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Enhancing Effectiveness of Guidance and Counseling Services Through Web-Based Interactive Media

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ABSTRACT

The efficacy of guidance and counseling services within educational settings has frequently been constrained by traditional delivery methods, such as paper-based materials, boards, and PowerPoint presentations, which have been shown to limit student engagement. This study was undertaken to address these limitations by developing and validating a web-based platform, named "WAHANA BIKONS," designed to enhance the interactivity, creativity, and innovation of counseling services. The platform incorporates interactive elements such as games, discussions, and quizzes to foster a more engaging environment for students. The research and development process were structured into three key phases: preliminary research for initial data collection, a prototyping phase involving the creation and refinement of the website, and an assessment phase, where evaluations were conducted with both information technology (IT) experts and end-users. Data were amassed through questionnaires administered to six IT experts and thirty-nine users, with content validation assessed via the Content Validity Index (CVI). The validation results revealed a score of 0.92 from IT experts and 0.99 from users, indicating a high level of content validity for the developed platform. These findings suggest that "WAHANA BIKONS" is a viable tool for school counselors, enabling more dynamic and engaging counseling sessions. The study underscores the potential of incorporating interactive web-based media in guidance and counseling services and suggests further exploration into diversifying game elements and content to address the evolving developmental needs of students comprehensively. Future iterations of such media are recommended to ensure responsive and adaptable services to the varied needs of the student population.

1. INTRODUCTION

The rapid development of technology has significantly influenced various aspects of human life, including education. In the advancing digital era, information technology has transformed how people seek information and services [1, 2] argues that education serves as an excellent means for the collaborative utilization of technological innovations. Therefore, theories and models related to technology adoption are frequently employed in research within the educational context. Increasing trends are noticed in technology usage in educational institutions and learning management systems, encompassing virtual reality, augmented reality, wikis, social networking sites, and others [3].

Despite these challenges, the utilization of technology in education offers several benefits, including enhancing the quality of services, increasing student motivation, and improving the efficiency of counselors' administrative tasks. To enhance the implementation of technology in guidance and counseling services, it is necessary to develop supportive infrastructure, provide training and development for educators, and establish clear policies and regulations. Collaboration between the government, educational institutions, and the private sector is also necessary [4].

The integration of technology within the classroom has become a common practice, enhancing content delivery by educators and students' comprehension of the material [5-7]. Technological advancements in education have positively influenced teaching methods, particularly in creating an engaging learning environment within the classroom. These positive effects are most pronounced when educators possess the requisite digital competencies to effectively utilize technology, as emphasized by Hanifah et al. [8].

A previous study has shown a web-based medium designed specifically to target students in various conditions [9]. In the field of guidance and counseling, which was previously limited to face-to-face sessions, online access has now become possible through web-based platforms [10-12] underscore that school counselors bear a responsibility to participate in globalization efforts by implementing ICT strategies in their services. Beidoılu et al. [13] revealed that school counselors can harness technology for: (1) information/resources (utilizing the web as a dynamic information repository containing text, graphics, videos, and three-dimensional environments); (2) communication/collaboration (using chat rooms, electronic bulletin boards, virtual classrooms, video conferences, online conferences, electronic services, and email for people to meet, exchange information, and make

decisions together); (3) interactive/productivity (sending information to computers using software and computer-based programs and using computers to process data); (4) providing counseling services in the cyber realm or interactively online.

Technology is becoming increasingly important in the field of education, including in Indonesia. The implementation of technology in education is expected to enhance the quality of education and help reduce the educational access gap between regions. However, there are several factors hindering the adoption of technology in education in Indonesia, such as limited infrastructure, inadequate training and development for teachers, and disparities in accessibility between regions [14]. Based on a preliminary study conducted among school counselors in Surakarta, Central Java, Indonesia, in April 2022, it was found that school counselors need digital media to make their services more engaging. The study included 85 subjects as respondents, with 84 respondents expressing interest and willingness to use technology-based guidance and counseling media, while one respondent was not willing. This interest is grounded in the current digital literacy capabilities of students, who are already proficient. Consequently, internet-based guidance and counseling services can significantly broaden the insights for school counselors when implementing them for secondary school students in Surakarta**.** Students in the current digital era exhibit a higher interest in technological advancements [15].

The interest in utilizing media also needs to be complemented by the ability to understand and operate various features on computer devices, websites, and the WAHANA BIKONS games. This aspect is integral to the technological, pedagogical, and content knowledge (TPACK) competence in packaging guidance and counseling service content. The WAHANA BIKONS games have the potential to present content-rich pedagogical competencies based on technology, particularly in the realm of the Internet of Things.

In alignment with the findings of Sarwar et al. [16], the utilization of technology-enhanced service approaches may improve interactivity, and students tend to derive greater enjoyment from learning in interactive and collaborative environments. The use of information technology media contributes to the students' academic satisfaction and performance [17]. School counselors are advised to possess proficiency in leveraging technology. ASCA [18] emphasizes the need for professional school counselors to capitalize on the diverse opportunities, information, and resources available through technology. Furthermore, Goodrich et al. [19] highlight that school counselors need to engage in continuous professional development related to technology for effective interventions.

