



## DIGA-FAM model (differentiation instruction and game-based formative assessment model): students' needs analysis

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### ABSTRACT

The growing demand for personalized and engaging learning experiences in digital education highlights the limitations of conventional formative assessments. Many existing assessment practices fail to accommodate learner diversity and sustain motivation. This study aims to analyze students' needs as a foundation for developing the DIGA-FAM Model (Differentiation Instruction and Game-Based Formative Assessment Model), which integrates differentiated instruction with game-based elements to create adaptive and enjoyable formative assessments. Using a quantitative descriptive approach, data were collected from 104 students through a structured questionnaire and analyzed across six indicators: comfort, interactivity, motivation, differentiation and difficulty level, learning opportunities, and feedback quality. The results show that students prefer formative assessments that are digital-based, interactive, engaging, and tailored to individual learning styles, with opportunities to retry and receive immediate, constructive feedback. These findings emphasize the necessity of developing the DIGA-FAM Model to enhance student engagement, support differentiated learning, improve the effectiveness of formative assessment in classrooms, and fosters meaningful learning experiences.



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## INTRODUCTION

Over the past few decades, research in technology-based learning has confirmed that digital innovations have significant potential to improve the quality of education (Tondeur et al., 2017), while formative assessment has long been recognized as an important strategy in supporting student learning outcomes (Børte et al., 2023). However, the development of digital tools tends to be more directed at summative assessments that focus on final outcomes (Adams & Clough, 2015), resulting in less than optimal utilization for formative practice (Børte et al., 2023). Most studies focus more on the role of technology in enhancing learning outcomes, rather than its use to support actual formative assessment (Adams & Clough, 2015). Formative assessment, however, has distinct characteristics because it emphasizes continuous monitoring of student progress and allows teachers to adjust instruction based on evidence of learning activities (Morris et al., 2021). This approach makes learning more adaptive and empowers students to regulate and reflect on their own learning (Yan et al., 2021).

Various studies have provided empirical evidence regarding the positive impact of formative assessment on the quality of learning. Gikandi et al. (2011) emphasized that formative assessment can increase students' active cognitive engagement in understanding the material. Li (2016) showed that formative assessment has a strong relationship with students' reading achievement on the PISA test, with mediating effects from teacher-student relationships and students' positive attitudes toward reading. In addition to contributing to academic achievement, formative assessment also helps reduce the achievement gap between students from different backgrounds (Stanja et al., 2023). This implication is important because it shows that formative assessment not only measures learning outcomes but also pays attention to aspects of students' motivation, attitudes, and social relations in the classroom (Sudakova et al., 2022). Thus, the implementation of formative assessment can be seen as a comprehensive approach to supporting student development.

Formative assessment is not only academically beneficial but also offers practical benefits such as reducing student anxiety, increasing ownership of the learning process, and validating their understanding (Shams & Iqbal, 2019). Technological developments have strengthened the opportunities for its integration into learning by providing continuous and timely feedback (Robertson et al., 2019), although its use in language education is still suboptimal (Çekiç & Bakla, 2021). Barriers often arise in the field, such as teachers' limited time (Tsulaia & Adamia, 2020), large student populations that make providing personalized feedback difficult (Hatzia Apostolou & Paraskakis, 2010), and the challenges of online learning that make formative assessment even more difficult to implement (Hsu et al., 2011). Furthermore, variations in teachers' assessment literacy and limited institutional support are also inhibiting factors (Gu, 2021). This situation demonstrates that although formative assessment has great potential and is recognized as important, its implementation still faces various practical obstacles that need to be addressed.

