

EVALUATION OF THE USABILITY OF SMART APPS CREATOR 3.0 AS AN AUTHORING TOOL FOR THE DEVELOPMENT OF DIGITAL LEARNING MEDIA FOR TEACHERS

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Abstrak

*Smart Apps Creator (SAC) 3.0 merupakan salah satu **authoring tool** yang banyak dimanfaatkan guru untuk mengembangkan media pembelajaran digital. Meskipun penggunaannya semakin luas, evaluasi empiris terhadap aspek usabilitas perangkat lunak ini masih terbatas. Penelitian ini bertujuan mengevaluasi usabilitas Smart Apps Creator 3.0 sebagai **authoring tool** dalam pengembangan media pembelajaran digital oleh guru. Penelitian menggunakan pendekatan kuantitatif dengan desain deskriptif. Evaluasi usabilitas dilakukan menggunakan instrumen System Usability Scale (SUS) terhadap 30 guru sebagai responden. Data dianalisis melalui perhitungan skor SUS dan diinterpretasikan berdasarkan kerangka interpretasi SUS. Hasil penelitian menunjukkan bahwa Smart Apps Creator 3.0 memperoleh skor SUS sebesar 67,91 yang termasuk kategori Marginal High, menunjukkan bahwa sistem memiliki tingkat usabilitas yang mendekati ambang *acceptable*, namun masih memerlukan beberapa penyempurnaan. Analisis per butir menunjukkan bahwa aspek kemudahan penggunaan dan kepercayaan diri pengguna memperoleh penilaian positif, sedangkan aspek *learnability* dan kebutuhan dukungan teknis masih menjadi tantangan. Temuan ini menunjukkan bahwa Smart Apps Creator 3.0 memiliki tingkat usabilitas yang memadai serta memberikan baseline empiris bagi pengembangan sistem dan penelitian selanjutnya.*

Kata kunci : *Usabilitas, System Usability Scale, Smart Apps Creator 3.0, Media Pembelajaran Digital, Authoring Tool.*

Abstract

*Smart Apps Creator (SAC) 3.0 is an **authoring tool** widely used by teachers to develop digital learning media. Despite its increasing adoption, empirical evaluations of its usability remain limited. This study aimed to evaluate the usability of Smart Apps Creator 3.0 as an **authoring tool** for developing digital learning media by teachers. A quantitative approach with a descriptive research design was employed. The usability evaluation was conducted using the System Usability Scale (SUS) involving 30 teachers as respondents. The data were analyzed by calculating SUS scores and*



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interpreting the results based on the established SUS interpretation framework. The findings indicate that Smart Apps Creator 3.0 achieved a SUS score of 67.91, which falls within the Marginal High category, indicating that the system demonstrates a level of usability close to the acceptable threshold, although several aspects still require improvement. Item-level analysis revealed that ease of use and user confidence were perceived positively, whereas learnability and the need for technical support remain the primary challenges. These findings demonstrate that Smart Apps Creator 3.0 provides an adequate level of usability while offering an empirical baseline for future system improvement and related research.

Keywords: *Usability, System Usability Scale, Smart Apps Creator 3.0 Digital Learning Media, Authoring Tool.*

I. Introduction

One indicator of the progress of modern civilization is the rapid pace of technological and information development. The transformation of the ever-evolving digital ecosystem is highly dynamic; for example, the introduction of advanced technologies such as artificial intelligence (AI) has brought new perspectives to various domains of contemporary life, one of which is education. Through their research, (Huang et al., 2021) provide several insights into the impact of AI technology on learning practices, including the effectiveness and efficiency of learning, as well as the personalization of instruction and lesson plans. The goal, of course, is to provide a more optimal learning experience based on the needs and characteristics of each student.

Another impact of technological advancements in education is the need to adapt educational curriculum models and approaches. One key rationale for curriculum adaptation is the recognition that 21st-century digital literacy and competencies have become global necessities for survival and for playing a key role in addressing various challenges in the modern era. In Indonesia, in 2020, the government, through the Ministry of Education and Culture, addressed these aspirations by introducing the Merdeka Curriculum. According to Nurdini et al. (2024), in addition to meeting the demands of the globalization era, the implementation of the Merdeka Curriculum is also expected to help students create more relevant and contextual learning experiences, particularly through a focus on project-based learning (PBL).