The content provided varied, using media that supported enjoyable service delivery for students [20]. The form of technological media employed in learning to engage students' interest primarily involves light-emitting screens, such as computers, laptops, and smartphones [21]. The aim of this research is to produce a website as a product. As Oraegbunam [22] mentioned, in this highly computerized era, websites have facilitated job searches, career information, and other guidance and counseling services, including personal counseling. By developing web-based counseling and guidance service media, school counselors can leverage various interactive tools and features to enhance the student experience.

Technology has played a crucial role in the field of education, and its utilization has grown exponentially across various approaches such as distance education, learning simulations, educational games, and direct instruction. Thus far, the development of website-based media in guidance and counseling services has been undertaken by Yuniar [23], who created website-based guidance and counseling media for high school students. Additionally, Putri et al. [24] developed a website to assist students in career planning, while Krismona et al. [25] developed a website to aid students in planning future studies. A previous study also developed a web-based classical guidance service to enhance students' academic responsibility [26]. In addition, Murtiningrum et al. [27] devised a website-based board game for guidance and counseling services, focusing on personal and social aspects.

The novelty of these research and development efforts lies in the integration of website-based games with content from various guidance and counseling fields at the junior high school level. This integration allows school counselors to utilize several games developed on the website and access materials related to academic, career, and personal/social domains. However, it is important to ensure that the development of web-based guidance and counseling services is effective and relevant. Validation is a crucial stage in such development [28]. Sharma et al. [29] further emphasized that the validation process aids in assessing the relevance or suitability of educational content to be well-received and effectively responded to by users. Therefore, in the development of this medium, it is important to involve IT experts in the validation process. In addition to IT experts, the perspectives of school counselors and students are required to assess the practicality and effectiveness of the created media. The attractiveness, interactivity, ease of access, and usefulness of the media are taken into consideration during validation.

Given the rapid advancements in information technology, the development and validation of web-based guidance and counseling services are highly pertinent steps in providing efficient mental health assistance with broad accessibility tailored to the needs of students. Consequently, this topic holds significant implications for advancing the field of guidance and counseling and enhancing the overall mental well-being of students, particularly in stimulating participation, critical reasoning, and divergence in the service process.

Based on the background described above, this study aims to develop guidance and counseling service media in the form of a website-based game. This is intended to assist school counselors in delivering guidance and counseling services in a more interactive, creative, and innovative manner. Additionally, it is expected that students will be more engaged in participating in guidance and counseling services due to the more appealing and enjoyable delivery methods employed by the counselors. This game involves counselors packaging their own service materials according to the analysis of students' needs in the school. Therefore, the outcomes of this activity are expected to effectively contribute to the personal development of students in line with their conditions and individual characteristics.

2. METHOD

This research and development employed the educational design research method. According to the study by Plomp and Nieveen [30], "educational design research is a research design appropriate to develop research-based solutions to complex problems in educational practice or to develop or validate theories about learning processes, learning

environments, and the like." The aim of this study was to develop website-based guidance and counseling media for school counselors and students. The research was conducted in three main stages [30]: (1) preliminary research; (2) prototyping stage; and (3) assessment phase.

The development theory by Plomp and Nieveen [30] was utilized because it focuses on education and social science. In their book, Plomp and Nieveen [30] provide examples of computer-based development research in which expert evaluation is applied to support its effectiveness. Based on this explanation, the researchers chose to use as its foundation [30]. This study involved three stages.

The research participants included three school counselors who were recruited as interviewees and eighty-five school counselors who participated as questionnaire respondents. The validity test engaged six IT experts and thirty-nine user experts. These subjects were for the preliminary research stage.

The timeline for completing this study spanned from March 2022 to July 2023. The preliminary research stage was conducted from March 2022 to April 2022. The prototyping or developing stage was implemented from May 2022 to June 2023. The assessment phase took place in July 2023.

The research and development took place in Surakarta City, Indonesia. Data collection utilized a questionnaire assessment instrument for six IT experts and thirty-nine user experts. Further details on the preliminary research, prototyping stage, and assessment phase are provided in the following sections.

2.1 Preliminary research

The preliminary research phase began by collecting preliminary data. The preliminary study was conducted using several techniques, namely documentation obtained through relevant scientific literature, interviews with school counselors, and a needs questionnaire distributed to 85 counselors.

In this stage, data obtained from the documentation study and interviews were analyzed through content analysis, while those from the questionnaire were analyzed using a quantitative descriptive method.

The literature review indicated that the use of guidance and counseling media by school counselors in schools influences students' interest in and engagement with the services. Findings from needs assessments conducted through interviews with school counselors revealed that manual media, such as paper-based questions, career trees, PowerPoint, and leaflets, were employed in guidance and counseling services. These methods required updates to help students achieve service goals more effectively.

