacking confidence and becoming easily discouraged when asked to work independently or solve problems without close guidance. As noted by one teacher (T-01), "Students often hesitate to answer because they are afraid of making mistakes." This condition suggests that existing learning practices do not yet provide sufficiently safe spaces for trial, error, and gradual mastery. Consequently, teachers viewed gamification positively, particularly elements such as levels, points, and missions, which they believe could help students persist longer and feel more secure in the learning process. As expressed by another teacher (T-03), "If learning is designed like a game with levels, students are usually more willing to continue, even if it is difficult."

These qualitative patterns are further reinforced by Figure 3, which visually represents dominant themes emerging from teacher interviews. The prominence of terms such as leadership, resilience, challenge, confidence, motivation, and gamification illustrates the convergence of concerns related to students' fragile persistence, fear of failure, and the need for structured motivational support within low-resource learning environments.



**Figure 3.** Dominant Themes from Teacher Interviews

The integration of document analysis Table 2, teacher interview findings Table 3, and thematic visualization Figure 3 reveals a coherent pattern: instructional materials remain content-centered and procedural, teacher leadership is conceptually understood but not yet pedagogically operationalized, and students' mental resilience is insufficiently supported within existing learning practices. These convergent findings provide a strong empirical foundation for the development of teacher leadership-based gamified teaching materials as a contextually relevant response to the learning needs of students in remote junior high schools in Madura.

Table 4 summarizes the results of student interviews conducted to explore learners' experiences, psychological readiness, and expectations regarding classroom learning in remote junior high schools in Madura. The findings indicate that students generally perceive their current learning experiences as monotonous and less engaging, which often leads to fatigue and reduced concentration during lessons. Many students reported feeling sleepy and disengaged, suggesting that existing instructional practices have not yet provided sufficient stimulation to sustain attention or active participation.

In terms of learning confidence, students frequently expressed fear of making mistakes, particularly when completing tasks in front of their peers. This fear significantly reduces their willingness to try new approaches or respond to challenging questions. One student (S-04) stated, "I'm afraid of answering in front of the class because if it's wrong, my friends will laugh." Another student (S-07) similarly explained, "Sometimes I know the answer, but I don't dare to say it because I'm scared it will be wrong." These statements illustrate that students tend to avoid risk-taking behaviors in learning contexts, as reflected in Table 4, indicating that current classroom environments may not yet provide sufficient psychological safety or gradual confidence-building opportunities. From a needs analysis perspective, this condition highlights the importance of gamification designs that offer easy entry levels, progressive challenges, and non-threatening feedback mechanisms that allow students to learn from mistakes without fear.

Student interviews also reveal a strong interest in game-based and digitally inspired learning activities. Even simple quizzes, point-based tasks, or competitive group activities were described as enjoyable and motivating. One student (S-02) remarked, "If learning feels like a game, it's more exciting, and I want to keep trying." Another student (S-09) noted, "I like quizzes with points because it feels like playing, not studying." These responses indicate that gamification is not only appealing but

also contextually relevant for students in remote school settings, as it transforms learning tasks into experiences that feel more approachable and less intimidating.

**Table 4.** Summary of Student Interview Findings in the Needs Analysis Stage

Interview Focus	Key Interpretations from Students' Responses	Implications for Teaching Material Development
Current Learning Experience	Learning is perceived as monotonous, teacher-centered, and less engaging; students often feel tired or lose concentration during lessons.	Teaching materials should incorporate game-based and interactive activities to enhance engagement and sustain attention.
Confidence in Classroom Performance	Students are often afraid of making mistakes, particularly when completing tasks or answering questions in front of the class; reluctance to try new approaches is common.	Gamified learning should provide easy entry levels, gradual challenge progression, and psychologically safe feedback mechanisms.
Interest in Game-Based Learning	Students show high enthusiasm for simple games, quizzes, group challenges, and point-based activities, even with minimal technology use.	Teaching materials need to integrate gamification elements such as points, challenges, and cooperative tasks that remain instructional in nature.
Expectations for Future Learning	Students express a desire for learning experiences that are more enjoyable, interactive, and meaningful, reducing anxiety and fear of failure.	Gamified teaching materials should aim to create positive and motivating learning experiences that support confidence-building.
Media Readiness and Accessibility	Students are comfortable using print-based materials; some lack personal digital devices, but show strong enthusiasm when school facilities are available.	Teaching materials should combine conventional print media with low-tech digital options to ensure inclusivity and contextual suitability.

