Journal Center of Excellent : Health Assistive Technology
Volume 4, Number 1, Tahun 2026, pp. 14-24
ISSN (Online): 2987-2200 DOI: 10.36082/jchat.v4i1.2651
Open Access: https://ejournal.poltekkesjakarta1.ac.id/index.php/jchat

Effectiveness of the E-UKGS Web System in Improving School Dental Health Management and Teachers' Roles

Dyah Saffana Arsinta[1*], Supriyana Supriyana[2], Lanny Sunarjo[3]
[1,2,3] Master of Applied Dental and Oral Therapy, Postgraduate Program, Health Polytechnic of the Ministry of Health Semarang, Semarang, Indonesia

ARTICLE INFO

Article history:
Received: Sep 2, 2025
Revised: March 21, 2026
Accepted: March 28, 2026
Available online: March 31, 2026

Keywords:
School-Based Dental Health Program (UKGS), Dental Health Website, Dental Health Management, Teacher Role, Elementary School Children Dental Health

This is an open access article under the CC BY-SA license.

Copyright © 2026 by Author. Published by Center of Excellent (PUI) Poltekkes Kemenkes Jakarta I, Indonesia

ABSTRACT

Maintaining oral health is a critical component of overall health, particularly among school-aged children who are prone to dental caries and gingivitis. In Semarang, the School-Based Dental Health Program (UKGS) faces challenges such as manual record-keeping, limited monitoring, and insufficient teacher involvement, which hinder program effectiveness. This study aimed to develop and evaluate E-UKGS, a web-based system designed to support teachers and dental health professionals in planning, implementing, monitoring, and evaluating UKGS activities effectively.

This study employed a Research and Development (R&D) approach using the ADDIE framework, combined with a pre-experimental one-group pretest–posttest design to assess effectiveness, encompassing five stages: analysis, design, development, implementation, and evaluation. Needs assessment involved interviews and observations with the Health Office, dental professionals, and teachers, complemented by literature review. Expert validation was conducted with UKGS specialists, IT professionals, dental staff, and elementary school teachers. Implementation involved small- and large-scale trials including teachers, students, parents, and health personnel. Participants included 5 dental health professionals, 5 teachers, 56 students, and 22 parents in the implementation phase. All the samples selected using purposive sampling. Data were collected using observation checklists, feasibility questionnaires based on ISO 9126, and pretest–posttest instruments. Data analysis was conducted using descriptive statistics, Paired T-Test, Wilcoxon, and Interclass Correlation Coefficient (ICC). The results showed that E-UKGS significantly improved UKGS management, including planning, implementation, monitoring, evaluation, and accessibility ($p < 0.05$). Teachers' roles in promotive and preventive activities also improved significantly ($p = 0.04$). Feasibility testing indicated that the system was highly suitable for independent use, with average scores of 97.3% for dental health professionals and 96% for teachers ($p = 0.000$). In conclusion, E-UKGS is an effective and feasible web-based system that enhances program management and strengthens teachers' roles in school dental health efforts. This platform has the potential to improve the quality and sustainability of UKGS implementation in elementary schools.

INTRODUCTION

Maintaining oral health is a crucial component in promoting overall oral well-being(Motto et al., 2017). A healthy oral cavity not only supports general health but also significantly influences individual quality of life and well-being. Among school-aged children, the most common oral health problems are gingivitis and dental caries, with prevalence rates ranging from 60% to 90% (Safitri et al., 2023). According to The Global Burden of Disease Study 2019, nearly 2.3 billion people worldwide suffer from caries in permanent teeth, while over 520 million children experience caries in primary teeth (Rokot et al., 2023). Data from SKI 2023 revealed that dental caries is the most dominant oral health problem, accounting for 43.6%. The prevalence of caries among children aged 5–9 years reached 92.6%, whereas in the 10–14-year age group, it was 73.4%. On average, 12-year-old children had approximately two permanent teeth affected by caries (Gulzar et al., 2021). Nevertheless, only around 11.2% of the Indonesian population experiencing oral health problems received care from dental health professionals (Amir et al., 2024).

School-aged children are particularly vulnerable to oral health problems, especially during the transition from primary to permanent teeth, which typically occurs between ages 6 and 12 (Amir et al., 2024). Poor oral health in elementary school students can negatively impact nutritional status and reduce overall quality of life. Children with oral health issues are reported to have up to 12 times higher limitations in daily activities compared to their healthy peers (NURWATI, 2019). The vulnerability of this age group is often linked to inadequate oral hygiene practices (Sutomo et al., 2020). Global and national efforts to

*Corresponding author.
E-mail addresses: dyahsaffana@gmail.com

address oral health issues have not yet achieved optimal outcomes, partly due to insufficient oral hygiene behaviors, which contribute 30–35% to overall health status. Low awareness of the importance of maintaining oral hygiene remains a major factor contributing to widespread oral health problems (Na & Abdulhaq, 2019). Oral health promotion efforts must be integrated, comprehensive, and sustainable, aiming to maintain and improve community oral health through health promotion, disease prevention, treatment, and rehabilitation (Yuanita Anwaristi et al., 2023).