Furthermore, a questionnaire was distributed to 85 school counselors in Surakarta and surrounding areas, containing the question, "Are you willing to use digital technology (phone, laptop, or computer) as a medium for guidance and counseling services?" Based on the survey responses, 84 counselors answered "yes," while one counselor answered "no." One respondent who expressed unwillingness cited age as the reason, stating that she felt too old and incapable of learning new technologies.

From the results of this preliminary study, the idea emerged to create a more modern, contemporary, effective, and efficient guidance and counseling service medium. This concept took the form of a website-based guidance and counseling medium in the form of a game.

2.2 Prototyping or developing stage

This stage took place from May 2022 to June 2023. The prototyping stage commenced after the preliminary research phase concluded, and a set of temporary design guidelines and proposed designs were established. Activities in this stage included paper sketching (initial design drawings), paper mockups (transferring designs), wireframes (application design creation), and concierge (basic application design simulation). Paper sketching involved designing the product on paper, with the researcher creating minimalistic drawings using Microsoft Word. Once completed and approved by the research team, the design was handed over to the programmer as the developer of the website product. The paper mockup stage was carried out by the programmer by transferring the researcher's designs drawn in Microsoft Word into software form. Subsequently, in the wireframe stage, the programmer began designing the website product in software form, adapting it to application development principles. After the design was completed, the results were presented to the researcher for adjustment based on needs and preferences. An agreement was reached at this stage, allowing the programmer to refine the website according to the research team's input. Finally, the process moved to the concierge stage. In this phase, the research team and the programmer simulated the developed website to identify any deficiencies, such as bugs in the application. Once everything was completed, the product was ready to be tested by experts to assess its feasibility.

2.3 Assessment phase

In the assessment phase, the feasibility test was carried out by IT experts and user experts. IT experts were required to have a minimum of a Master's degree in a relevant field of education. There were six IT experts with expertise and affiliations related to technology, all holding Master's degrees in IT and computer science. User experts, in this context, were school counselors at the junior high, senior high, and vocational school levels. These users served as the chairpersons and vice-chairpersons of regional professional organizations, possessing seniority and experience. The confidentiality of the identity information for both experts and users was maintained.

Data collection utilized an expert validation questionnaire with criteria for relevance, consistency, and practicality. Data from the results of the IT expert and user expert evaluations were analyzed using the CVI [31, 32]. One limitation of the questionnaire is its potential for bias since it can only measure the cognitive aspect and cannot assess behavior.

3. RESULTS

3.1 Gaming media development

The web-based guidance and counseling service platform developed by the researchers is called WAHANA BIKONS. In the Great Dictionary of Indonesian Language (KBBI), "WAHANA" is defined as a tool or means to achieve a goal. Additionally, "Wahana" can also be interpreted as a game. On the other hand, "BIKONS" is an abbreviation for Bimbingan dan Konseling (Guidance and Counseling). Therefore, WAHANA BIKONS signifies a tool or means in the form of a game to achieve goals in assisting the

developmental tasks of students in guidance and counseling services. The creation of this medium was based on a pre-designed media plan and further development to produce the final product. The developed medium is illustrated in Figure 1.