In practice, the project-based learning model encourages teachers to take an active role as learning facilitators. Through this role, teachers are expected to understand the meaning and essence of the Merdeka Curriculum, which is characterized by the implementation of project-based learning, the expansion of open spaces for students' creative development, and the instillation of the values of diversity and social justice (Dinn Wahyudin et al., 2024). Furthermore, teachers' competence as instructional designers is a determining factor in realizing the Merdeka Curriculum. Teachers need to develop lesson plans that address how to create effective learning environments, how to ensure that student engagement during instruction can be

continuously monitored, and how to conduct comprehensive evaluations of learning based on the various activities carried out. Therefore, (Alhayat et al., 2023) state that teachers need to strengthen their competencies, particularly regarding their ability to plan, implement, and evaluate learning. Thus, the role of teachers in the classroom is not limited to that of an instructional implementer but also extends to that of an instructional designer.

The Merdeka Curriculum provides teachers with full freedom and autonomy to use their professional judgment in applying and designing learning models—including approaches, strategies, methods, and learning media—as long as they support the achievement of learning objectives (Dinn Wahyudin et al., 2024). To develop these curriculum components, teachers can utilize multimedia authoring tools to create teaching materials and resources tailored to the curriculum's needs. Multimedia authoring tools are software designed to facilitate the development of multimedia-based content, including instructional media. One such software widely used by teachers and education practitioners is Smart Apps Creator 3.0.

SAC 3.0 is software that can be used to create interactive programs—ranging from mobile apps and desktop applications to HTML5 formats—without requiring structured coding skills for their development. Other advantages of Smart Apps Creator, as noted by Khasanah & Rusman (2021), include its flexibility, as the resulting products can be used across multiple platforms, such as Android-based smartphones and PCs/computers. Not only that, but SAC accommodates various types of multimedia elements in the projects created, including text, audio, video, animations, and even web-based URL services. When considered in terms of its benefits as a learning medium, (Abdulrahman et al., 2020) note that multimedia integration can influence students' learning responses and outcomes through interactivity and the diverse types of media integrated into a single, unified learning medium.

Thanks to the various conveniences and features it offers, SAC 3.0 is a platform that supports cross-subject usability, meaning it can be utilized across various subjects. It is no surprise that SAC 3.0 is widely used by vocational teachers, ICT teachers, productive subject teachers, and teachers in general to develop high-quality, digitally-based learning media with good accessibility. However, the platform's success in providing a positive user experience for teachers is determined not only by the comprehensiveness of its features and tools but also by the ease of operational accessibility and practical interaction between users and the system. Therefore, a usability evaluation of the Smart Apps Creator 3.0 software is necessary to establish whether the SAC 3.0 tools are suitable for use, particularly in relation to the development of digital learning materials.

Given the shift in learning models under the implementation of the Merdeka Curriculum—where learning is geared toward providing real-world, project-based learning experiences—there is an increased urgency to evaluate the usability of the SAC 3.0 software. This is because of the rising trend in its use and the significant

benefits SAC currently offers; thus, the potential relevance of Smart Apps Creator 3.0 is projected to be medium-term based on its adoption rate and feature characteristics. This study was conducted using the System Usability Scale (SUS) method.

The System Usability Scale (SUS) is a method used to measure and evaluate the usability of a system or software. The SUS method is one of the most popular methods currently in use and is projected to remain so in the future for assessing user perceptions of a system. The System Usability Scale (SUS) method has been widely adapted to assess the usability of educational technology platforms, such as e-Learning or Learning Management Systems (LMS) (Supriyadi et al., 2020). A systematic review (Vlachogianni & Tselios, 2022) concluded that SUS scores fall into a relatively good category for evaluating various types of educational technology platforms. To assess a system's usability, the SUS method employs 10 (ten) items with both positive and negative perspectives as its evaluation tools.

Therefore, this study aims to conduct a usability evaluation of the Smart Apps Creator 3.0 software using the System Usability Scale (SUS) method. This study is important for evaluating the suitability of Smart Apps Creator 3.0, particularly as a tool for teachers to develop instructional materials to support the implementation of the project-based learning model under the Merdeka Curriculum.

