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TRANSFORMING LEARNING ASSESSMENT THROUGH A GAME-BASED APPROACH FOR TEACHERS

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Abstrak: Evaluasi atau penilaian dalam lingkungan pendidikan merupakan alat untuk mengukur sejauh mana tujuan pembelajaran tercapai. Akan tetapi, penilaian yang dilakukan sebagian besar kurang menyenangkan sehingga dampaknya kurang maksimal. Padahal, penilaian dapat dilaksanakan dengan lebih menyenangkan menggunakan pendekatan penilaian berbasis permainan (GBA), sehingga dapat menciptakan pengalaman belajar dan penilaian yang menyenangkan dan imersif. Kegiatan pengabdian masyarakat ini bertujuan untuk meningkatkan keterampilan guru dalam mengembangkan GBA dengan fokus pada platform Kahoot!. Metode yang digunakan adalah Participatory Action Research (PAR), yaitu pendekatan kolaboratif yang menekankan pada keterlibatan aktif dan kemitraan dengan anggota komunitas yang mendapat intervensi dari kegiatan itu. Peserta yang terlibat dalam kegiatan ini adalah 39 guru (15 laki-laki, 24 perempuan) di SMKS Sakti Gemolong, Sragen. Hasilnya menunjukkan tingkat kepuasan dan efektivitas yang tinggi, dengan skor rata-rata berkisar antara 4,59 hingga 4,85 dalam berbagai aspek seperti kegunaan kegiatan, perolehan pengetahuan baru, dan niat menerapkan GBA dalam pengajaran. Skor yang sedikit lebih rendah untuk penerapan praktis menunjukkan antisipasi realistis terhadap tantangan dalam penerapan GBA. Namun demikian, tanggapan positif secara keseluruhan, khususnya keinginan untuk berpartisipasi dalam kegiatan serupa di masa mendatang (4,85), menggarisbawahi nilai yang diberikan pada pengembangan profesional berkelanjutan dalam metode pengajaran inovatif.

Kata Kunci: penilaian berbasis game, pembelajaran berbasis game, Kahoot, participatory action research

Abstract: Evaluation or assessment in educational settings is a tool for measuring the extent to which learning objectives are achieved. However, the conducted assessments are mostly less playful, so the impact of it is less effective. On the other hand, an assessment can be carried out more fun with a game-based assessment (GBA) that can create an enjoyable and immersive learning experience. This community service aims to enhance teachers' proficiency in GBA, focusing on platforms like Kahoot!. The method used was Participatory Action Research (PAR), a collaborative approach that emphasizes active involvement and partnership with the community members affected by the issue being studied. Participants involved in this activity were 39 teachers (15 males, 24 females) at SMKS Sakti Gemolong, Sragen. The results reveal high levels of satisfaction and perceived effectiveness, with average scores ranging from 4.59 to 4.85 across various aspects, such as the usefulness of the activity, acquisition of new knowledge, and intent to apply GBA in teaching. The slightly lower score for practical application indicates a realistic anticipation of challenges in implementing GBA. Nevertheless, the overall positive response, particularly the eagerness for future participation in similar activities (4.85), underscores the value placed on continuous professional development in innovative teaching methods.

Keywords: game-based assessment, game-based learning, Kahoot, participatory action research

Introduction

Evaluation or assessment in educational settings is a critical tool for measuring the extent to which learning objectives are achieved. It can also be used to assess students' progress and how much they have learned the material contents that have been given. Even from the

perspective of "assessment for learning," assessment plays a central role in both teaching and learning (Memarian & Doleck, 2024). The assessment process is not just a terminal activity but an ongoing mechanism that informs educators about the effectiveness of their teaching methodologies and the learning uptake of their students (Adarkwah, 2021). Through various assessment techniques, educators can glean insights into students' understanding, skills, and knowledge, providing a comprehensive overview of the educational process. Assessment, therefore, acts as a barometer, gauging student achievement and instructional effectiveness and facilitating informed decisions about future teaching and learning strategies (Zhang, 2020).