Figure 1. WAHANA BIKONS landing page

Figure 2. Types of games in WAHANA BIKONS

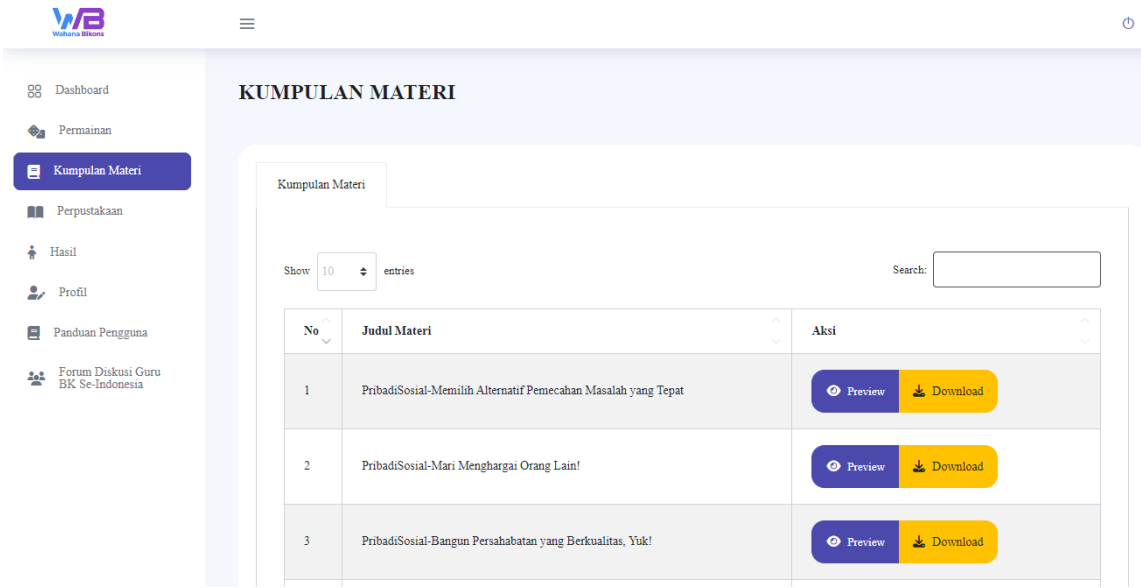

Figure 3. Collection of materials in WAHANA BIKONS

Figure 1 depicts the landing page of the website. This page includes a brief description of WAHANA BIKONS and a menu for logging in as an administrator or school counselor. Students are not required to log in; they only need to enter a game code provided by the school counselor. The landing page also provides a play menu for students and users and a menu to access the user manual for operating WAHANA BIKONS. Additionally, the front-page displays feature available in WAHANA BIKONS, user statistics, the development team behind WAHANA BIKONS, and a section for feedback and suggestions.

Figure 2 showcases one of the features within WAHANA BIKONS, which is the gaming feature. Two types of games are available in WAHANA BIKONS: "Ular Tangga BIKONS" and "Monopoli BIKONS." The displayed view is for the administrator or school counselor, who must log in first to select the game to be played with students.

Figure 3 presents the collection of materials available in WAHANA BIKONS. Users can choose from various topics based on the type of guidance and counseling services. These materials can be viewed on the website and downloaded.

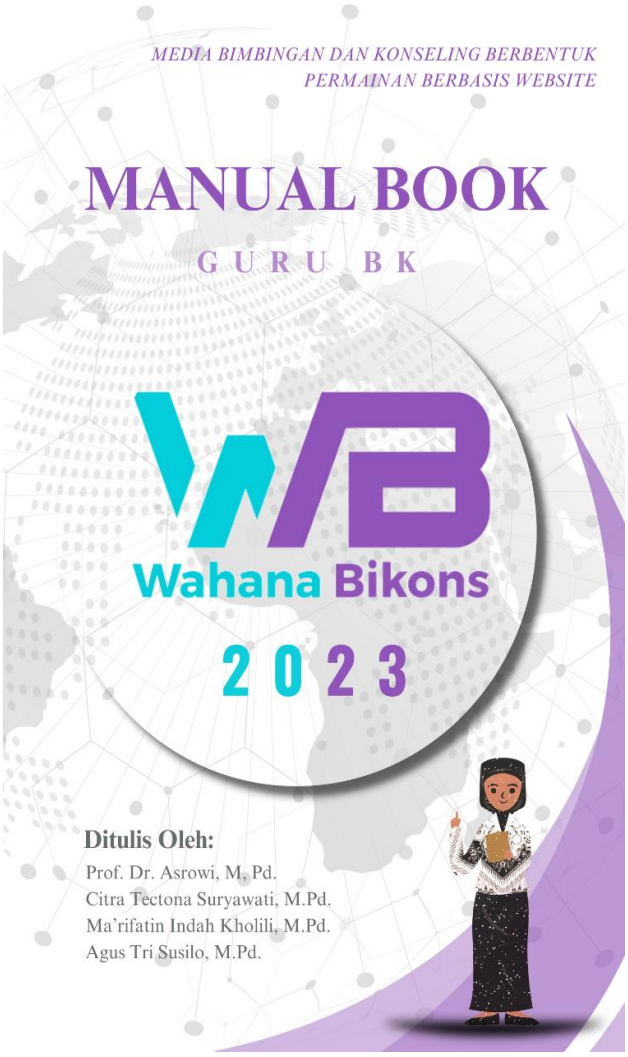

Figure 4. Cover page of WAHANA BIKONS user manual

Figure 4 displays the cover page of the user manual for WAHANA BIKONS. We have provided user manuals for both school counselors and students. These manuals contain instructions on how to use WAHANA BIKONS for each feature available on the website.

The developed media underwent validation to assess its suitability. Two validation processes were conducted: one by IT experts and the other by 39 school counselors. The results of these validations are outlined below.

3.2 Content validation

We analyzed the results of content validity and user validity by calculating the CVI. The CVI was calculated based on the values provided by six IT experts using a 4-point Likert scale with the following numerical interpretations: 1, "not relevant at all"; 2, "somewhat relevant"; 3, "relevant"; and 4, "highly relevant." Subsequently, the ordinal scale was converted into a dichotomous value of 0 and 1 to be processed using the CVI approach. Ordinal scales 1 and 2 were categorized as 0, while ordinal scales 3 and 4 were categorized as 1.

Content validity was assessed by calculating the validity of each statement item (I-CVI) and the content validity of all items together (S-CVI). I-CVI was obtained by dividing the number of items falling into one category by the number of raters. To calculate S-CVI, the average of I-CVI was determined.

Lynn [31] recommends having a minimum of three experts for validation and not exceeding 10 experts. To achieve a loose CVI, a minimum of six experts is suggested [33]. Therefore, the researchers chose six experts, as it was deemed sufficient to represent expert validation from all aspects. Several criteria were used by researchers to recruit an expert to evaluate the developed product. Some of these criteria include having a minimum of a Master's degree and a background in information and communication technology studies.