In Indonesia, oral health promotion for school-aged children is implemented through the School-Based Dental Health Program (UKGS), which includes health education, dental services, and the creation of a supportive school environment. Dental health services represent a core activity carried out according to established oral health service patterns (Nugraheni et al., 2018). Public Health Centers (Puskesmas) develop oral health programs targeted at specific populations on a continuous basis, encompassing promotive, preventive, curative, and rehabilitative efforts through the School-Based Dental Health Program (UKGS) (Wirata et al., 2016). UKGS includes health education, provision of dental services, and fostering a supportive school environment, with the ultimate goal of achieving optimal oral health conditions for students Oral health in Indonesian children still requires serious attention from health professionals. Therefore, maintaining oral health and promoting dental hygiene among school-aged children is essential, taking into account their growth and developmental stages, which can be achieved through the implementation of UKGS (Candra Dew & Wirata, 2018).

The success of UKGS depends on the alignment between program design and implementation, as well as the presence of an integrated control mechanism. To motivate implementers, enhancing the competence of program personnel and improving the quality of activity documentation and reporting are necessary. Another barrier to UKGS implementation is the limited role of teachers as dental health advocates, despite their critical position in educating students about oral health. Teachers serve not only as educators but also as role models for students (Rahina et al., 2023). However, in practice, several challenges persist. The role of teachers as key actors in promoting oral health is still not optimal, despite their strategic position as educators and role models.

Preliminary studies conducted at the Semarang City Health Office indicated that UKGS reporting was still performed manually at the end of each year using forms integrated with health office reports, complicating the monitoring and evaluation process. Furthermore, planning and implementation of UKGS were still executed manually by Puskesmas in collaboration with elementary schools, with a minimum target of once per year. Health management plays a vital role in coordinating, integrating, synchronizing, and adjusting various subsystems within the National Health System (SKN). Implementing management functions at technical service units aims to effectively, efficiently, and rationally utilize available resources to achieve organizational objectives (Arifin et al., 2024).

Previous studies have highlighted the importance of health information systems in improving healthcare management and service quality (Carlof & Mulyanti, 2023). Information system-based approaches have also been shown to enhance efficiency, data accuracy, and program (Ayuning et al., 2021). However, existing studies primarily focus on general health information systems or partial aspects of UKGS implementation, and there is still limited research that integrates a comprehensive digital system specifically designed for UKGS management while simultaneously evaluating its effectiveness in improving both program management and teachers' roles. In addition, most UKGS implementations remain conventional and have not fully utilized digital platforms to support real-time monitoring and decision-making processes (MUSTOFA, 2018).

Based on these conditions, a clear research gap can be identified, namely the lack of an integrated, web-based UKGS management system that not only facilitates program implementation but also systematically evaluates its impact on management quality and the role of teachers as key implementers. Therefore, this study introduces the E-UKGS website as a novel approach to addressing these limitations. The novelty of this study lies in the development of a comprehensive web-based system that integrates planning, implementation, reporting, monitoring, and evaluation of UKGS activities into a single platform, while also assessing its effectiveness in enhancing school dental health management and strengthening teachers' roles in promotive-preventive efforts.

The E-UKGS platform is designed to support various UKGS activities, including health education, peer dental training, dental examinations, and program management from planning to evaluation. By incorporating digital features for data management, reporting, and monitoring, this system is expected to improve efficiency, accuracy, and program sustainability. Ultimately, the implementation of E-UKGS is anticipated to enhance the quality of UKGS management and contribute to improved oral health outcomes among elementary school students.

.

METHOD

This study employed a Research and Development (R&D) approach using the ADDIE framework by Dick dan Carey (1996). The ADDIE model consists of five main stages: 1) Analyze (needs analysis), 2) Design (design planning), 3) Development (expert validation), 4) Implementation (Phase I testing), and 5) Evaluation (Phase II testing involving end users) (Arsinta et al., 2025). The overall goal of this approach was to produce the E-UKGS website as a feasible and effective tool to support the management of UKGS in elementary schools. This study applied purposive sampling, with clearly defined inclusion criteria for each research phase. Participants were selected based on their relevance and involvement in the UKGS program. The inclusion criteria were as follows elementary school teachers actively involved in implementing UKGS activities, dental health professionals responsible for school dental health services, UKGS experts and IT specialists involved in system validation, Health Office staff responsible for supervising UKGS programs, elementary school students and parents.

In the Development and Evaluation phases, data were collected using structured measurement instruments. The instruments included observation checklists to assess system functionality and implementation processes, feasibility questionnaires developed based on ISO 9126 standards, covering six aspects: functionality, reliability, usability, efficiency, maintainability, and portability, and Pretest–posttest assessment forms to measure changes in teachers' roles and the quality of UKGS management before and after system implementation. All instruments were reviewed by experts to ensure content validity, and reliability.

In the Analyze phase, needs identification was conducted by examining and evaluating issues arising in the implementation of oral health education among elementary school students. This process involved interviews and observations with relevant stakeholders, including the Health Office, dental health professionals, and teachers implementing UKGS. Additionally, a literature review was conducted using relevant scientific sources to strengthen information regarding UKGS implementation in elementary schools.

The Design phase involved formulating the product concept based on the results of the needs analysis. The gathered information was then used to develop an initial design of the E-UKGS website, tailored to the characteristics and requirements of UKGS implementation in elementary schools. The website was designed as an information system aimed at improving UKGS management quality while supporting the enhancement of students' oral health.