II. Research Methodology

This study employed a descriptive method with a quantitative approach. To evaluate the usability of the Smart Apps Creator 3.0 platform from the teachers' perspective, the subjects of this study were 30 (thirty) teachers across various subjects at SMK N 1 Klaten. The research sample was selected using purposive sampling. The rationale for selecting this sampling technique was based on the need for teachers to develop competencies in creating digital learning media across various subjects.

The research instrument used was the System Usability Scale (SUS), a validated, standardized, and widely used universal scale for evaluating the usability of various digital devices and systems (Lewis, 2018). The SUS instrument consists of 10 items, each with 5 response options on a Likert scale, where option 1 represents "strongly disagree" and option 5 represents "strongly agree." The researchers utilized the original SUS instrument without modifying the items, even though research (Sauro & Lewis, 2011) has shown that massively adjusting the labeling of negative or positive items does not have a significant effect on the final SUS score. The complete list of instrument items can be seen in Table 1.

Table 1. System Usability Scale (SUS) Survey Instrument

No Item	Statment
1	I want to use this software more often
2	I feel this software doesn't need to be this complicated
3	I think this software is very easy to use
4	I need technical assistance to use this software

No Item	Statment
5	I find that the features in this software are well-integrated
6	I think there are inconsistencies in this software
7	I feel that most people can learn this software very quickly
8	I feel that this software is very complicated to use
9	I feel confident using this software
10	I need to learn how to use this software before I can use it

Regarding the processing of research data, the procedures followed are based on standard SUS scoring norms. Once the data has been collected, each response to an odd-numbered item is normalized by subtracting 1 from the original score. For even-numbered items, responses are normalized by subtracting 5 from the original score. All normalized scores are then summed to produce the SUS raw score. To interpret the results according to the SUS acceptability criteria and grade scale, the next step is to multiply the raw SUS score by 2.5, resulting in a score within the 1–100 range. The final step is to sum the total scores for each respondent and divide the result by the number of study participants to determine the average SUS score.

The scores obtained are then interpreted using several frameworks, including the Quartile Range (1st to 4th), the Acceptability Interval (Not Acceptable, Marginal, Acceptable), and the Adjective Rating (Worst Imaginable to Best Imaginable), thereby providing a comprehensive picture of the usability level of SAC 3.0. For a more complete overview, see **Figure 1**.

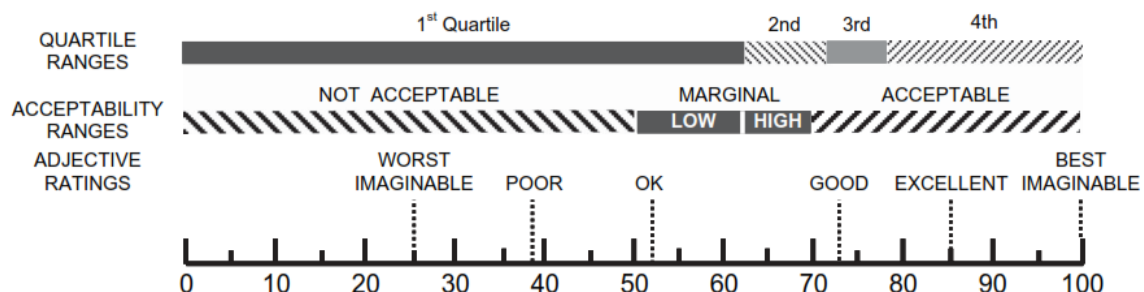


Figure 1. Interpretation of System Usability Scale Scores

Source: (Bangor et al., 2008)

III. Results and Discussion

A. Overview of Study Respondents

Data on the usability evaluation of the Smart Apps Creator 3.0 platform was obtained through a survey completed by teachers of various subjects at SMK Negeri 1 Klaten, with a total of 30 teachers participating. The respondents' profiles, including their educational backgrounds and the subjects they teach, are presented in Table 2.