One concern regarding CVI is that it represents the agreement among assessors, and this agreement can be exaggerated by unintended factors. Recognizing this issue, [31] developed item acceptance criteria that incorporate a proportion of error tolerance. She recommended that if there are five experts or fewer, all must agree on content validity (scoring 3 or 4) for their ranking to be considered a reasonable representation of all possible rankings.

In other words, I-CVI should be 1.00 if the number of experts is five or fewer. If there are six or more experts, the standard can be relaxed, but Lynn recommended that I-CVI not be lower than 0.78. For example, with six assessors, there might be one rating that is "not relevant," so the minimum CVI value for the validation to be categorized as relevant is 0.83.

The content validity of "WAHANA BIKONS" was based on aspects of relevance, consistency, and practicality. The data obtained from the content validity assessment by six IT experts was processed and calculated using the CVI. The quantitative data resulting from the validation by IT experts is presented in Table 1.

The validity was measured using a questionnaire comprising 30 statement items, including 5 items for relevance, 15 items for consistency, and 10 items for practicality. Content validity was assessed in collaboration with six IT experts. As shown in Table 2, the results showed an I-CVI of 1.00 for relevance, 0.89 for consistency, and 0.93 for practicality. The S-CVI value was 0.92. The acceptance criteria for a CVI with six experts were a minimum of 0.83. Therefore, it can be concluded that the validation results and the calculated I-CVI for each aspect and S-CVI were considered appropriate and relevant. Suggestions and feedback resulting from the qualitative descriptive validation by six IT experts are presented in Table 2.

Table 1. CVI from six (6) IT experts

No.	Expert						Number of Agreement	I-CVI
	1	2	3	4	5	6		
1	1	1	1	1	1	1	6	1.00
2	1	1	1	1	1	1	6	1.00
3	1	1	1	1	1	1	6	1.00
4	1	1	1	1	1	1	6	1.00
5	1	1	1	1	1	1	6	1.00
Relevance								1.00
6	1	1	1	1	1	1	6	1.00
7	1	0	0	1	1	1	4	0.67
8	1	0	0	1	1	1	4	0.67
9	1	0	1	1	1	1	5	0.83
10	1	0	1	1	1	1	5	0.83
11	1	0	0	1	1	1	4	0.67
12	1	1	1	1	1	1	6	1.00
13	1	0	1	1	1	1	5	0.83
14	1	0	1	1	1	1	5	0.83
15	1	1	1	1	1	1	6	1.00
16	1	1	1	1	1	1	6	1.00
17	1	1	1	1	1	1	6	1.00
18	1	1	1	1	1	1	6	1.00
19	1	1	1	1	1	1	6	1.00
20	1	1	1	1	1	1	6	1.00
Consistency								0.89
21	1	1	1	1	1	1	6	1.00
22	1	1	1	1	1	1	6	1.00
23	1	1	1	1	1	1	6	1.00
24	1	0	1	1	1	1	5	0.83
25	1	0	1	1	1	1	5	0.83
26	1	1	1	1	1	1	6	1.00
27	1	1	1	1	1	1	6	1.00
28	1	1	1	1	1	1	6	1.00
29	1	0	1	1	1	1	5	0.83
30	1	0	1	1	1	1	5	0.83
Practically								**0.93**
S-CVI (Ave)								***0.92***

Figure 5. Revised menu for downloading Students' Guide book

Table 2. Input or suggestions from six (6) IT experts

No.	Improvement Suggestions
1	Enhance the appearance of the forum by adding features such as comment editing and deletion, as well as topic categorization to improve user convenience in utilizing the forum feature.
2	Testing is needed to ensure the accuracy of each presented feature.
3	Consider further development into a mobile-based application.
4	Special emphasis on improving practicality and creating a more attractive user interface and user experience (UI & UX).
5	It would be beneficial to include Google login access for user convenience.
6	Review and adjust the color theme of the application and game themes, making it more colorful to align with the game themes.
7	Reassess the game objectives, as there is currently no "finish" point, resulting in a lack of competitiveness.
8	Add a feature to view scores for players, not just accessible by school counselor/administrator.
9	Game rules can be made clearer and separated into a different menu.
10	Include buttons or error handling to allow users to return to the previous page or the home page.

Based on Table 2, the researcher attempts to summarize several aspects regarding the recommendations and feedback from the six experts. Areas that need improvement or addition in WAHANA BIKONS include adding features, enhancing the layout, and clarifying the game rules. Furthermore, all experts agreed that the development of "WAHANA BIKONS" is suitable for use and can be continued with improvements as per the provided suggestions.

The researchers made several improvements based on feedback from user experts. One of these is presented in Figure 5 regarding clearer game rules. The researcher added a menu on the landing page to allow participants to access the playing guide in WAHANA BIKONS.

3.4 User validation

In addition to content validity, we also collaborated with 39 school counselors in Surakarta to validate "WAHANA BIKONS." The data from this validation were also processed and calculated using CVI and are presented in Table 3.