Formative assessment plays a central role in improving the quality of learning because the feedback it provides has been shown to significantly contribute to student learning outcomes (Wisniewski et al., 2020) and provides teachers with crucial information to improve teaching strategies while guiding student development (Hopfenbeck et al., 2023). However, time constraints and the large number of students make providing individualized feedback in traditional classrooms challenging (Double et al., 2020), necessitating innovative strategies to maintain the essence of formative assessment. From a policy perspective, this assessment is seen as crucial as an integral part of learning planning in both schools and universities, with a systematic design to ensure its sustainability (Morris et al., 2021). Furthermore, formative assessment functions not only as an assessment but also as an instrument to modify instruction according to students' learning needs (Andersson & Palm, 2017). In practice, this form of assessment can take the form of peer assessment and self-assessment, allowing students to utilize it as a learning opportunity, while its success requires teacher creativity in designing strategies that suit students' needs and the educational context (Asamoah et al., 2022).

One creative strategy for designing formative assessments is the integration of games, which have long been considered fun, motivating, and challenging, especially for children and adolescents (Bang et al., 2023). Play activities provide space for students to think critically, understand complex issues, and find innovative solutions (Ilten-Gee & Hilliard, 2021), while educational games designed with learning content have been shown to make the learning process more engaging, effective, and impact students' emotional, social, and cognitive development (Tsai et al., 2020). The popularity of games has also encouraged their integration into formal curricula as a form of learning innovation (Kyriakides et al., 2016). The development of digital technology further reinforces this trend, as students accustomed to digital interactions expect similar learning experiences in school (San Martín-Rodríguez et al., 2020); if learning remains dominated by traditional methods, their motivation can potentially decline (García-Viola et al., 2019). Conversely, digital learning that incorporates interactive, competitive, and collaborative elements can significantly increase student participation while connecting academic content to their real-world environments (Tavares, 2022).

The growing trend of digital game-based learning (DGBL) is encouraging educators to experiment with designing their own learning environments. However, there is a gap in the literature regarding the basic principles of DGBL development, making it difficult for teachers to design effective educational games (Kucher, 2021). Many practices incorporate short-form game genres, such as interactive exercises or puzzles, which do not actually meet the characteristics of DGBL environments (Groff et al., 2016). The inclusion of game elements alone does not guarantee optimal learning outcomes, as DGBL design requires a balance between educational content and game mechanics (Gee, 2005). If academic content is too dominant, the game becomes boring, while if the entertainment aspect is too strong, learning outcomes are limited (An, 2016). Several studies have demonstrated the successful implementation of DGBL designed by educators (Sung & Hwang, 2018), but further research is needed to identify effective strategies and practices that can help teachers overcome the pedagogical challenges of designing balanced digital learning environments.

The integration of game-based learning into education not only emphasizes motivation and engagement but also needs to be directed at achieving learning outcomes that meet the unique needs of each student. This aligns with the principles of differentiated learning, which emphasize adapting

content, processes, and learning products to suit students' readiness, interests, and learning styles (Inman & Roberts, 2022; Marlina et al., 2024; Rudhumbu & Dziva, 2022; Wibowo et al., 2025). In this context, educational games can be an effective tool when designed with a differentiated approach, making them not only enjoyable but also meaningful for students with diverse learning characteristics. Furthermore, successful integration requires formative assessments that provide instant feedback during play activities, allowing teachers to continuously monitor student progress and adjust learning strategies as needed. Game-based formative assessments enable teachers to identify gaps in understanding while strengthening critical and collaborative thinking skills through challenges relevant to learning objectives. Thus, the combination of game-based learning, differentiation, and formative assessment provides a conceptual foundation for the development of the DIGA-FAM Model (Differentiation Instruction and Game-Based Formative Assessment Model), designed to address the demands of 21st-century learning.