The system development process utilized the Rapid Application Development (RAD) method, which emphasizes speed from design to implementation. This approach allows the system to be developed in a relatively short time through structured and interactive stages. The E-UKGS website was developed using RAD to support the roles of dental health professionals and elementary school teachers as implementers of the UKGS program. The RAD phases included requirements analysis, analysis modeling, design modeling, and construction (Wulandari et al., 2024).

The Development phase involved realizing the E-UKGS website design into a functional application. During this phase, validation was conducted by four experts: a UKGS specialist, an IT expert, dental health professionals, and elementary school teachers, to assess system feasibility before implementation. Data were collected through observations using a checklist instrument and revisions were made according to evaluation findings.

Subsequently, Phase I feasibility testing (Implementation) was conducted through two schemes: a small-group trial to assess initial feasibility, followed by a large-group trial to evaluate system implementation on a broader scale. The study employed a pre-experimental design using a one-group pretest-posttest model to evaluate the effectiveness of the E-UKGS website in enhancing UKGS management quality and teachers' roles in supporting promotive-preventive oral health efforts for elementary school students.

The Evaluation phase (Phase II/end-user testing) aimed to assess system success, suitability, and users' ability to operate the platform independently. Evaluation included direct observation and questionnaires completed by teachers and dental health professionals. The instruments consisted of observation sheets and feasibility questionnaires based on ISO 9126 standards, covering six main aspects: functionality, reliability, usability, efficiency, maintainability, and portability.

Data obtained from interviews and observations were analyzed descriptively in qualitative terms. Expert validation was analyzed using the Interclass Correlation Coefficient (ICC) to measure inter-rater reliability and the consistency of scores among validators. Meanwhile, product testing data were analyzed quantitatively using descriptive statistics, calculating the percentage of test results. Before analysis, all data were checked for completeness, coded, and tabulated according to the table format, followed by paired statistical tests (Paired T-Test and Wilcoxon) and ICC.

RESULT

The needs analysis conducted through interviews with the Health Office, dental and oral health therapists at the Puskesmas implementing the UKGS program, and teachers responsible for UKS in elementary schools indicated that the UKGS program in Semarang is still actively managed by the Puskesmas. The main activities include health education, mass tooth brushing, and dental check-ups. The program targets students in specific grades according to UKGS Stages 1, 2, and 3, with routine implementation 1–2 times per year based on directives from the Health Office. The scheduling of UKGS Stages 2 and 3 is adjusted according to the policies of each Puskesmas. Most partner schools (approximately 80%–90%) fall under Stage 2, while the remainder (10%–20%) are in Stage 3. The collected information serves as the basis for product design. Data also indicated that UKGS activities and the improvement of students' oral health are still managed manually. The reporting system, conducted only once per year at the end of the academic period using health-integrated forms, makes monitoring and evaluation challenging. Therefore, an improvement in UKGS management quality is required to ensure the program runs optimally and sustainably, thereby enhancing students' oral health. The involvement of health professionals and teachers oriented toward Industry 4.0 is also necessary through integrated management using an information system.

A. Expert validation test

The E-UKGS website was developed to support the implementation, monitoring, and evaluation of the UKGS program more efficiently. The system aims to address the limitations of manual record-keeping, increase teacher participation, facilitate reporting, and support the continuity of UKGS activities in a structured and integrated manner. During the validation stage, tests were conducted by four experts: a UKGS specialist, an IT expert, dental health professionals from Puskesmas, and elementary school teachers, to evaluate the suitability and feasibility of the website prior to implementation. Data collection was performed through observation using a checklist instrument based on ISO 9126 standards, followed by revisions according to the findings. The validation results were analyzed using the Interclass Correlation Coefficient (ICC) test.

Table 1. Expert Validation Test

Mean (%)	Average Measures	p-value
92,9	0,954	0,000

B. Small-scale trial of the E-UKGS website

A small-scale trial of the E-UKGS website was conducted involving 5 dental health professionals from Puskesmas Padangsari, 4 teachers from SD Antonious 02 Semarang, and 20 students. The purpose of this trial was to confirm the initial feasibility of the E-UKGS website as an innovation for enhancing the quality of UKGS implementation and the oral health status of elementary school students. The results of this small-scale trial subsequently served as the basis for conducting a larger-scale trial with a broader group of respondents.

1. UKGS Management Quality

Table 2. E-UKGS Website Effectiveness Test in Improving UKGS Planning, Implementation, Monitoring, Evaluation and Accessibillity Quality in Small Group

Variable	Mean ± SD Pretest	Mean ± SD Posttest	P-value
Planning	**80,9 ± 5,3**	**96,6 ± 2,2**	**0,027***
Implementation	**81,9 ±5,1**	**88,8 ± 3,5**	**0,026***
Monitoring	**29,1 ± 7,7**	**81,3 ± 3,2**	**0,008***
Evaluation	**83,3 ± 2,1**	**90,5 ± 2,9**	**0,005***
Accessibillity	**77,6 ± 2,6**	**81,3 ± 3,2**	**0,024***
Management quality	**68,8 ± 2,3**	**87,6 ± 1,4**	**0,000****

**Wilcoxon **Paired sample t-test*

2. Teachers' role

Table 3. E-UKGS Website Effectiveness Test in Improving Teacher's Role in Small Group

Variable	Mean ± SD Pretest	Mean ± SD Posttest	P-value
Teacher's role	**59 ± 3**	**97,5 ± 3,1**	**0,000***

**Wilcoxon*

C. Feasibility test I

The website was implemented among 56 students, 22 parents, 5 teachers from SD N Srondol Wetan 05, and 5 dental health professionals from Puskesmas Srondol.