As supported by the user validation results processed using the CVI approach, Table 3 shows that the I-CVI for all items falls within the range of 0.97 to 1.00. Additionally, the S-CVI, which represents the average of all I-CVI values, is 0.99. This value meets the minimum CVI acceptance criteria, which, according to the study by Lynn [31], is 0.83. Hence, when interpreted, the user validation results indicate that the development of the WAHANA BIKONS is appropriate and relevant. The 39 school counselors also provided descriptive suggestions, as shown in Table 4.

The qualitative data in the form of feedback and suggestions from validators can be found in Table 4. Based on the improvement suggestions provided by school counselors, we made comprehensive improvements to enhance the platform. The suggestions and feedback include recommendations for adding background music, incorporating additional features to enhance user convenience, increasing the variety of games, organizing service content, and adding more content as well as a service plan.

Improvements were made based on user expert feedback, as indicated in Figure 6. In WAHANA BIKONS, features have been added to the materials, allowing for preview and download. This improvement enables sharing with students, aligning with the suggestions from user experts.

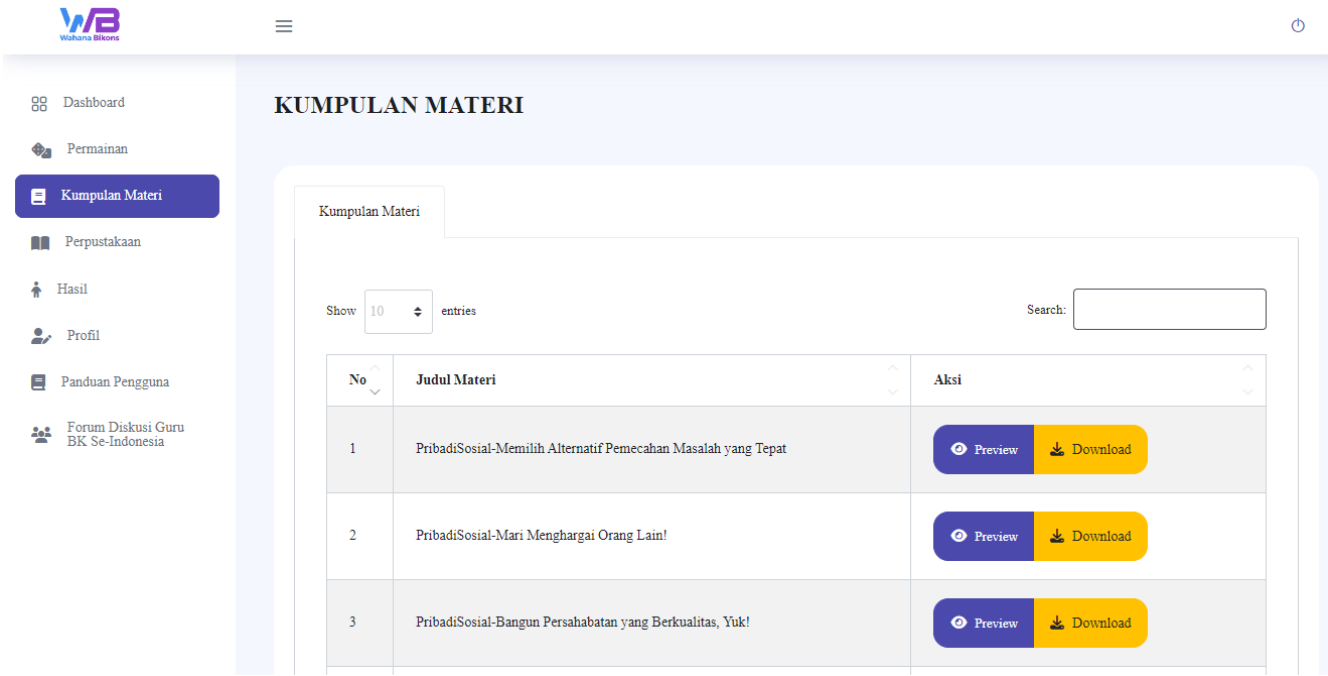

Figure 6. Revised downloadable materials

Table 3. CVI from 39 school counselors

No.	Aspect	Number of Agreement	I-CVI
1	Relevance	39	1.00
2		39	1.00
3		39	1.00
4		39	1.00
5		39	1.00
6		39	1.00
7		39	1.00
8		39	1.00
9		39	1.00
10		39	1.00
11		39	1.00
12		39	1.00
13	Consistency	39	1.00
14		39	1.00
15		39	1.00
16		39	1.00
17		38	0.97
18		39	1.00
19		39	1.00
20		38	0.97
21		39	1.00
22		38	0.97
23		39	1.00
24		38	0.97
25	Practically	39	1.00
26		39	1.00
27		38	0.97
28		38	0.97
29		38	0.97
30		39	1.00
	S-CVI (Ave)		***0.99***