Regarding future learning expectations, students consistently expressed a desire for learning environments that are more enjoyable, interactive, and meaningful. Enjoyable learning was perceived as reducing anxiety and increasing their willingness to participate actively. As one student stated (S-05), "If learning is fun, I don't feel as nervous, and I want to join the lesson." In relation to media readiness, students demonstrated flexibility in using both print-based and limited digital media. While some students reported not owning personal digital devices, they showed high enthusiasm when school facilities were available. One participant explained (S-08), "At home I don't have a gadget, but if we use the computer lab at school, I'm very happy to learn there." This finding underscores the importance of integrating conventional and low-tech digital formats in instructional media development to ensure inclusivity and contextual suitability.

When interpreted alongside teacher interview findings, the student perspectives presented in Table 4 reinforce a consistent pattern: students experience low engagement, fragile confidence, and limited persistence within current learning practices, yet demonstrate strong enthusiasm for structured, game-based activities. Both teachers and students express a shared need for instructional media that are interactive and challenging while still providing a sense of safety and guidance in the learning process.

The convergence of student and teacher interview findings confirms a substantial gap between existing instructional practices and students' psychological learning needs. The inclusion of verbatim evidence strengthens the methodological credibility of this needs analysis and provides strong empirical justification for the development of teacher leadership-based gamified teaching materials that can enhance student engagement, support gradual confidence-building, and strengthen mental resilience in the context of remote junior high schools in Madura.

Based on the results of classroom observations, document analysis, and interviews with teachers and students, this study reveals that learning practices in remote junior high schools in Madura remain predominantly oriented toward fulfilling basic curriculum requirements, with limited integration of

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strategies aimed at strengthening students' mental resilience. Observational findings indicate that constraints in learning facilities and infrastructure lead teachers to rely heavily on conventional instructional approaches, particularly lectures and routine assignments. This pattern is consistent with previous findings showing that schools in 3T areas tend to maintain traditional learning models due to limited pedagogical resources and professional development opportunities (Himawan, 2022). Such conditions inevitably influence students' readiness to engage with more complex academic challenges and adaptive learning demands (Fujiastuti et al., 2025).

Despite these limitations, observational data also demonstrate that students possess a strong intrinsic interest in learning. However, this potential has not been optimally facilitated through interactive or contextual learning media. Students express a clear preference for learning experiences that are more challenging, enjoyable, and experiential in nature (Diana et al., 2025; Rahayu et al., 2025). Empirical evidence from technology-enhanced learning studies further indicates that interactive and experience-based learning environments are effective in stimulating cognitive engagement and sustaining learner motivation, particularly when conventional instruction fails to address students' developmental needs (Annuar & Solihatin, 2025). The absence of instructional mechanisms that encourage risk-taking, persistence, and gradual mastery renders the learning process less stimulating and reduces opportunities for students to develop resilience-related competencies. This finding supports the argument that students' mental resilience is more likely to develop when learning environments provide structured challenges accompanied by consistent teacher support (Himawan, 2023).

The importance of document analysis in needs analysis research is well established (Hermanto et al., 2025; Kusmiatun et al., 2025), and the findings of this study further reinforce its relevance. Analysis of lesson plans, learning modules, and student worksheets reveals that instructional documents largely emphasize content coverage and procedural task completion. Explicit elements aimed at fostering perseverance, emotional regulation, or adaptive problem-solving are rarely articulated. Instructional planning thus prioritizes the delivery of subject matter rather than the design of learning experiences that support mental resilience. As noted by Himawan and Utaminingsih (2021), instructional documents that lack a psychological orientation limit teachers' ability to translate resilience values into concrete classroom practices. This gap highlights the need for more adaptive teaching materials that integrate pedagogical and psychological dimensions.