1. UKGS Management Quality

Table 4. E-UKGS Website Effectiveness Test in Improving UKGS Planning, Implementation, Monitoring, Evaluation and Accessibillity Quality

Variable	Mean ± SD Pretest	Mean ± SD Posttest	p-value
Planning	**74 ± 9,6**	**97 ± 6,3**	**0,004***
Implementation	**69,9 ± 10,5**	**92 ± 10,3**	**0,007***
Monitoring	**18,3 ± 5,2**	**93,2 ± 8,7**	**0,004***
Evaluation	**81,6 ± 5,2**	**94,9 ± 8,2**	**0,025***
Aksesbilitas	**54.9 ± 8**	**86,5 ± 10,5**	**0,005***
Management quality	**59,6 ± 5,9**	**92,8 ± 3,2**	**0,000****

**Wilcoxon* ***Paired sample t-test*

2. Teachers' role

Table 5. E-UKGS Website Effectiveness Test in Improving Teacher's Role

Variable	Mean ± SD Pretest	Mean ± SD Posttest	p-value
Teacher's role	**76,6 ± 8,6**	**94,6 ± 2,9**	**0,04***

**Wilcoxon*

D. Feasibility test II

Table 6. E-UKGS Website End-User Effectiveness Feasibility Test II

Variable	N	Mean (%)	*Average Meassures*	*p**
Dental Health Professionals	5	97,3%	0,937	0,000
Teachers	5	96%	0,961	0,000

**Interclass Correlation Coefficient*

Table 7. End User Observation Result

Subject	Observation Result	Reseracher Interpretation
Dental Health Professionals	Overall, the website provides dental health professionals with greater ease in accessing, managing, and remotely monitoring the UKGS program. Consequently, direct school visits are not always required, thereby improving both effectiveness and time efficiency, particularly in the context of the high workload typically faced by community health centers (Puskesmas).	The E-UKGS website is considered highly feasible as an innovative tool to support the implementation of the UKGS program. For dental health professionals, the system facilitates the remote management and monitoring of UKGS activities, enhancing efficiency without disrupting the already demanding schedule of the Puskesmas. Meanwhile, teachers can independently carry out UKGS activities as extensions of the Puskesmas, while simultaneously monitoring students' oral health behaviors and conditions. Evaluations conducted by teachers provide the basis for planning activities tailored to students' needs, ensuring that the program is more targeted, effective, and yields positive impacts on improving the oral health status of elementary school children.
Teachers	Teachers serve as extensions of community health centers (Puskesmas) by independently implementing the UKGS program. Through monitoring students' oral health behaviors and conditions, teachers are able to conduct evaluations and design activities tailored to the specific needs of the students, thereby ensuring that the program is more targeted and delivers significant benefits.	

DISCUSSION

A. UKGS Management Quality

1. Planning

Planning within the UKGS program is aimed at supporting its implementation to ensure that promotive and preventive dental health services in elementary schools are achieved in accordance with established targets (Ayuning et al., 2021). Statistical analysis revealed a p-value of 0.004, confirming the effectiveness of the website in enhancing program planning. This finding is consistent with a study conducted in Surabaya, which reported that a web-based UKS database prototype could facilitate the development of school health programs that are better aligned with the specific needs of each school (Armyade et al., 2015).

The availability of structured and data-based input within the system enables users to design programs that are more targeted and aligned with actual school needs. The system facilitates access to previous data, standardized planning formats, and relevant guidelines, thereby reducing uncertainty and improving the accuracy of program design. This data-driven approach allows teachers and dental health professionals to develop more systematic and evidence-based plans, which contributes to the observed improvement in planning outcomes.

2. Implementation

The implementation phase is a critical stage that determines the success of the program, during which all previously planned activities are carried out (Ayuning et al., 2021). The E-UKGS system enhances coordination and execution of activities by providing integrated tools such as digital dental examination forms, educational materials, and real-time activity tracking. These features simplify the implementation process and reduce administrative burden, allowing teachers and health professionals to focus more on delivering promotive and preventive services. In addition, the system supports communication and collaboration among stakeholders, which strengthens program execution and ensures that planned activities are carried out more consistently and effectively.

The application of an information system at this stage has demonstrated significant positive impacts, as reflected in Table 4 with a p-value of 0.007. The system has been proven to enhance various aspects of program activities, including promotive, preventive, and referral dental health services. These findings are consistent with research conducted in elementary schools under the Pudak Payung Health Center, which reported that the use of a web-based platform in UKGS implementation strengthens coordination among schools, health professionals, and parents. Through this platform, users gain convenient access to key features such as dental examination forms, interactive educational materials, and tools for managing and monitoring health activities in real time. Thus, the information system plays a crucial role in improving both the effectiveness and quality of UKGS implementation in elementary schools (Ayuning et al., 2021).