Table 4. Input or suggestions from 39 school counselors

No.	Improvement Suggestions
1	Background music should be added to the games for enhanced engagement.
2	Include the option to share materials.
3	It would be better if the simulation time is extended to ensure that the service is clear and ready to be transferred to students.
4	Distinguish between the login for accounts and direct play for students, preventing students from attempting to create or log in to an account.
5	Expanding and diversifying the types of games would be beneficial.
6	Materials could be expanded and categorized by different educational levels: junior high school (SMP), high school (SMA), and vocational high school (SMK).
7	It would be preferable if one game can be played on multiple devices.
8	The landing page should be adjusted to the page resolution to ensure a full-screen display.
9	Include some examples of RPL (Guidance and Counseling Service Plan) to facilitate school counselors in providing services.
10	Materials could be added in the form of teaching modules.

4. DISCUSSION

The aim of this research is to develop a website-based game medium to assist school counselors in transforming their behavior to be more interactive, creative, and innovative in delivering guidance and counseling services. The research findings demonstrate that WAHANA BIKONS can be utilized by school counselors by leveraging its interactive gaming features. Comprehensive development of mobile-based guidance and counseling media is necessary [34]. The use of games in guidance and counseling services is intended to enhance motivation and facilitate the effective delivery of complex messages [35, 36]. The development of guidance and counseling media should be tailored to the specific service requirements [37, 38], and WAHANA BIKONS was developed based on the needs of school counselors in schools.

The implementation of guidance and counseling service strategies would be more effective with the use of media. The development of guidance and counseling media in Indonesia has generally been extensively conducted by previous researchers. Media in guidance and counseling services plays a crucial role in the counseling process, allowing students to better understand and internalize counseling materials [39]. Netaniel et al. [40] developed a web-based board game medium accessible to school counselors and students. The results of this research provide suggestions for future researchers to explain how to prepare and implement games [27]. Harlina and Suwarjo developed an Android application as a medium for guidance and counseling services. Future studies are expected to focus on practical developments in Android applications that can be downloaded from the Play Store or a website as a follow-up to the study. This is because the use of websites remains highly effective for guidance and counseling services for students [41]. The support of this relevant research reinforces the researchers' focus on the development of technology-based counseling media. WAHANA BIKONS' advantages over previous studies emphasize the diversity of games offered. In the WAHANA BIKONS application, users have the freedom to determine and add content according to the needs of each school.

Essentially, the development of WAHANA BIKONS focuses on the application of technology, and its usage should be computer- or laptop-assisted. Utilizing computer-based media in the learning process can improve student participation and allow them to have control over their learning activities, promoting interaction and engagement. WAHANA BIKONS contributes to school counselors at the secondary education level as a practical and efficient alternative web-based service medium. The technological implications within WAHANA BIKONS may facilitate school counselors in storing service materials, enhancing the effectiveness of the media used. During the service delivery, they only need to prepare a laptop that can be used by all students.

The development of this medium also aims to assist counselors in becoming more interactive, creative, and innovative. The interactive process is transformed by utilizing gaming features and discussion forums. Creativity and innovation are facilitated by giving counselors the opportunity to add their own materials according to their students' needs, and they can also add questions within the application. Through this opportunity, counselors can continue to sharpen their creativity and innovation in developing up-to-date materials.

Using games as a learning medium creates an enjoyable learning experience for students [42, 43], increasing their enthusiasm for learning and fostering direct interaction between students and their environment, thereby laying a significant foundation for learning development [44]. Game-based media can assist teachers in delivering content in an engaging manner and leave a lasting impression on students as they engage in the learning experience [45].

The development of technology, especially multimedia, continues to be explored for its potential to enhance teaching and learning [46].

The sophistication of the technology and media used needs to be complemented by the professionalism of school counselors. School counselors need to develop an effective professional identity in their work and be capable of designing and implementing comprehensive school counseling programs, including various creative and innovative guidance and counseling services [47]. Professional counselors can view technological advancements as an opportunity to find new ways to enhance services for students [48, 49]. The use of technology can enhance the behavior and role of counselors in schools. Unlike previous patterns, the implementation of technology-based service media directs counselors to be more effective and engaging. The utilization of technology in guidance and counseling services is believed to increase active participation from both school counselors and students [50].

Previous research indicates that the appropriate use of gamification strategies enhances motivation and interest, marking a significant development in learning. Gamification strategies encourage user interest to influence behavior [51]. Games can take various forms, including digital, board, card, and role-playing games [52, 53]. The gaming media developed

on the Bikons platform primarily refers to the principles of the digital-based snake and ladder game and the Monopoly game, with modified content to align with guidance and counseling materials. This gaming medium is considered relevant and effective for students in schools. By using the snake and ladder game, we can educate a child and even transform entire generations.

Moreover, educating children through the snake and ladder game involves winning or losing, but regardless, valuable information is gained on how to react quickly and safely [54]. Another study on the Monopoly game indicates that Monopoly is used as a learning medium that can enhance student learning outcomes and is worthy of development as a learning medium [42].