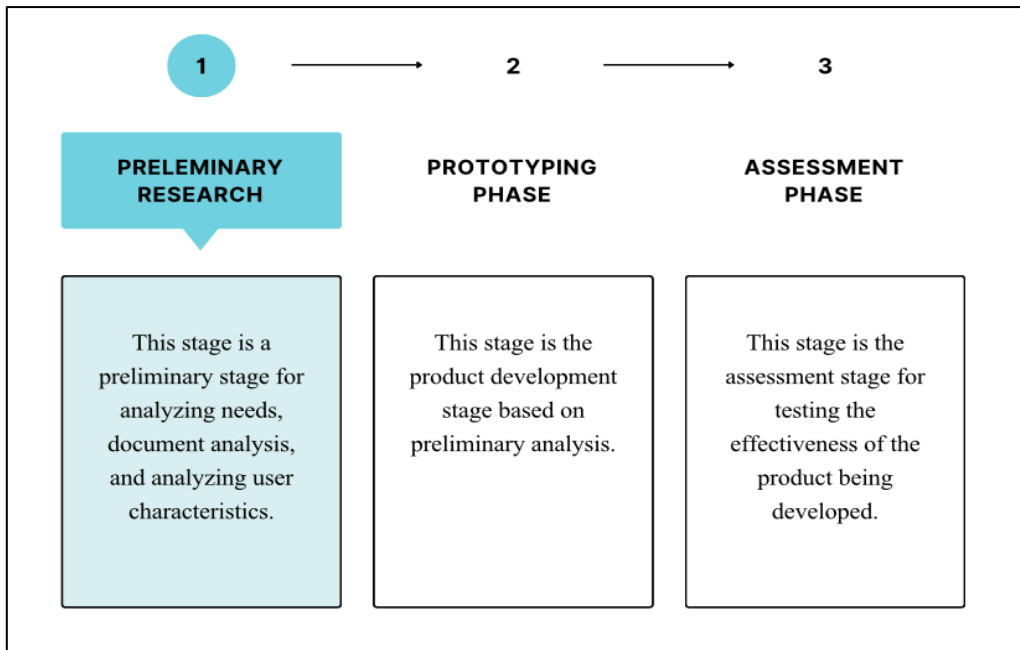
In today's digital learning landscape, formative assessment practices are often uniform and less responsive to the diversity of students' learning needs. Many educators still rely on traditional assessment methods that emphasize content mastery rather than adaptive learning processes. While numerous studies have explored game-based learning and differentiated learning as separate pedagogical approaches, research attempting to integrate the two within a single formative assessment framework is limited. This gap indicates a lack of comprehensive understanding of how differentiation and gamification can work synergistically to enhance learning effectiveness. This lack of integration limits teachers' ability to provide personalized and motivating feedback. The urgency of this research arises from the growing demand for assessment systems that are flexible, learner-centered, and aligned with students' individual learning profiles. Meaningful, real-time feedback and interactive assessment experiences are crucial for maintaining engagement in digital learning environments. Therefore, developing innovative models that integrate differentiation and gamification is crucial to achieving equitable, adaptive, and personalized learning outcomes.

The novelty of this research lies in the conceptual development of the DIGA-FAM Model, which bridges the principles of differentiated learning with game-based assessment practices. This integration provides a new pathway for creating formative assessments that are both pedagogically sound and intrinsically motivating. A key foundation in the development of this model is the analysis of students' needs and responses to the conceptual framework. Student feedback serves as an authentic reflection of their learning experiences, revealing how assessment design influences engagement, perceived level of challenge, and relevance. Understanding these responses allows teachers to refine differentiation strategies and optimize the balance between difficulty and enjoyment in learning activities. Through this process, the DIGA-FAM Model becomes truly learner-centered, emphasizing inclusivity and adaptability. By incorporating student voice into assessment design, it fosters a sense of responsibility and ownership in the learning process. Ultimately, the DIGA-FAM Model redefines formative assessment as a dynamic tool for improving classroom learning outcomes.

## RESEARCH METHODS

This study used a descriptive approach with a survey method to identify student needs in the development of the DIGA-FAM (Differentiation Instruction and Game-Based Formative Assessment Model). The survey method was chosen because it is considered capable of presenting a picture of the phenomenon based on data collected from a representative sample of the population. The study subjects were 104 students at SMA Negeri 7 Padang. Respondents consisted of 84.6% female students and 15.4% male students, with 62.5% from grade 10 and 37.5% from grade 11. The sample was obtained from students who agreed to complete an online questionnaire. This method allowed the researcher to obtain direct information regarding student needs related to designing innovative formative assessments appropriate to the language learning context.