3. Monitoring

Program monitoring is an essential component of activity management, serving to assess the extent to which program implementation aligns with the planned objectives (Nazir & Darmawati, 2018). The improvement in monitoring can be attributed to the system's capability to provide real-time data tracking and visualization. Through automated data recording and display in the form of charts and tables, users can easily monitor program progress and identify gaps in implementation. This continuous feedback mechanism enhances transparency and accountability, as stakeholders are able to access up-to-date information and make timely adjustments when necessary. As a result, monitoring becomes more systematic, accurate, and responsive compared to conventional manual methods.

The application of the E-UKGS web-based monitoring system has proven effective in enhancing transparency and accountability, as indicated by a p-value of 0.004. These findings are consistent with previous studies showing that monitoring through web-based platforms enables real-time tracking of students' oral health activities while also facilitating data visualization in the form of charts and tables, thereby allowing more effective monitoring of program progress (Arsinta et al., 2025). Furthermore, digital platforms strengthen health program supervision by providing accurate and systematically structured reports, which help minimize the risks of data loss or incomplete records.

4. Evaluation

The E-UKGS system is supported by its ability to generate automated reports and summarize program outcomes efficiently. The system processes collected data into meaningful information, enabling users to assess program achievements, identify trends, and determine appropriate follow-up actions. This reduces the time and effort required for manual reporting

while improving the quality and completeness of evaluation results. Consequently, decision-making becomes more evidence-based and timely. Evaluation is a crucial stage in program management, aimed at assessing the extent to which activities have achieved their intended outcomes (Dafiqiin et al., 2024). In the context of UKGS, evaluation is carried out to measure the effectiveness of planning in addressing students' oral health problems, to assess the level of student participation, and to serve as the basis for formulating appropriate follow-up actions (Ayuning et al., 2021; Dafiqiin et al., 2024). The statistical test results presented in Table 4 show a p-value of 0.025, indicating that website-based evaluation is effective in generating automated reports on program achievements and impacts, including the reduction of dental caries cases among students. The utilization of a web-based system also facilitates the preparation of reports and the formulation of recommendations quickly and efficiently, requiring only an internet-connected computer. Beyond its function as an information management tool that supports timely decision-making, the platform also strengthens planning and management processes by identifying critical factors that influence service quality. Thus, this system holds the potential to serve as an effective institutional support mechanism for all stakeholders (Santos et al., 2018).

5. Accessibility

The increased accessibility provided by the E-UKGS platform plays a crucial role in improving overall program effectiveness. By allowing teachers, health professionals, students, and parents to access information easily, the system fosters active participation and engagement in oral health activities. The availability of interactive features and centralized information enhances users' awareness, motivation, and ability to contribute to the program. This participatory environment strengthens the implementation of UKGS and supports sustainable improvements in school dental health management.

Statistical testing demonstrated a significant result with a p-value of 0,005, confirming that the website substantially enhances the accessibility of the UKGS program. This improvement fosters a participatory environment that encourages active engagement in oral health activities. Parents are able to easily obtain information regarding their children's oral health and directly communicate with schools through the interactive features available on the platform. Meanwhile, teachers and health professionals gain access to essential guidelines and supporting tools necessary for implementing UKGS activities effectively. Moreover, the accessibility feature also extends to the website's ability to manage collected data, thereby facilitating monitoring, evaluation, and program reporting in a more structured and systematic manner (Ayuning et al., 2021).

B. Teachers' Role

The improvement in teachers' roles in promotive and preventive oral health efforts following the implementation of the E-UKGS system can be explained through several underlying mechanisms related to increased access, capacity building, and active engagement. Through the web-based platform, teachers are provided with flexible and continuous access to structured oral health education materials, which enhances their knowledge and competence in delivering accurate and consistent information to students. This ease of access reduces dependence on conventional, time-limited training and enables self-directed learning, thereby strengthening teachers' confidence and readiness to perform their roles effectively. In addition, the E-UKGS system supports teachers by providing practical tools such as educational media, digital forms, and activity guidelines that simplify the implementation of promotive and preventive activities. These features reduce administrative complexity and allow teachers to focus more on student engagement and behavior change. As a result, teachers are not only functioning as information providers but also as facilitators who can actively guide students in adopting healthy oral hygiene practices.

The use of the E-UKGS website significantly supports the strengthening of teachers' roles in promotive and preventive efforts to maintain students' oral and dental health, as reflected in a p-value of 0,04. This finding aligns with previous research demonstrating that web-based training effectively improves teachers' understanding of the impact of sugar consumption on both oral and general health (Bhadauria et al., 2022). Other studies have also emphasized the importance of teachers' involvement in oral health promotion, highlighting that active engagement and training for teachers can increase the success of school-based oral health programs (Gulzar et al., 2021). Furthermore, the platform enables teachers to access and utilize real-time student data, allowing them to tailor health education and interventions based on actual needs. This data-driven approach increases the relevance and impact of the activities conducted, as programs are no longer generic but adapted to students' conditions. The availability of monitoring features also allows teachers to track students' progress, reinforcing their

role in sustaining behavior change over time. By providing a user-friendly system that supports communication, feedback, and participation in program management, the platform encourages teachers to take a more active role in UKGS implementation.