In the curriculum context, the assessment is integral to the development process. It plays a pivotal role in curriculum design by identifying areas where modifications or enhancements are needed (Ali, 2018). Effective assessment strategies ensure that the curriculum remains dynamic and responsive to students' changing educational needs and diverse learning styles (Nortvedt et al., 2020). Integrating assessment with curriculum development supports a more student-centered approach, where learning experiences are tailored to meet individual student needs and preferences. Consequently, evaluation transcends its traditional role of merely measuring student performance to become a fundamental component in the iterative process of educational improvement and curriculum innovation (Yusuf, 2022).

Several assessment methods in educational settings predominantly involve quizzes, tests, assignments, or projects. However, the conducted assessments are mostly less playful, so the impact of it is less effective. Whereas an assessment can be carried out more fun with a game-based assessment (GBA), an assessment strategy that integrates the principles of gaming into the assessment process, creating an enjoyable and immersive learning experience (Kim, Knowles, Scianna, Lin, & Ruipérez-Valiente, 2023). This method not only evaluates the student's knowledge but also enhances their engagement and motivation through the playful yet educational nature of games (Anggarini et al., 2023; Ma'ruf & Alfurqan, 2022).

Several platforms have emerged to support the implementation of GBA in educational environments, each offering unique features and tools to facilitate interactive learning. For example, Kahoot!, Quizizz, Wordwall, Padlet, and Mentimeter are popular choices for educators looking to incorporate GBA into their teaching methodologies (Cadet, 2023; Handoko, Mizkat, Nasution, & Eska, 2021). These platforms provide a dynamic and interactive interface where students can participate in educational games and quizzes. In our community service program, the focus was specifically on Kahoot! due to its user-friendly interface, accessibility, and widespread recognition among educators. Kahoot! was chosen for its ability to engage students actively and provide immediate feedback, which aligns well with the goals of game-based assessments. This selective focus allowed for a more in-depth exploration and hands-on practice, ensuring participants could effectively integrate this tool into their teaching strategies. Using such platforms in educational assessments can significantly increase student motivation, drive higher engagement levels, and transform the teaching and learning process into a more captivating and enjoyable experience (Hellín et al., 2023). Using such platforms in educational assessments can significantly increase student motivation, drive higher engagement levels, and transform the teaching and learning process into a more captivating and enjoyable experience

(Udeozor, Abegão, & Glassey, 2023). By integrating these innovative tools, educators can create a more diverse and inclusive learning environment that caters to various learning styles and preferences (Sanger, 2020).

Additionally, it is important to highlight previous researchers' contributions in the GBA field. Studies by Kim, Knowles, Scianna, Lin, & Ruipérez-Valiente, (2022) have demonstrated the positive impact of GBA on student engagement and learning outcomes. Our approach builds upon this existing body of work by focusing on practical implementation and providing hands-on training with specific tools like Kahoot!. This focus on practical application represents a novel contribution by equipping educators with the necessary skills and confidence to integrate GBA into their classrooms effectively. Moreover, our study addresses the gap in the literature by offering detailed insights into the training process and its immediate impact on teachers' readiness to adopt GBA strategies, thereby contributing new knowledge to the ongoing discourse on educational innovation.

The problem met by the partner, SMK Sakti Gemolong, Sragen, is that implementing GBA among its teachers is lacking. An initial analysis conducted with the school's faculty revealed a significant knowledge gap in this area. Out of 39 teachers who participated in the survey, only 13 (approximately 33%) were familiar with and had experience in implementing GBA in their teaching practices. The remaining 26 teachers, which constitute a significant 67%, were yet to be acquainted with this innovative assessment approach. Traditionally, these teachers have predominantly relied on conventional assessment methods such as written tests, quizzes, and assignments to evaluate student learning. While effective in specific contexts, these methods often fail to engage students actively or provide immediate feedback, which are key benefits of game-based assessments. This finding is particularly noteworthy considering that SMK Sakti Gemolong receives the SMK Center of Excellence (Pusat Keunggulan, PK) grant—a program to develop vocational schools with specific competencies to enhance quality and performance.