Further document analysis indicates that existing learning media remain predominantly textual, with minimal visual representation and limited use of gradual, progressive activities that could support students' self-regulation skills. Text-heavy instructional materials present particular challenges for students in remote contexts with limited access to supplementary learning resources. Research on mobile-based and immersive learning environments demonstrates that visually rich and interactive media can significantly enhance students' engagement, persistence, and self-directed learning behaviors (Annuar & Solihatin, 2025; Yew & Ismail, 2025). These findings align with the view that learning media not oriented toward meaningful learning experiences may hinder the development of students' character and mental endurance (Himawan, 2020). Consequently, updates in media design are required to ensure that instructional materials are more visually engaging, developmentally supportive, and aligned with students' learning needs.

Findings from teacher interviews complement and deepen these insights. Teachers demonstrate a clear understanding of the importance of strengthening students' mental resilience and recognize their role as learning leaders who guide, motivate, and emotionally support students. However, teachers report significant barriers to implementing innovative learning practices, including limited pedagogical training, restricted access to technology, and the absence of effective instructional models or media. Similar challenges have been identified in design and development research on technology-supported learning, which emphasizes that innovation adoption depends not only on technology availability but also on teachers' pedagogical readiness and leadership capacity (Yew & Ismail, 2025). Despite these challenges, most teachers express openness toward gamification-based learning approaches, perceiving them as promising tools for enhancing student motivation and engagement.

Student interview findings further reinforce the patterns identified through observation and document analysis. As an essential component of needs analysis, interviews serve to clarify and validate findings obtained from other data sources (Himawan et al., 2024; Juniar et al., 2023; Suryadi et al., 2024). Students report that monotonous learning experiences reduce motivation and lead to rapid disengagement when facing difficult tasks. Conversely, they express higher enthusiasm and persistence when learning involves games, challenges, or competitive elements. Prior studies on experiential and gamified learning confirm that challenge-based activities foster confidence, persistence, and adaptive coping strategies among learners (Annuar & Solihatin, 2025). These responses indicate a strong need for learning media that are not only informative but also capable of building confidence, courage, and persistence through engaging and meaningful learning experiences.

The convergence of observational data, document analysis, and interview findings reveals a consistent pattern. Learning practices in remote schools in Madura remain conventional and textually dominant, instructional tools lack resilience-oriented and experience-based design, and both teachers and students express a strong need for interactive, challenging, and supportive learning media. These findings provide a robust empirical justification for the development of teacher leadership-based gamification teaching materials as a contextually relevant response to existing educational challenges. Such materials are expected to introduce structured challenges, activate teacher leadership roles in classroom practice, and strengthen students' mental resilience within learning environments characterized by limited facilities and the pressures of the digital disruption era.

## Conclusions

This study provides an initial empirical understanding of the learning conditions, instructional practices, and psychological needs of students in remote junior high schools in Madura through a needs analysis approach. Findings from classroom observations, document analysis, and interviews indicate that current learning practices remain largely conventional and text-oriented, with limited instructional strategies that intentionally support students' mental resilience. Although teachers demonstrate awareness of the importance of resilience, confidence, and perseverance in learning, these values have not yet been systematically embedded in instructional materials or classroom practices. The analysis reveals a clear need for teaching materials that are interactive, structured, and capable of engaging students emotionally while gradually challenging them. Gamification emerges as a relevant pedagogical approach because it offers progressive challenges, feedback mechanisms, and motivational structures that align with students' learning preferences and psychological conditions. Importantly, the findings also highlight that the effectiveness of such materials depends on the activation of teacher leadership. Teachers require practical instructional tools that enable them to guide learning processes, foster psychological safety, and support students in facing difficulties with confidence and persistence. As a study limited to the Analysis stage of the ADDIE model, this research does not evaluate the impact of instructional interventions. Instead, it establishes a grounded foundation for the subsequent design and development of teacher leadership-based gamified teaching materials that are contextually appropriate for remote school environments. The conclusions underscore that strengthening students' mental resilience requires instructional designs that integrate pedagogical innovation with teacher leadership, particularly within contexts characterized by limited facilities and the challenges of the digital disruption era.

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