The web-based platform also provides teachers with a variety of tools and resources that enable them to take an active role as oral health promoters, not merely as educators but also as facilitators of behavior change among students. Research indicates that 96% of teachers expressed interest in becoming promoters in school oral health programs, while 91,9% agreed that oral health education should be integrated into the school curriculum (Saskianti et al., 2021). Additionally, teachers can directly participate in managing UKGS activities in their schools, tailoring programs according to actual student data and needs. Consequently, the success of UKGS can be optimized, as its objectives are aligned with students' specific requirements.

C. Website E-UKGS

1. Effectiveness of Independent Use by Dental Health Proffesionals

The feasibility test results demonstrated that the independent use of the E-UKGS website by dental health professionals achieved an average score of 97,3%, which is classified as highly feasible. Furthermore, the test produced a p-value of 0,000 with an average measure of 0,937, confirming that the website is suitable for autonomous use by dental health professionals as end users. This high level of feasibility can be attributed to the user-friendly interface and structured system design, which enable dental health professionals to operate the platform independently without requiring extensive technical assistance. These professionals play a crucial role in enhancing the quality of health services for the community, thereby fostering awareness, motivation, and the ability to live healthily, ultimately contributing to the achievement of optimal health as a valuable investment in developing a productive human resource base. In addition, dental health professionals are expected to possess strong clinical skills, the ability to provide appropriate patient care, effectively manage their tasks and responsibilities, and consistently adhere to established standards (Ibrahim et al., 2024).

These findings are in line with prior studies suggesting that information systems can facilitate and assist health departments in managing reports from health centers, which are subsequently used as evaluation material to assess the effectiveness of their programs. The development of a web-based reporting and documentation system offers distinct advantages, particularly in terms of virtualization, where previously manual processes can be effectively transformed into structured information systems. This transformation reduces administrative burden, minimizes the risk of data loss, and improves the efficiency and accuracy of reporting processes. Moreover, the adoption of such systems enhances flexibility in recording and reporting mechanisms, as they can be tailored to meet the specific needs of dental health professionals in primary health centers (Indira, 2023). The availability of real-time data access also supports timely decision-making and strengthens the overall management of UKGS programs.

2. Effectiveness of Independent Use by Teachers

The feasibility test demonstrated that the independent use of the E-UKGS website by teachers responsible for managing the program achieved an average score of 96%, which is categorized as highly feasible. Furthermore, the statistical analysis yielded a p-value of 0.000 with average measures of 0.961, confirming that the platform can be independently utilized by teachers as end users in managing UKGS programs. This finding can be explained by the accessibility and practicality of the system, which provides teachers with integrated features that support both educational and administrative tasks. Previous studies have also indicated that schools implementing UKGS optimally tend to exhibit lower dental caries prevalence compared to those that do not. Nevertheless, several challenges remain, including the limited availability of health professionals, the lack of continuous education, and the minimal involvement of teachers and parents. In this regard, the E-UKGS website serves as a solution by providing both educational resources and an integrated management platform, enabling teachers to act as extensions of community health centers (Puskesmas) in effectively managing and implementing UKGS activities (Failasufa et al., 2021).

The accuracy of data and information is closely linked to the timely collection of data in accordance with the scheduled UKGS activities in schools, thereby expediting the decision-making process. Information delivery through the E-UKGS system has been found to be more timely compared to manual methods. This improvement occurs because the system allows real-time data input, storage, and retrieval, enabling teachers to monitor student conditions and program progress more efficiently. An information system is considered to be of high quality if it is capable

of processing data and delivering information optimally while meeting user needs. In this study, appropriateness was assessed based on the availability of UKGS data that could generate relevant information aligned with the needs of both teachers and students. Accordingly, the developed web-based health information system has been proven to provide significant benefits in analyzing students' oral health problems in line with the objectives of the UKGS program (Alam et al., 2016). Thus, the combination of ease of use, data integration, and real-time accessibility contributes to the high feasibility of independent system use among teachers.

CONCLUSION

The findings of this study demonstrate that the E-UKGS website is effective in enhancing various aspects of the School Dental Health Program (UKGS). From the perspective of health professionals and teachers, this platform provides significant improvements in planning, implementation, monitoring, and evaluation, as evidenced by statistical test results with p-values < 0,05. The system facilitates structured program planning, improves accessibility for all stakeholders, including teachers, parents, and students also supports evidence-based decision-making processes in school-based oral health programs.

The system enhances accessibility, supports structured and data-based program management, and facilitates more efficient decision-making processes. In addition, the platform strengthens the role of teachers as health promoters by providing accessible educational resources and management tools, enabling their active involvement in promotive and preventive oral health activities. The feasibility results also confirm that the system is highly suitable for independent use by both teachers and dental health professionals, indicating that E-UKGS is a practical and reliable tool for supporting UKGS implementation.

Based on these findings, it is recommended that schools consistently utilize the E-UKGS platform to support all stages of UKGS activities. Teachers are encouraged to actively engage as facilitators and health promoters in the school environment. Furthermore, dental health professionals are advised to integrate the use of E-UKGS with reporting systems at Community Health Centers (Puskesmas) to improve data management and support the development of more effective school-based oral health programs.