Table 2. Distribution of Research Respondent Profiles

Subjects Taught	Frequency	Percentage
Islamic Religious Education Teacher	2	6,67%
Catholic Religious Education Teacher	1	3,33%
Physical Education and Health Teacher	1	3,33%
Indonesian Language Teacher	2	6,67%
Javanese Language Teacher	1	3,33%
French Language Teacher	1	3,33%
English Language Teacher	2	6,67%
Vocational Teacher	11	36,67%
History Teacher	1	3,33%
Arts and Culture Teacher	1	3,33%
Music Teacher	1	3,33%
ICT Teacher	1	3,33%
Science Teacher	1	3,33%
Mathematics Teacher	2	6,67%
Guidance and Counseling Teacher	1	3,33%
Civics and Pancasila Teacher	1	3,33%
Total	30	100%

From other general overview aspects, when examined by the respondents' highest level of education, it was found that those with a Bachelor's degree (S1) accounted for the highest percentage at 66.67%, while respondents with a Master's degree (S2) accounted for 26.67%, and the remaining 6.67% of respondents were high school graduates or equivalent. This indicates that a majority of respondents have a Bachelor's degree (S1), a small portion have a Master's degree (S2), and the remainder are high school graduates or equivalent.

B. Platform Smart Apps Creator 3.0

Smart Apps Creator 3.0 is software that can be used free of charge by users within certain parameters. Equipped with a wide range of features that support the development of mobile and desktop applications, SAC offers inclusive value to anyone who wants to create and innovate by developing digital learning materials—whether for smartphones or desktops—even without in-depth knowledge of structured programming.

When applied in an educational context, SAC 3.0 is extremely useful for educators, educational staff, and other education practitioners—such as instructors, training

specialists, and even students—to create interactive multimedia content. Smart Apps Creator 3.0 makes the process of creating learning materials easier—much like creating a PowerPoint presentation—by utilizing drag-and-drop functionality and basic “IF” and “THEN” algorithms to facilitate interactions with elements according to their intended purpose or function.

Based on an exploration of several previous studies, it is known that there are quite a number of learning media developments that utilize the SAC 3.0 platform. For example, a study by (Saputro & Miftahuddin, 2024) which Offering digital-based learning innovations with SAC 3.0 can increase students’ interest and motivation in learning history. Furthermore, an experiment conducted by Fahlevi and Aminatun (2023) demonstrated that the integration of digital learning media can enhance students’ critical thinking and problem-solving skills. Another study by Heliawati et al. (2022) showed that the implementation of SAC 3.0-based learning media was statistically proven to improve students’ science literacy on the topic of water. These studies underscore the value of using Smart Apps Creator 3.0 for the development of digital learning media by teachers and other education practitioners.

C. Platform Smart Apps Creator 3.0

The researchers used the original System Usability Scale instrument in their study. The data collected from 30 teacher respondents teaching various subjects is presented in **Table 3**.

Table 3. Summary of Raw Data from the SAC 3.0 Usability Evaluation

No	Responden	Original Scores from the Usability Evaluation of Smart Apps Creator 3.0									
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	R1	4	2	4	2	4	2	3	2	5	4
2	R2	4	3	4	2	3	2	4	1	4	3
3	R3	4	5	4	4	4	2	4	2	4	5
4	R4	4	2	5	1	4	3	4	1	5	4
...	...	...	...	...	...	...	...	...	...	...	...
30	R30	3	3	4	2	3	3	4	2	5	4

Based on the summary of the collected data, calculations were performed in accordance with the System Usability Scale data analysis procedure, as explained earlier. The final results of the SAC 3.0 usability score calculations are shown in Table 4.

Table 4. Summary of SUS Score Calculation Results

No	Responden	Original Scores from the SAC 3.0 Usability Evaluation										Total	Score SUS
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
		1	2	3	4	5	6	7	8	9	0		
1	R1	3	3	3	3	3	3	2	3	4	1	28	70
2	R2	3	2	3	3	2	3	3	4	3	2	28	70
3	R3	3	0	3	1	3	3	3	3	3	0	22	55
4	R4	3	3	4	4	3	2	3	4	4	1	31	77,5
...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	R30	2	2	3	3	2	2	3	3	4	1	25	62,5
Total												815	2037,5
Average SUS Score													67,9

Based on the SUS score calculation for the Smart Apps Creator 3.0 platform, a total score of 2,037.5 was obtained. This result was then divided by the number of study respondents (30), yielding a final average SUS score of 67.9. This score indicates that the Smart Apps Creator 3.0 platform can be categorized in the second quartile and has an adjective rating of "OK." In this category, the Smart Apps Creator 3.0 platform falls within the "high marginal" acceptability range. At this level, according to (Bangor et al., 2008), a product is acceptable and usable, but requires ongoing monitoring and improvement, and can be retested to achieve a better score.