The development process of WAHANA BIKONS utilized a research and development design [30]. This research design is deemed suitable for developing research-based solutions to issues in educational practice. It is also appropriate for developing or validating theories about learning processes, learning environments, and similar aspects [55]. The Plomp and Nieveen model is considered quite practical for media development. Future researchers are recommended to use this model if they intend to develop media or create application programs based on websites or play stores.

The process of developing WAHANA BIKONS involves validation from both experts and practitioners. IT experts assessed the functionality of the website system, including appearance, website capacity, system functions, icon functions, features, and functions in the application's menus and sub-menus. The feedback from these experts was used to enhance the quality of the website's functions. Meanwhile, practitioner validation focuses on input regarding content materials, game rules, device usage, and how to make new materials more accessible, including descriptions of game outcomes. Input from practitioners served as the basis for content improvement within the website.

Validation is a crucial aspect of media development [28, 56]. It is done to evaluate the applicability and effectiveness of a product [57, 58]. There are three common forms of validation, including content, construct, and criterion validity [59]. In the case of the WAHANA BIKONS platform, content validation is used. Content validity is considered an essential step in instrument development as it is a prerequisite for other forms of validity [60-62]. The validation of the WAHANA BIKONS platform involves content validation (expert validation) and construct validation.

The CVI is used for the validation analysis. CVI uses expert ratings on each item, considering the "relevance and clarity" of the items assessed by the panel of expert subjects [63, 64]. CVI serves as an indicator of inter-rater agreement on content relevance. The emphasis is placed on developing a strong theme definition, comprehensive instructions, clear, unambiguous, and relevant items, and involving various qualified experts [64]. There are two forms of CVI: item-level CVI (I-CVI) and scale-level CVI (S-CVI). S-CVI is calculated using two methods: one by averaging the I-CVI scores for all items on the scale (S-CVI/Ave) and the other by calculating the proportion of scale items above universal agreement (UA) (S-CVI/UA) [65, 66].

Based on the product validation with six IT experts, an S-CVI value of 0.92 was obtained, with an I-CVI value of 1.00, 0.89, and 0.93 for relevance, consistency, and practicality aspects, respectively. Similarly, the user validation exhibited a S-CVI value of 0.99. Relevance exhibits the strongest value, indicating that the application developed in this study was based on the latest relevance and knowledge trends. However, the result of this study highlights the need for further development in the consistency aspect, meaning that it is necessary to improve the interplay among components within the application. The results of expert and user validation indicate that the development of the WAHANA BIKONS platform is appropriate and relevant. According to Zamanzadeh et al. [59], the criteria for each item are as follows: If I-CVI is higher than 79 percent, the item is considered suitable. If it falls between 70 and 79 percent, it needs revision. If it is less than 70 percent, it is removed.

WAHANA BIKONS can be applied to any culture because there are no cultural limitations. One of the limitations is that not all schools have full access to laptops and the internet. This limitation arises because some schools in specific regions of Indonesia are not accustomed to using laptops or computers in their school activities. Another limitation in the development of this medium is that it is focused only on school counselors at the secondary education level. This limitation is influenced by the availability of school counselors, which is limited to the secondary education level, as elementary education in Indonesia does not yet have counselors. Furthermore, the development of this medium is solely concentrated on the implementation of basic services and cannot be used for other components of guidance and counseling programs. A suggestion for future researchers is to consider developing media services for individual planning components, responsive services, and system support.

5. CONCLUSIONS

The development of the research product in the form of a website-based guidance and counseling service platform aims to facilitate school counselors in delivering more engaging services both inside and outside the classroom. This research product is named the WAHANA BIKONS website. The development of this medium aims to assist counselors in becoming more interactive and transformed by utilizing gaming features and discussion forums. Creativity and innovation are facilitated by providing counselors with the opportunity to add their own materials according to their students' needs, and they can also add questions within the application.

The WAHANA BIKONS website has been tested and has obtained valid results, meeting the aspects of relevance (application development is based on relevance and the latest developments in knowledge), consistency (every component in the application is consistently interconnected), and practicality (convenience in using the application). Based on the S-CVI results, the IT expert obtained 0.92, and the user expert obtained 0.99, with the minimum threshold being 0.83. Therefore, it can be concluded that the validation results for WAHANA BIKONS are categorized as relevant. It can be concluded that the WAHANA BIKONS website is ready for use in guidance and counseling services. For future researchers, it is recommended to assess user validity from a more comprehensive sample in various regions to broaden the application's usage and develop service media to facilitate individual planning, responsive services, and system support. Additionally, there is a need to explore and develop various game variations to achieve diversity in the types of games offered by the application.

WAHANA BIKONS can be adopted in various cultural contexts without specific limitations. However, one major obstacle involves the limited access to laptops and the internet in some schools in Indonesia. Additionally, WAHANA BIKONS is more focused on counselors at the secondary education level due to the limited availability of counselors at the elementary education level in Indonesia. The use of this medium is also restricted to the implementation of basic services and does not cover other elements of the guidance and counseling program.

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