REFERENCES

Alam, H. S., Sudiro, S., & Purnami, C. T. (2016). Pengembangan Sistem Informasi Pemantauan Alat Kesehatan Untuk Mendukung Penjaminan Mutu Pelayanan Kesehatan Di Balai Kesehatan Indera Masyarakat (BKIM) Provinsi Jawa Tengah. *Jurnal Manajemen Kesehatan Indonesia*, *4*(3), 187–195. https://doi.org/10.14710/jmki.4.3.2016.187-195

Amir, N. A. R., Alfiyani, L., Fatimah, N., & Rahmah, A. H. (2024). Edukasi Kesehatan Gigi Dan Mulut Dengan Media Leaflet Dan Aplikasi Pokemon Smile Di Sd Negeri Mojosongo I. *Jurnal Abdimas Ilmiah Citra Bakti*, *5*(3), 596–604. https://doi.org/10.38048/jailcb.v5i3.3716

Arifin, N., Damopolii, M., & Hasan, M. (2024). Implementasi Website Sebagai Sistem Informasi Manajemen Pendidikan Pada Sekolah Islam Terpadu (Sit) Al-Hikmah Amanah Ummah Maros. *An-Nadzir : Jurnal Manajemen Pendidikan Islam*, *2*(01), 14–25. https://doi.org/10.55799/annadzir.v2i01.429

Armyade, U. Wahyuni, C., & Hargono, R. (2015). Aplikasi Basis Data Usaha Kesehatan Sekolah Tingkat Sekolah Dasar di Kota Surabaya. *Jurnal Berkala Epidemiologi*, *3*(3), 366–376. https://www.researchgate.net/profile/Chatarina-Umbul-Wahyuni/publication/313962547_Application_Database_School_Health_Program_in_Primary_School_Level_of_Surabaya_City/links/58cb6d53aca2727749ed93b2/Application-Database-School-Health-Program-in-Primary-Sch

Arsinta, D. S., Supriyana, S., & Sunarjo, L. (2025). Transformasi Digital UKGS : Rancang Bangun Inovasi Sistem Informasi Digital melalui Website E-UKGS. *Journal of Dental Hygiene and Dental Therapy*, *6*, 140–152. https://doi.org/10.36082/jdht.v6i2.2508

Ayuning, G., Sunarjo, L., & Fatmasari, D. (2021). Management Model of School Dental Health Effort (SDHE) of Website-Based for Improving Quality of Information System at Elementary School. *International Journal of Nursing and Health Services (IJNHS)*, *4*(2), 112–119. http://ijnhs.net/index.php/ijnhs/homehttp://doi.org.10.35654/ijnhs.v4i2.353

Bhadauria, U. S., Purohit, B. M., Agarwal, D., Duggal, R., Mathur, V., & Priya, H. (2022). Effectiveness of a Training Program in School Teachers on the Role of Sugars in Oral and General Health. *Cureus*, *14*(9), 1–6. https://doi.org/10.7759/cureus.28865

Candra Dew, A. G., & Wirata, N. I. (2018). Gambaran Karies Gigi Sulung Dan Tingkat Pengetahuan Orang Tua Terhadap Pemeliharaan Kesehatan Gigi Dan Mulut Pada Anak Pra Sekolah Di Tk Sila Chandra Iii Batubulan Tahun 2017. *Jurnal Kesehatan Gigi* , *6*(1), 22–28. https://ejournal.poltekkes-denpasar.ac.id/index.php/JKG/article/view/968/333?__cf_chl_tk=SQlpTPUTVru2I6rGp.nT2bAIkPw