This research was part of the Research and Development (R&D) phase, which focused on needs analysis as the basis for developing the DIGA-FAM Model. The subsequent research procedures were illustrated in a flowchart showing the systematic stages from needs analysis to conceptual model design. This research focuses on the first stage.



**Figure 1. Research procedures**

The instrument used was a questionnaire designed to measure student needs. The questionnaire covered several aspects, including comfort and pressure during assessment; the interest and interactivity of the assessment; learning motivation; differentiation and difficulty level; learning opportunities provided; and the function of feedback. The instrument was developed through a literature review and consultation with experts to ensure the suitability of the indicators. Instrument validation was carried out in two stages: content validation and language validation. Content validation emphasized the relevance of items to the construct being measured, while language validation ensured that each statement was easily understood and communicative for students. Next, the instrument was piloted on a small number of respondents to detect unclear or inconsistent items. The pilot test results were then used as the basis for revising the instrument to make it more accurate and reliable. The revised instrument was then widely disseminated via Google Forms and WhatsApp

**RESULTS AND DISCUSSION**

The findings of this study provide an initial overview of students' needs for an integrated formative assessment model within the DIGA-FAM Model framework. The questionnaire results indicate that students desire an assessment model that not only encourages active engagement but also supports learning differentiation and enhances the effectiveness of formative assessment. Data analysis emphasizes the importance of developing a model that is appropriate to the diversity of student characteristics. To clarify these results, the questionnaire data is presented in tabular form based on indicators for easier understanding and interpretation. This tabular presentation also serves as a basis for designing an assessment model that is relevant to students' needs. The results of the analysis of students' needs for a formative assessment model based on indicators of comfort and stress in assessment are presented in Table 1 below.

**Table 1. Based on Comfort and Pressure in The Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	I feel like the assessments teachers give me often make me nervous.	55.8	26.9	17.3	0
2.	I need assessments that are more enjoyable and less stressful.	78.8	21.2	0	0

The research results show that teacher-implemented assessments still cause psychological stress for a majority of students, potentially hindering their learning outcomes. Students tend to feel anxious when facing assessments, indicating a need for changes in assessment mechanisms. At the same time, students expressed a strong desire for more enjoyable and less burdensome assessments. This situation illustrates the gap between current assessment practices in the classroom and students' expectations for a more positive learning experience. These findings also emphasize that assessments should not simply function as a tool to measure learning outcomes but should also provide added value in the form of motivation and comfort.

The results of this study align with previous findings that emphasize the importance of comfort in determining the effectiveness of an assessment or instrument. Zemp et al. (2015) explain that pressure exerted on users, both in learning contexts, can cause discomfort that negatively impacts performance. In educational contexts, excessive pressure from traditional assessments has been shown to reduce students' self-confidence and inhibit their active engagement. Furthermore, research by Ma et al. (2025) highlights that comfort and discomfort are important factors in the acceptance of a tool, so assessment development also needs to consider students' emotional and psychological experiences. This suggests that comfortable and stress-free assessments not only increase student acceptance but also the overall effectiveness of learning. Thus, students' need for enjoyable assessments can be seen as a pedagogical demand. Furthermore, to clarify students' needs, the following presents the results of the questionnaire analysis related to the aspects of assessment interest and interactivity, which can be seen in Table 2.

**Table 2. Aspects of Attractiveness and Interactivity of Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	I appreciate it when assessments are interactive and engaging.	75.0	25.0	0	0
2.	I find that assessments using games make learning more enjoyable.	69.2	28.8	1.9	0
3.	I understand the lesson more easily when assessments are varied.	65.4	32.7	1.9	0
4.	I understand language material more easily when assessments are conducted in creative and fun ways.	78.8	21.2	0	0

The results of this study show that the majority of students strongly agree that assessments are designed in an interactive and engaging manner. This trend suggests that monotonous and conventional forms of assessment are less relevant to today's student learning needs. Assessments presented through creative activities have been shown to create a more positive learning environment, encouraging engagement and active participation. This situation emphasizes that assessments are viewed not only as a measure of academic achievement but also as a means to foster motivation and curiosity. Therefore, interactivity in assessments plays a crucial role in creating meaningful learning experiences. These findings also indicate that students are more receptive to learning material when assessments are presented in a fun way.