As a beneficiary of this prestigious grant, SMK Sakti Gemolong must elevate the quality of its human resources, especially its teaching staff. In the context of educational excellence, the mode of assessment employed is a critical quality parameter. The current underutilization of GBA at SMK Sakti Gemolong represents a missed opportunity to harness a progressive educational tool that could significantly enhance both teaching and learning experiences. This gap underscores the need for targeted interventions to familiarize and train the teaching staff in GBA methodologies. Such initiatives are essential for aligning with the school's status as a PK grantee and elevating the overall educational standards to produce competent and industry-ready graduates.

Based on the problem statements explained, it is imperative to devise an intervention that addresses the existing gap in implementing GBA at SMK Sakti Gemolong, Sragen. The proposed solution is conducting a comprehensive training program tailored to educators. This training aims to enhance the teachers' skills in designing and implementing GBA within their teaching methodologies. The program seeks to bridge the current disparity in using this innovative assessment tool by equipping educators with the necessary knowledge and practical skills in GBA. The training encompasses a range of pedagogical strategies, mainly developing a GBA tool

for assessment employing a platform by integrating technology and approaches to engage and assess students through gamified methods. This initiative is crucial for aligning with the school's commitment to excellence under the SMK PK grant and is vital in fostering an engaging and effective learning environment that resonates with contemporary educational practices.

Method

The method employed in this community service is Participatory Action Research (PAR), a collaborative approach that emphasizes active involvement and partnership with the community members affected by the issue being studied (Patriot et al., 2023; Sari et al., 2023). This method was chosen due to its effectiveness in addressing real-world problems through a cycle of action and reflection. PAR's iterative nature allowed for continuous learning and adaptation, ensuring that the intervention developed was relevant and practical. The process was structured into four distinct phases, as illustrated in Figure 1: identification, defining requirements, intervention, and evaluation.

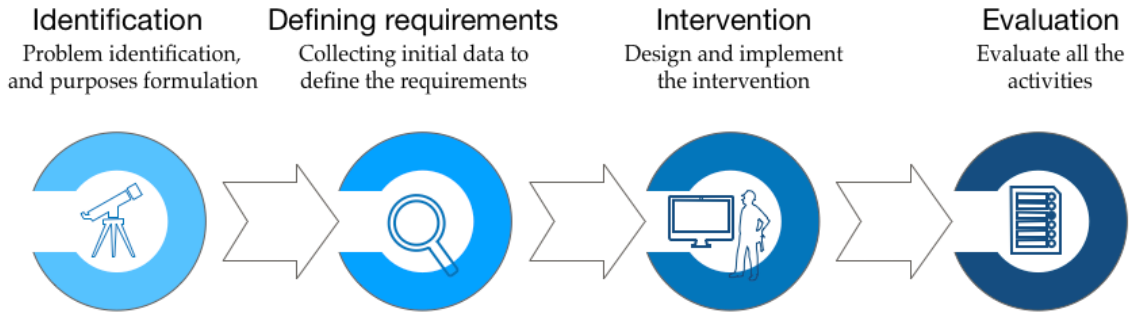

Figure 1. Activity design

In the Identification phase, the primary focus was on problem identification and formulating purposes. This stage involved engaging with teachers at SMK Sakti Gemolong, Sragen, to understand their perspectives and experiences regarding the use of GBA. Through a survey, we identified the demographic information, including age and gender, the insight into GBA and game-based Learning (GBL), and related information. This phase was crucial as it set the foundation for the entire project, ensuring that the subsequent actions aligned with the teachers' real needs and concerns. Demographic information among 39 teachers obtained in this phase is provided in Table 1. It can be seen that the school has a golden age teacher because their age between 24 and 44 is about 71.8%. Additionally, their insight about GBA is relatively equal (53.8% vs 46.2%). However, their experience in using a GBL platform is lacking.

Based on the identification phase, the requirements for intervention are defined. The defining requirements phase entailed collecting initial data to determine the specific requirements of the intervention. This phase was pivotal in translating the insights gained from the identification phase into actionable plans. We analyzed the data to determine the training needs, resource requirements, and potential strategies that could be used to enhance the teachers' proficiency in GBA. This step was critical for designing a tailored intervention that was practical and achievable within the school context. Following this, the Intervention phase

involved the actual design and implementation of the training program. This phase saw the development of workshops, instructional materials, and hands-on training sessions to equip the teachers with the necessary skills and knowledge to implement GBA in their classrooms effectively. The emphasis was on practical application and active participation, enabling the teachers to experience firsthand the benefits and challenges of GBA.