OrmauC2Ou.QwiviA-1726069599-0.0.1.1-7295
Carlof, & Mulyanti, D. (2023). Inovasi Teknologi dalam Manajemen Kesehatan: PemanfaatanSistem Informasi Kesehatan Elektronik di Rumah Sakit. *Journal of Management and Social Sciences (JIMAS) Vol. 2, No. 2 Mei 2023*, *2*(2), 50–62.
Dafiqiin, H. L., Sunarjo, L., & Ningtyas, E. E. (2024). *Effectiveness and Application of the Data Collection and Evaluation Application Model (AP-PENDANELSI) Results of Web-Based Networking in Improving the Quality of School Dental Health Business Programs in Elementary Schools in the Jepara Region*. *9*(2).
Failasufa, H., Fahrie, T. O., & Arimbi, A. (2021). Hubungan Pelaksanaan Usaha Kesehatan Gigi Sekolah terhadap Status Karies Gigi : Literature Review. *Indonesian Journal of Dentistry*, *1*(2), 37. https://doi.org/10.26714/ijd.v1i2.7977
Gulzar, S., Wyne, A. H., AlJameel, A. H., Shah, A. H., Asiri, F. Y., Sheehan, S. A., Alghmlas, A. S., & Almadi, H. S. (2021). Effectiveness of Oral Health Promotion among Teachers and Parents of Special Care School Children in Al-Kharj, Kingdom of Saudi Arabia. *World Journal of Dentistry*, *11*(6), 482–487. https://doi.org/10.5005/jp-journals-10015-1779
Ibrahim, I., . S., Fatmasari, D., Sunarjo, L., & Subekti, A. (2024). Improving the Quality of Recording and Reporting as Well as the Quality of Data and Risk Management Information at Kolonodale Hospital, North Morowali Regency with the Website-Based Sip-Menko-Rs Application. *International Journal of Innovative Science and Research Technology (IJISRT)*, *9*(7), 1216–1221. https://doi.org/10.38124/ijisrt/ijisrt24jul873
Indira, Z. N. (2023). Analisis Kebutuhan Pengembangan Sistem Informasi Rawat Jalan Di Rumah Sakit Umum Daerah Banyumas. *Journal of Nursing & Health*, *8*(3), 235–239.
Motto, C. J., Mintjelungan, C. N., & Ticoalu, S. H. R. (2017). Gambaran kebersihan gigi dan mulut pada siswa berkebutuhan khusus di SLB YPAC Manado. *E-GIGI*, *5*(1). https://doi.org/10.35790/eg.5.1.2017.15632
MUSTOFA. (2018). Analisis Jenis Dan Program Pelayanan KesehatanMasyarakat Di Puskesmas Pondok Bahar Kota Tangerang. *Jurnal Mozaik*, *10*(2614–8390), 99–110.
Na, Y., & Abdulhaq, M. (2019). Hubungan Tingkat Pengetahuan Tentang Kesehatan Gigi Dan Mulut Dengan Perilaku Perawatan Gigi Dan Mulut Pada Anak Usia Sekolah 7-9 Tahun Di Sd Islam Al Amal Jaticempaka. *Afiat*, *5*(01), 80–91. https://doi.org/10.34005/afiat.v5i01.721
Nazir, N., & Darmawati, G. (2018). Perancangan Pencatatan Dan Pelaporan Terpadu Puskesmas Berbasis E-Report Untuk Meningkatkan Kesehatan Masyarakat. *Jurnal Sains Dan Teknologi: Jurnal Keilmuan Dan Aplikasi Teknologi Industri*, *18*(2), 75. https://doi.org/10.36275/stsp.v18i2.109
Nugraheni, H., Sunarjo, L., & Wiyatini, T. (2018). Teacher'S Role on Oral Health Promoting School. *Jurnal Kesehatan Gigi*, *5*(2), 13. https://doi.org/10.31983/jkg.v5i2.3857
NURWATI, B. (2019). Hubungan Karies Gigi Dengan Kualitas Hidup Pada Anak Sekolah Usia 5-7 TAHUN. *Jurnal Skala Kesehatan*, *10*(1), 41–47. https://doi.org/10.31964/jsk.v10i1.164
Rahina, Y., Dewi, I. G. A. A. C. I., Pramesti, I. G. A. R., Elang, P., & Astuti, E. S. Y. (2023). Training of Trainers Method for Elementary School Teachers To Improve Dental Health Knowledge. *Interdental Jurnal Kedokteran Gigi (IJKG)*, *19*(2), 127–131. https://doi.org/10.46862/interdental.v19i2.7713
Rokot, G. F. Y., Wowor, V. N. S., & Wahyuni, R. (2023). HHubungan Konsumsi Makanan Kariogenik dan Kejadian Karies Gigi pada Anak Usia Sekolah di Desa Wori. *E-GiGi*, *12*(2), 227–232. https://doi.org/10.35790/eg.v12i2.51343
Safitri, R., Isnanto, & Ulfah, S. F. (2023). Pengetahuan Tentang Makanan Kariogenik Pada Siswa Kelas VI Di SDN Bubutan VIII Surabaya. *Indonesian Journal of Health and Medical*, *3*(3), 98–119.
Santos, L. X., Almeida, D. R. de S., Silva, J. de S., Rizental, Â. C. M. F., de Goes, P. S. A., & Figueiredo, N. (2018). A web-based tool for monitoring and evaluating health care services: An analysis of centers for dental specialties webpage. *Pesquisa Brasileira Em Odontopediatria e Clinica Integrada*, *18*(1), 1–13. https://doi.org/10.4034/PBOCI.2018.181.59
Saskianti, T., Puteri, M. M., Bonardo, B., Maulani, B., Naomi, N., & Estu, A. R. (2021). Teachers' Role in Regular and Special Need Students' Oral Health: A Narrative Review. *Journal of International Dental and Medical Research*, *14*(4), 1639–1647.
Sutomo, S. Y., Usman, A., Yulandasari, V., & Wikandari, D. (2020). Peran Orang Tua Terhadap Perilaku Perawatan Gigi Pada Anak Usia Sekolah (6-12 Tahun) Di Dusun Paok Odang Desa Sisik Kecamatan Pringgarata Kabupaten Lombok Tengah. *Jurnal Kesehatan Qamarul Huda*, *8*(1), 47–53. https://doi.org/10.37824/jkqh.v8i1.2020.198
Wirata, I. N., Agung, A. A. G., & Nuratni, N. K. (2016). Perbedaan Derajat Kesehatan Gigi dan Mulut pada Siswa SD dengan Program UKGS Aktif dan Tidak Aktif di Wilayah Kerja Puskesmas Denpasar Utara II Tahun 2015. *Jurnal Ilmu Dan Teknologi Kesehatan*, *3*(2), 124–136.
Yuanita Anwaristi, A., Sari, N. D. A. M., Cahyani, C., Sari, M., Hafizi, I., Nugrahani, N. A., & Zafira, G. D. (2023).

Mewujudkan Gerakan Sadar Sehat Pada Anak Melalui Penyuluhan Kesehatan Gigi Dan Mulut. *GANESHA: Jurnal Pengabdian Masyarakat*, *3*(2), 131–136. https://doi.org/10.36728/ganesha.v3i2.2555