Furthermore, the results of this study confirm that assessments that integrate game elements and offer variety can strengthen students' conceptual understanding. This is believed to be both an evaluation of achievement and a pedagogical strategy for deepening understanding of the material. The presence of engaging assessments impacts long-term motivation and engagement in the learning process. This demonstrates that assessment effectiveness is determined not only by the validity of the questions but also by the emotional experiences they evoke. These findings provide a strong foundation for the importance of assessment innovations that connect students' cognitive and affective needs.

The results of this study align with previous findings showing that the implementation of game-based and interactivity-based assessments can increase student engagement and comprehension. Huynh et al. (2018) confirmed that the game elements in the Duolingo platform successfully created a more engaging and effective language learning experience. Similarly, Anisah (2022) found that the use of Wordwall as an assessment tool in junior high schools not only increased student motivation but also helped them understand the material more deeply through a creative approach. Similarly, Saputri et al.

(2018) research by emphasized that the need for game-based interactive multimedia is both a challenge and an opportunity in 21st-century learning. The integration of interactivity and engaging content into assessments not only provides feedback but also creates a fun and relevant learning experience for students. Thus, the results of this study reinforce the need for creative assessments to enhance student motivation and comprehension. To determine the extent to which assessment plays a role in increasing students' enthusiasm and motivation to learn, the following presents the results of the questionnaire analysis related to learning motivation through assessment, which can be seen in Table 3.

**Table 3. Motivation to Learn Through Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	Game-based assessments can make me more motivated to learn.	65.4	32.7	1.9	0
2.	I'm more enthusiastic about learning if the assessment is done digitally.	80.8	17.3	1.9	0
3.	I'm more interested in participating in learning if the assessment is done independently.	59.6	32.7	5.8	1.9
4.	I feel more motivated if the assessment provides rewards.	78.8	21.2	0	0
5.	I'm more motivated if the assessment is competitive.	69.2	26.9	3.8	0

The research findings indicate that student learning motivation can be influenced by the form and mechanism of assessment used. Assessments utilizing game-based approaches and digital technology can foster student enthusiasm and engagement in the learning process. This indicates that students respond positively to assessments designed to suit their digital lifestyles and habits. Furthermore, assessments that provide opportunities for independent learning also encourage students' independence and sense of responsibility for their learning process. Furthermore, the research findings indicate that rewards and competition in assessments are important factors that can trigger students' extrinsic motivation. This situation reflects that students are driven not only by academic achievement but also by the pleasurable emotional experience of learning. Assessments designed with competitive elements and rewards create a more challenging and motivating learning environment. By presenting healthy challenges and relevant rewards, students can be encouraged to actively participate and develop their potential optimally. Therefore, students' need for motivational assessments is an important basis for developing assessment models that are tailored to their needs and characteristics.

The results of this study align with previous findings that emphasize the crucial role of assessment in shaping student learning motivation. Hanus & Fox (2015) demonstrated that gamification in assessment can increase students' intrinsic motivation, sense of satisfaction, and effort in learning, although it needs to be carefully designed to avoid creating excessive pressure. Meanwhile, Kusrakar et al. (2023) emphasized that assessment has a significant influence on motivation, both positive and negative, depending on its design and implementation. In this context, assessments that are varied, enjoyable, and provide space for rewards and competition have been shown to strengthen student motivation to achieve better learning outcomes. Walters et al. (2017) also emphasized that a harmonious relationship between teaching, learning, and assessment significantly determines the extent to which students feel motivated to learn deeply. Thus, the results of this study strengthen the argument that assessment is not merely a tool for measuring achievement, but also a pedagogical instrument that can stimulate students' intrinsic and extrinsic motivation. Next, to illustrate how students view the importance of differentiation and adjustment of difficulty levels in assessment, this can be seen in Table 4.