D. Discussion of the Usability Evaluation Results for Smart Apps Creator 3.0 Analysis of the Overall Usability Level

Based on the SUS scores obtained, it is evident that SAC has been able to provide a fairly good experience, although it is not yet perfect and requires further improvement. Therefore, based on the patterns of respondents' answers, analysis and interpretation can be conducted to provide a more representative picture of each question on the System Usability Scale (SUS) administered on the Smart Apps Creator 3.0 platform. Consequently, for the elements that need improvement, appropriate and suitable follow-up actions can be formulated to facilitate teachers in developing digital learning media and implementing them within the framework of project-based learning.

Based on the final cumulative total SUS score of 67.9, it is evident that SAC 3.0 falls within the "OK" and "high marginal" adjective levels. The conclusion that can be drawn is that Smart Apps Creator 3.0 is already acceptable and can be used by teachers in the context of developing digital learning media. However, the software does not yet provide an optimal user experience and may pose a significant challenge for users with relatively low digital literacy or those who are not yet accustomed to

using digital technology. Therefore, considering the potential for sustained use, it is necessary to strengthen teachers' digital competencies.

The research conducted (Lewis & Sauro, 2009) produced a structured mapping of each item included in the System Usability Scale, with two main factors serving as the validated aspects, and key meanings were derived for each questionnaire item. Through these mapped factors, the usability of each component can be interpreted, thereby representing the meaning of each item in relation to the system being tested. Table 5 shows the mapping of items and the key meanings of each question on the System Usability Scale questionnaire.

Table 5. Mapping of Key Meanings for SUS Question Items

Item	Question	Key Meaning
1	I want to use this software more often	Interest in sustained system use
2	I don't think this software needs to be this complicated	System complexity
3	I think this software is very easy to use	Ease of use
4	I need a technical person to help me use this software	Reliance on technical support
5	I find that the features in this software are well integrated	Alignment of features and UI/UX design with ease of use
6	I think there are some inconsistencies in this software	Consistency and coherence of UI/UX, including navigation
7	I feel that most people can learn to use this software very quickly	Describes perceived learnability for novice or general users.
8	I find this software very complicated to use	Complexity of features and navigation
9	I feel confident using this software	Indicators of user confidence, perceived stability, and user comfort during interaction.
10	I need to learn how to use this software before I can use it	User onboarding difficulty (initial learning curve).

The Power of Usability: Ease of Use, User Confidence

Some of the responses to the SUS questions received generally good scores, as shown in **Table 6**.

Table 6. Summary of SAC 3.0 Usability Scores (Based on SUS Item Responses)

Indicator	Score	Usability Meaning
Item 1 – Intention to Reuse	3,06	There is a drive toward sustainable use
Item 3 – Ease of Use	3,43	Efficiency and ease of interaction are quite good
Item 5 – Feature Integration	3,10	The features are well-integrated and not confusing
Item 9 – User Confidence	3,37	Users feel capable of operating the system

The findings indicate that the SAC 3.0 system is relatively easy to use once users understand the basic concepts of its key features. Users can grasp the basic workflow, particularly the drag-and-drop concept and the no-coding tagline. This helps build their confidence in creating digital learning materials and motivates them to continue using SAC 3.0, even if not with a very strong drive. This suggests that the digital interaction experience can provide an understanding of the benefits of SAC 3.0 but has not yet generated sufficiently strong user engagement.