Table 1. Demographic information of the participants

Info		**n**	**%**
Gender	Male	15	38.5
	Female	24	61.5
	Total	39	100
Age	<=24	1	2.6
	25-29	11	28.2
	30-34	4	10.3
	35-39	8	20.5
	40-44	4	10.3
	>=45	11	28.2
	Total	39	100
Have you known about GBA?	Yes	21	53.8
	No	18	46.2
	Total	39	100
Skills in using technology (internet, smartphone, and related)?	Poor	8	20.5
	Medium	30	76.9
	Proficient	1	2.6
	Total	39	100
Have you ever used a platform to support game-based learning?	Yes	13	33.3
	No	26	66.7
	Total	39	100

Finally, the evaluation phase assessed the effectiveness of all activities in the program during the intervention. This involved collecting feedback from the teachers, observing changes in their teaching practices, and evaluating the impact of the training on their use of GBA. The evaluation helped identify areas of success and aspects that required further refinement. This phase was about assessing the outcomes, reflecting on the process, learning from the experience, and planning future actions. The insights gained from this phase would feed back into the next cycle of PAR, fostering a continuous process of improvement and development. The instrument for evaluation is provided in Table 2. The participants responded by selecting the options designed with a Likert scale from 1 to 5, indicating strongly disagree to strongly agree.

Table 2. Instrument for evaluation

No.	**The Questions**
Q1	This program is useful for me
Q2	After participating in this program, I felt that it was useful
Q3	I gained new knowledge about game-based assessment
Q4	I will apply this game-based assessment in the classes I teach
Q5	Overall, I was satisfied with this program
Q6	The material presented in the program was interesting and met my expectations
Q7	I hope to be able to take part in the programs like this in the future in order to make a better classroom learning

Results and Discussion

One of the stages in this community service at SMK Sakti Gemolong, Sragen, was the intervention phase, designed as a comprehensive training program, including workshops and practical sessions. The training began with an informative session explaining the rationale behind the necessity of incorporating GBL and GBA, especially in the context of catering to Generation Z students. This demographic, known for its affinity towards digital technologies and interactive media, demonstrates a higher engagement level with educational content when presented in a gamified format. The session highlighted how game-based approaches could significantly enhance student interest and motivation, thereby leading to better learning outcomes. This introduction set the foundation for the rest of the next session, emphasizing the alignment of teaching methods with the evolving learning preferences of contemporary students.

Subsequent material training delved deeper into the specifics of GBA. Educators were introduced to the concept of GBA, discussing its importance and the added value it brings to the educational process. The training underscored the benefits of GBA, such as its ability to provide immediate feedback, foster a more engaging learning environment, and cater to various learning styles. The session was not only theoretical but also included practical aspects, introducing and demonstrating various platforms that can be used to implement GBA. These platforms included Kahoot!, Wordwall, Quizizz, Padlet, and Mentimeter, that each offering unique features and capabilities. The inclusion of these tools was crucial in showcasing the versatility and accessibility of GBA in diverse educational settings.

In a more focused training segment, a special session was dedicated to Kahoot!, a popular GBL and GBA platform. This session involved a hands-on experience where the teachers actively engaged in creating their quizzes using Kahoot!. This practical exercise was instrumental in demonstrating the ease and effectiveness of incorporating GBA into their teaching and assessment. The educators were guided through the process of quiz creation, from conceptualization to execution, providing them with a comprehensive understanding of how to utilize the platform effectively. This direct experience with Kahoot! not only enhanced their technical skills but also built confidence in their ability to integrate game-based elements into their assessment strategies. This practical approach ensured that the training was not just theoretical but equipped educators with actionable skills they could immediately apply in their classrooms.