**Table 4. Differentiation and Level of Difficulty of Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	I learn more easily if the assessment questions are adjusted to a gradual level of difficulty.	71.2	26.9	1.9	0
2.	I feel more challenged by assessments that have levels.	59.6	36.5	3.8	0

No.	Statement	Answer (%)			
		SA	A	D	SD
3.	I need assessments that help me learn according to my learning style (visual, auditory, kinesthetic).	71.2	28.8	3.8	0

The results of the study indicate that most students placed significant emphasis on the differentiation and difficulty levels of assessments tailored to their learning needs. The dominant response indicated that students found it more helpful when assessments were designed in stages, as this provided an opportunity to adapt to their individual ability levels. Assessments with varying levels of difficulty were considered not only to facilitate the learning process but also to provide challenges that stimulate students' internal motivation to strive for excellence. Furthermore, the recognition of different learning styles, including visual, auditory, and kinesthetic, demonstrates that students recognize the importance of a more personalized approach to assessment. This reflects students' need for flexibility that accommodates individual differences, thus creating a more inclusive learning experience. The presence of assessments that are both challenging and tailored to learning styles demonstrates a close relationship between assessment strategies and student learning satisfaction. These findings also demonstrate that assessments serve not only as a tool for measuring achievement but also as a learning tool that can guide students' development according to their capacities.

The results of this study align with the findings of Walters et al. (2017), which emphasized that tiered assessment and differentiated instruction can provide a more equitable learning experience and support student development according to their individual abilities. Adjusting the level of difficulty in assessments has been shown to help students stay motivated without feeling overburdened, as (Le Hebel et al., 2017) noted that problem difficulty often arises when cognitive demands do not match students' capacities. Therefore, adaptive assessment design serves a dual function: as a tool for measuring achievement and as a learning tool that fosters internal motivation. Furthermore, the need for students to receive assessments that align with their individual learning styles reinforces the notion that instructional differentiation is crucial in educational practice. This emphasis on flexibility is also supported by research by (Keppler-Noreuil et al., 2015), which highlights the importance of a differentiated approach in the evaluation context to suit the unique characteristics of each individual. To provide a deeper understanding of the role of assessment as a means of student self-development, the following describes the results of research related to learning opportunities through assessment, which are presented in Table 5.

**Table 5. Learning Opportunities Through Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	I feel more confident if the assessment gives me the opportunity to try again after making a mistake.	80.8	19.2	0	0
2.	I need an assessment that measures not only memorization, but also understanding.	75.0	23.1	1.9	0
3.	I prefer assessments that provide a learning experience, not just a grade.	75.0	25.0	0	0
4.	I need assessments that encourage me to think critically.	65.4	30.8	3.8	0

The research findings indicate that students perceive assessment not only as a tool to measure academic achievement but also as an opportunity to correct mistakes and develop deeper understanding. Students value assessments that provide space for retrying after failure, as this increases self-confidence and reduces learning anxiety. This opportunity allows students to view mistakes as part of the learning process, not as the end of the assessment. Furthermore, there is a strong need for assessments that emphasize understanding over memorization, allowing students to build more meaningful connections between knowledge. Assessments that provide experiential learning are perceived as more relevant because they not only produce scores but also develop thinking and problem-solving skills. Furthermore, the research findings confirm that students desire assessments that foster critical thinking skills as part of their learning experiences. Assessments that encourage analysis are perceived as

broadening their horizons and leading to a deeper understanding of concepts. This suggests that students view assessment not only as the end of learning but also as an ongoing process that guides their development. Therefore, assessment is seen as more effective when it is formative.