In the context of Project-Based Learning (PjBL), the final learning product is a crucial part of the assessment and reflection process. Smart Apps Creator 3.0 enables teachers and students to develop project products in the form of applications or interactive digital media that can be accessed via various devices. The resulting media can be used by students to present project outcomes in a more engaging, interactive, and contextual manner compared to conventional media such as static presentations. In addition, SAC 3.0 can be used as an authoring tool to produce interactive media for teachers and students, which, based on experiments (Munir et al., 2024), has a positive impact on students' independence and motivation to learn in PjBL implementations.

Usability Weaknesses: Challenges in Learnability and System Complexity

The respondents' answers indicate that a small number of aspects received moderate scores, as shown in **Table 7**.

Table 7. Summary of Usability Weaknesses in SAC 3.0 (Based on SUS Item Responses)

Indicator	Score	Usability Meaning
Item 6 – System Incompatibility	2,73	UI/UX inconsistencies
Item 7 – Ease of Learning	2,93	Learnability is not yet optimal
Item 8 – Perceived Complexity	3,00	The features are considered numerous and complex

Based on the respondents' answers, there is still a perception of complexity that can affect the efficiency of system use during the initial stages of adoption. Inconsistencies in the user interface (UI/UX) can also pose a risk of causing errors in usage, which in turn can hinder the creative process. These findings underscore the importance of a well-structured onboarding process for menus and tools so that users can understand the location, purpose, and usage of the tools. If users possess this foundational understanding, teachers will find it much easier to optimize the use of SAC features when developing digital learning materials. Other findings indicate that while SAC 3.0 tends to be easy to use at certain stages, the learning process itself requires significant effort. This is driven by the perception of interface complexity, which can lead to user resistance—particularly among teachers who lack basic ICT literacy or are non-ICT teachers.

Critical Usability Aspects: The Need for Technical Support and the Lack of Self-Learnability

Some of the feedback on the SUS survey items points to elements that should be top priorities for improvement in the SAC 3.0 platform. Several of these items refer to the indicators listed in **Table 8**.

Table 8. Summary of Critical Usability Aspects in SAC 3.0 (Based on SUS Item Responses)

Indicator	Score	Usability Meaning
Item 2 – Complex systems	2,23	There are operational steps and features that users are not yet familiar with
Item 4 – Need for technical assistance	2,37	The self-explanatory nature of the interface is not yet optimal
Item 10 – Need for further study	0,93	The learning curve tends to be steep

Based on the item indicators showing critical scores, it can be concluded that the SAC 3.0 platform requires comprehensive tutorials on the use of each tool or on media development objectives. This is evidenced by the presence of operational steps and features that are impractical to apply, meaning users must understand the concepts and purposes of each tool in accordance with the elements they wish to add to the learning media. Other items also indicate that SAC 3.0 must be taught or introduced to users before they can use it. This need for technical assistance suggests that SAC 3.0 is not yet fully intuitive and cannot be used independently. One form of training or tutorial involves providing supervision to teachers.

Supervision plays a crucial role for teachers in the context of developing instructional media using the Smart Apps Creator 3.0 platform. Providing supervision to teachers fosters real-time feedback, efficient communication, and the development

of self-directed skills in operating SAC 3.0 (Jamal & Wahira, 2025). It is hoped that through continuous supervision, the reliance on training and technical guidance can be reduced in the future. Upon further analysis, items in the critical aspect have the potential to affect the sustainability of SAC 3.0 usage based on user perceptions if continuous support and motivation for its use are not provided.

IV. Conclusion

The results of the usability evaluation of Smart Apps Creator 3.0 show an average score of 67.9, meaning that in terms of acceptability, the SAC 3.0 platform falls into the “high marginal” category and receives an “OK” rating. This score indicates that the SAC 3.0 platform has usability that is acceptable to users, although there are still several aspects that need to be reviewed and improved, such as those identified as critical. These issues need to be addressed through enhancements to features and other aspects—such as visualization design and structured self-learning strategies or guidelines for users—to achieve a higher level of usability.

These findings indicate that while SAC 3.0 excels in ease of use and user confidence, there are still critical areas that need attention to improve the overall user experience. Further research is recommended to combine SUS-based usability evaluations with qualitative approaches or task-based usability testing to gain a more comprehensive understanding of the user experience when using Smart Apps Creator 3.0.

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