Figures 2 and Figure 3 exemplify the efficacy and versatility of their creations. Figure 3 showcases a participant's work created using a smartphone, demonstrating the platform's mobile accessibility and the ease with which educators can develop engaging assessments on-the-go. This mobile creation signifies the adaptability of Kahoot! to various contexts and highlights its user-friendly interface on smaller screens. Meanwhile, Figure 2 displays a participant's work crafted on a desktop version, illustrating a more comprehensive view of the platform's capabilities when accessed through a computer. With its broader display and navigational ease, the desktop version allowed for more intricate quiz designs and detailed

content creation. Both figures collectively underscore the flexibility of Kahoot! as an evaluation tool, catering to different user preferences and technological accessibilities, thereby enhancing the practical applicability of GBA in diverse educational settings.

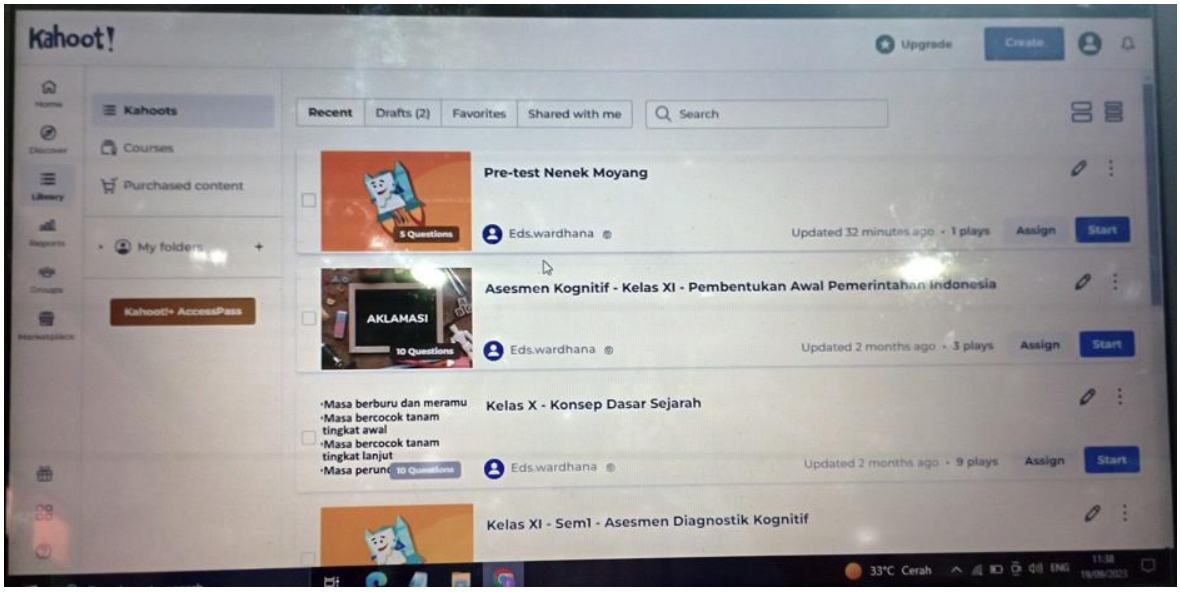

Figure 2. Assessment tool created by a participant

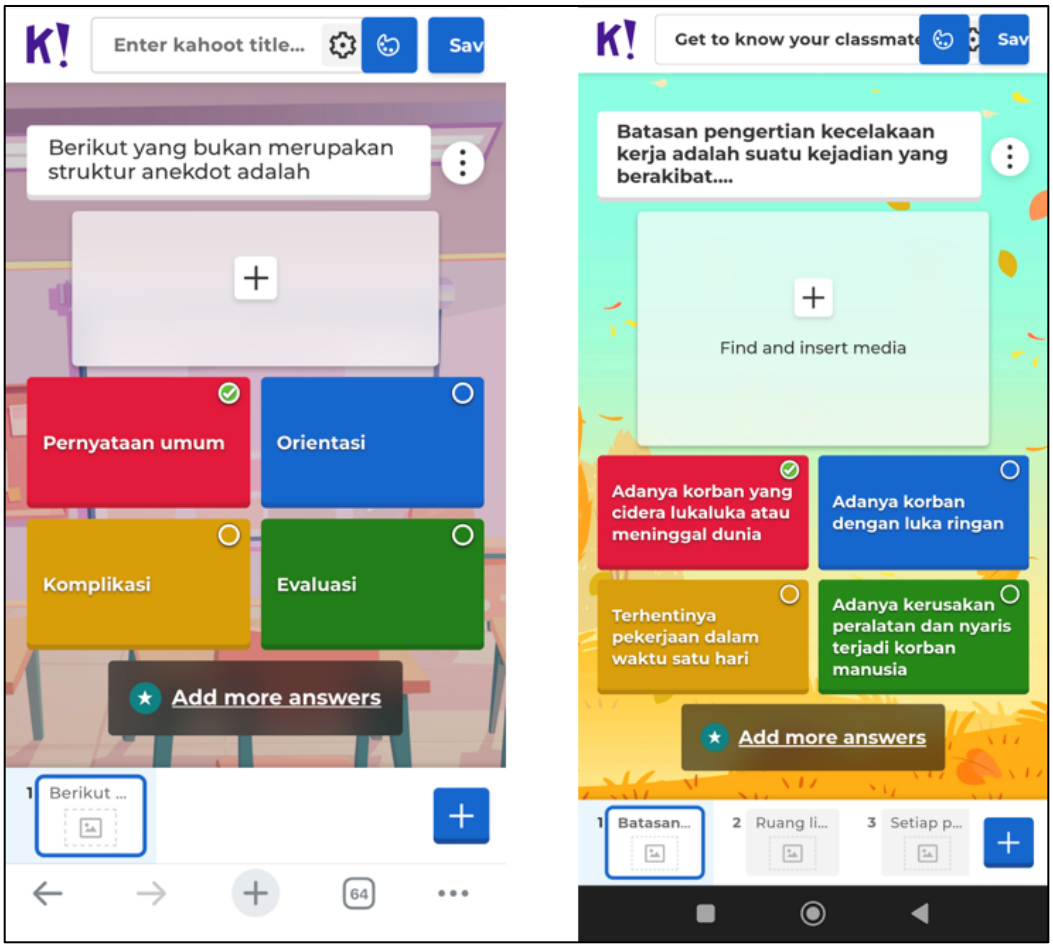

Figure 3. Example of participants' work on the smartphone version

Figure 4 is documentation of the intervention activities conducted during the training program. Figure 4 captures a moment in delivering the training content, focusing on the presentation and direct application of Kahoot!. This illustrates the interactive nature of the training session, where the facilitator not only introduces the concept and functionalities of Kahoot!, but also demonstrates its practical use in real-time. This approach ensured that participants could immediately see the relevance and application of the tool in an educational setting, thereby enhancing their understanding and engagement. On the other hand, Figure 4 depicts an interactive exchange between a participant and the trainer, highlighting the participant-driven aspect of the training. In this instance, the participant is seen inquiring about creating assessments using Kahoot!, with the trainer providing detailed guidance