The results of this study demonstrate that assessments that provide students with broader learning opportunities align with previous research findings that emphasize the formative function of assessment. Wiliam & Thompson (2017) emphasized that assessments integrated with learning can create a continuous feedback loop that strengthens student understanding. Similarly, Black & Wiliam (2018) demonstrated that classroom assessments serve not only as a measure of learning outcomes but also as a pedagogical strategy that guides students' thinking processes. Research by Hill & West (2020) also supports these findings by demonstrating that dialogic feedback-based assessments can enhance students' learning experiences by providing direction and support before the final evaluation. Thus, assessments designed as learning experiences encourage students to view mistakes as opportunities, rather than obstacles, to deepen their knowledge. This reinforces the idea that assessment should not be separated from the learning process but should instead be a crucial instrument in creating meaningful learning experiences. To illustrate how students view the important role of feedback in the learning evaluation process, the following presents the results of research related to feedback in assessment, which can be seen in Table 6.

**Table 6. Feedback Function in Assessment**

No.	Statement	Answer (%)			
		SA	A	D	SD
1.	I like it when assessments provide quick feedback.	71.2	28.8	0	0
2.	The feedback from the assessment helped me know my weaknesses and strengths.	75.0	25.0	0	0

The results of the study indicate that students view feedback in assessments as a crucial element in supporting their learning process. The responses highlighted that feedback serves not only as a means of providing information about results but also as a means of reflection, helping students identify strengths and areas for improvement. This demonstrates that students desire formative evaluations, namely assessments that provide immediate and useful feedback to improve their learning process. Prompt feedback is seen as a key factor in maintaining student engagement because it allows them to immediately make improvements and adjust their learning strategies. Thus, students perceive assessments not only as the end result of a process but also as a continuous learning experience. These findings emphasize that assessments that incorporate feedback reflect the importance of interactive and responsive assessment design to optimally meet student needs.

The results of this study align with the findings of experts who emphasize the importance of feedback in supporting effective learning. Valdez-García et al. (2017) emphasized that constructive feedback can be a key principle of effective assessment because it can strengthen students' learning processes. Brown (2019) also emphasized that the quality of feedback is more important than quantity, as clear and immediate feedback allows students to understand weaknesses and potential improvement strategies. Furthermore, Ajjawi & Boud (2017) highlighted the role of dialogue in the feedback process, where interactions between teachers and students can foster a deeper understanding of learning outcomes. In the context of this study, students' need for prompt and informative feedback indicates that they seek not only results but also guidance for development. This confirms that assessments accompanied by feedback can optimize the role of assessment in improving the quality of learning.

## CONCLUSION

Based on the research results and discussion, it can be concluded that students have a strong need for a formative assessment model that is not only adaptive, but also interactive, enjoyable, and able to accommodate learning differentiation. The analysis shows that aspects of interest, interactivity, motivation, learning opportunities, differentiation, and feedback are important factors that must be integrated into the assessment model. These findings emphasize the urgency of developing the DIGA-

FAM Model, which is expected to increase student engagement, foster learning motivation, and provide a more meaningful learning experience. This model also has the potential to create a more participatory and enjoyable learning environment, tailored to the characteristics and needs of diverse students. Recommendations are for teachers to pay more attention to differences in student learning styles, implement game-based strategies in assessment, and provide prompt feedback. Furthermore, teachers are expected to be able to integrate various forms of assessment that emphasize not only the final outcome but also the learning process experienced by students.

Therefore, implementing an assessment model that can accommodate these factors can be a solution to increase the effectiveness of formative assessment in the classroom. The implication of this research is the need for a paradigm shift in assessment practices in schools, where assessment is no longer viewed solely as a tool for measuring final outcomes, but rather as a means to facilitate continuous learning. The DIGA-FAM Model offers an approach that combines differentiation and game-based assessment, thus addressing the challenges of 21st-century learning. For educators, this model can serve as a practical guide for designing student-centered, interactive assessments that enhance motivation and foster critical thinking skills. Meanwhile, for educational institutions, these findings emphasize the importance of systemic support in the form of digital tools, teacher training, and policies that encourage assessment innovation. However, this study has limitations because it focused solely on analyzing student needs, without testing the model's direct implementation in the classroom. Therefore, further research will be conducted through empirical trials to evaluate the effectiveness of the DIGA-FAM Model in improving student learning outcomes. This way, the development of this model can continue and make a significant contribution to formative assessment practices that are relevant to student needs.

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