and clarification. This moment is indicative of the hands-on, responsive nature of the training, emphasizing the importance of addressing individual queries and facilitating direct, experiential learning. Together, these images document critical aspects of the intervention and reflect the dynamic, participatory, and practical approach adopted in the training program, aligning with the objectives of enhancing teachers' skills in game-based assessment methodologies.

Figure 4. Example of participants' work on the smartphone version

Upon the completion of the workshop and practical sessions, participants were invited to fill out a questionnaire, as provided in Table 2, serving as the evaluation for the conducted activities. This questionnaire was meticulously designed to gather feedback on various aspects of the training, including the effectiveness of the content delivered, the utility of the practical sessions, and the overall satisfaction with the program. The structured questions in the questionnaire aimed to collect the data, providing a comprehensive understanding of the participants' experiences and perceptions. The responses to these questions were then quantitatively analyzed, resulting in an average score for each item, as illustrated in Figure 5.

From Figure 5, it can be seen that the score of the first two items (Q1 & Q2) is 4.81, demonstrating a high level of agreement among participants about the immediate usefulness and relevance of the activity to their needs. This means that the program conducted is beneficial. Furthermore, the score of 4.85 for Q3, "I gained new knowledge about game-based assessment", suggests that the activity successfully imparts new, valuable information regarding game-based assessment, a key objective of the session. Similarly, the score of 4.59 for Q4, "I

will apply this game-based assessment in the classes I teach", indicates a strong intention among participants to implement the learned strategies in their teaching, though slightly lower than other items, possibly reflecting some anticipated challenges in practical application.

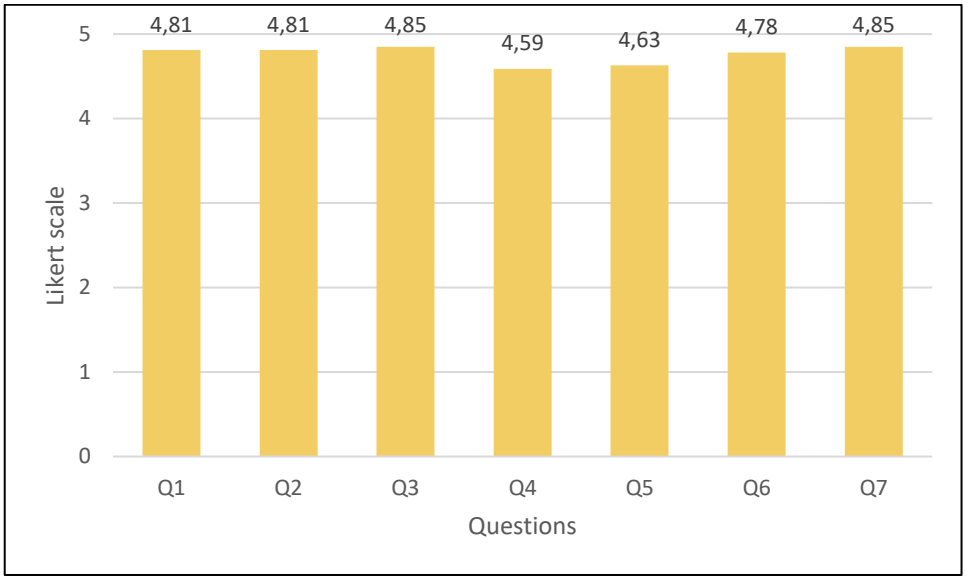

Figure 5. The average score of the questionnaire answers each item

The overall satisfaction with the conducted activity is further reinforced by a score of 4.63 for Q5, "Overall, I was satisfied with this activity," which aligns with the high scores for other items. Additionally, item Q6, "The material presented was interesting and met my expectations," received a score of 4.78, suggesting that the content was engaging and effectively met the participants' expectations. Finally, the score of 4.85 for Q7, "I hope to be able to take part in activities like this in the future to make classroom learning better", signals an intense desire among participants for continued engagement in similar professional development opportunities, underscoring their belief in the value of such activities for enhancing classroom learning.

In general, these scores collectively indicate that the activity was highly successful in relevance, content delivery, participant satisfaction, and potential impact on future teaching practices. The results suggest that such training sessions are not only valued by educators but are also seen as critical tools for the continuous improvement of teaching methodologies, particularly in game-based assessment.

Conclusion

Based on the results and discussion, it can be concluded that the community service program implemented at SMK Sakti Gemolong, Sragen, to transform the learning assessment through a game-based approach is successful. The program focuses on enhancing teachers' skills in Game-Based Assessment (GBA), particularly using platforms like Kahoot! The collected data, encompassing high average scores from the participant feedback questionnaire, indicate a strong positive reception among the teachers. Scores such as 4.81 for the utility of the activity,

4.85 for the acquisition of new knowledge, and 4.78 for the interesting nature of the material, underscore the effectiveness of the training in meeting its objectives. The slightly lower score of 4.59 for the intention to apply GBA in classrooms suggests a realistic perspective of the challenges in implementation, yet still reflects a positive inclination towards future application. The enthusiastic response to future similar activities, with a score of 4.85, highlights the participants' recognition of the importance of ongoing professional development in innovative teaching methodologies. These outcomes not only demonstrate the immediate impact of the program but also imply its potential long-term benefits in improving teaching practices and enhancing student learning experiences at SMK Sakti Gemolong. The program's success sets a precedent for integrating game-based learning tools in educational settings, suggesting a promising direction for future teaching and learning innovations.

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