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Development and Implementation of Junior High School Health Information System in Serang City

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Abstract: The health information system in schools has a crucial function in supporting the implementation of the School Medical (UKS) program. This study aims to evaluate how effective the health information system developed, "KesSekolah," is based on the opinions of experts in the field of learning media and learning materials. The research approach used is quantitative by conducting user acceptance testing (User Acceptance Testing, UAT) involving experts. The results of the study revealed that this system received a very good rating in terms of the feasibility of learning media, reliability, interface display, and ease of use. The highest value is in the usefulness of the media indicating that this system can improve the UKS program and is feasible to be implemented to improve health standards in the school environment.

Keywords: Health information system; User acceptance testing; School Medical

Introduction

The development of digital technology, marked by Industry 4.0 and the potential of Industry 5.0, is driven by several factors, including advancements in computing, faster processing speeds, and data analytics (Afifulloh & Cahyanto, 2021). Global connectivity and the rise of the Internet of Things (IoT) enable efficient data exchange (Shabir, 2022). Technologies like smart factories, AI, machine learning, and cloud computing support industries in improving productivity, decision-making, and automation. As cybersecurity threats grow, the need for advanced protection systems increases. Consumer demand for innovative and connected digital solutions further pushes companies to adopt cutting-edge technology.

Industry 5.0 introduces a human-centered approach to production, responding to the social and workforce impacts of automation. These technological changes significantly affect industries and society, including education, which has rapidly evolved, especially following the Covid-19 pandemic. Learning is no longer confined to time and place, allowing more flexible and accessible education. The integration of Information and Communication Technology (ICT) has become essential to overcoming challenges in the learning process (Putra et al., 2023).

The digital era necessitates educational adaptation, enhancing student skills beyond cognitive aspects to address complex real-world challenges. Competency development is critical in this context, as students need various skills to thrive in the evolving landscape (Anita & Astuti, 2022). Education plays a key role in fostering human resource development, which is essential for national progress. Vocational education aims to prepare students for specific careers, but challenges remain, such as a high unemployment rate among graduates due to inadequate competencies (Handoyono & Purnomo, 2020). Educational institutions, particularly vocational schools, must equip students with competitive skills for the global workforce (Firdaus & Anriani, 2022).

The use of media in education is the responsibility of educators, who must select appropriate and effective tools for teaching. In today's digital age, electronic media is increasingly prominent in the classroom, replacing traditional printed materials (Aldira Lubis et

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al., 2024). The 2013 curriculum emphasizes learning experiences aligned with students' interests and talents, but many students still rely on printed materials, which can be costly compared to digital resources (Putra et al., 2023). Engaging and diverse instructional methods are essential to combat student disengagement and improve learning outcomes (Wicaksana et al., 2020). Moreover, data from PISA shows Indonesia's relatively low literacy scores compared to other countries, highlighting the need for improvement in educational quality ((Ramdhayani, 2023).

The Indonesian Ministry of Health has responded to this need by initiating the development of the "Health Teaching Tools" to support educators in enhancing the quality of health education through the Merdeka Teaching Platform (PMM). This initiative allows teachers to access standardized, up-to-date educational resources officially provided by the Ministry. With easier access to these materials, teachers are expected to improve their competencies and the quality of health education delivered to students.

Building upon the "Health Teaching Tools," this research introduces a dynamic health information system called "KesSekolah." Designed as an extension of the Ministry's initiative, "KesSekolah" focuses on a student-centered approach to health education. This system serves as a bridge between teachers and students, providing a more interactive and flexible learning experience. The key difference between "Health Teaching Tools" and "KesSekolah" lies in their approach: while the former is intended as a resource to support teachers in enhancing health education, "KesSekolah" creates a learning environment that allows students to easily access health information from their teachers. By utilizing both platforms together, it is expected that the school's health services can be significantly improved, and students' health education experience will become more accessible and effective.

In the "Health Teaching Tools," educators are given access to a variety of standardized and up-to-date health education materials. They can explore specific topics, deepen their knowledge, and enhance their skills in delivering the content to students. However, this is often not sufficient, particularly in the context of more flexible and interactive learning. This is why "KesSekolah" was designed specifically to help students acquire health knowledge directly from their teachers.

"KesSekolah" offers flexible learning through a mobile-based application, making it easier for teachers, students, and school health officers to access the learning materials anytime and anywhere. This innovation in educational technology aims to reduce student illness rates early on and supports the government's health programs. To achieve this objective, "KesSekolah" needs to implement the Software Development Life Cycle (SDLC) in its development process. SDLC has been around since the early days of computers, with ENIAC as one of its early foundations (Albhantany et al., 2022; Jeremi et al., 2019). As computer technology, development tools, and modern software development team management concepts have advanced, the practices and methods of the SDLC have continued to evolve (Pebriani et al., 2022; Rafly et al., 2021). These developments have resulted in new methods of software development. Although the approaches of these methods vary, the goal remains the same, which is to ensure that the software development process is effective and efficient (Gurung et al., 2020; Merdekawati & Rahayu, 2022).

The Iterative Model is a method in SDLC that involves an iterative process. Each iteration phase produces a partial version of the software. In each cycle, the software is updated or given additional features based on user feedback (Amri & Aji, 2018; Pradana & Kuswinardi, 2020). This approach allows for incremental improvements and provides the flexibility to adapt to changes that occur more effectively (Popa et al., 2021; Wilson et al., 2023). The Iterative Model has the characteristics of flexibility and adaptability, which allows software development to be carried out continuously by making adjustments based on user feedback (Fauzi, 2018; Gupta et al., 2022).

Method

The Software Development Life Cycle (SDLC) method is a structured framework used to guide all stages of software development from start to finish. The main objective of this methodology is to ensure that the software development process is carried out in an effective and efficient manner (Yuangga & Agustina, 2021). SDLC includes a number of stages, namely the planning stage, requirements analysis, system design, implementation, testing, and maintenance.

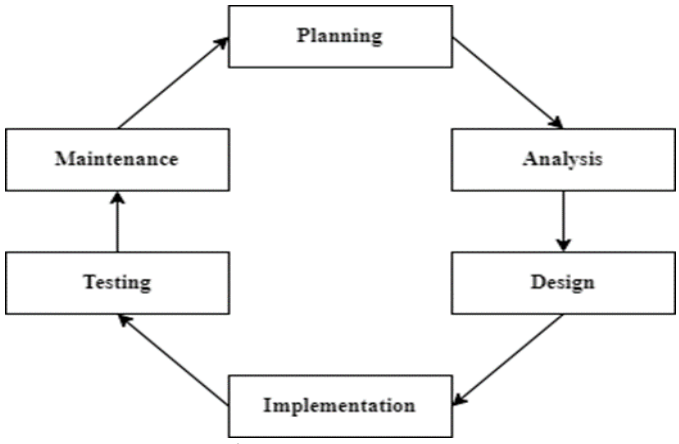

Figure 1. SDLC steps

Planning involves identifying resources, developing a project schedule, and defining the scope of work. In the requirements analysis phase, user needs and required features are explored. Design includes creating a system architecture model and detailed design. The implementation phase consists of software development. Testing is performed to evaluate the functionality and performance of the software. In the implementation phase, the software is used in a production environment. Maintenance includes fixing errors, updating, and improving overall performance (Hryhorivna et al., 2022).

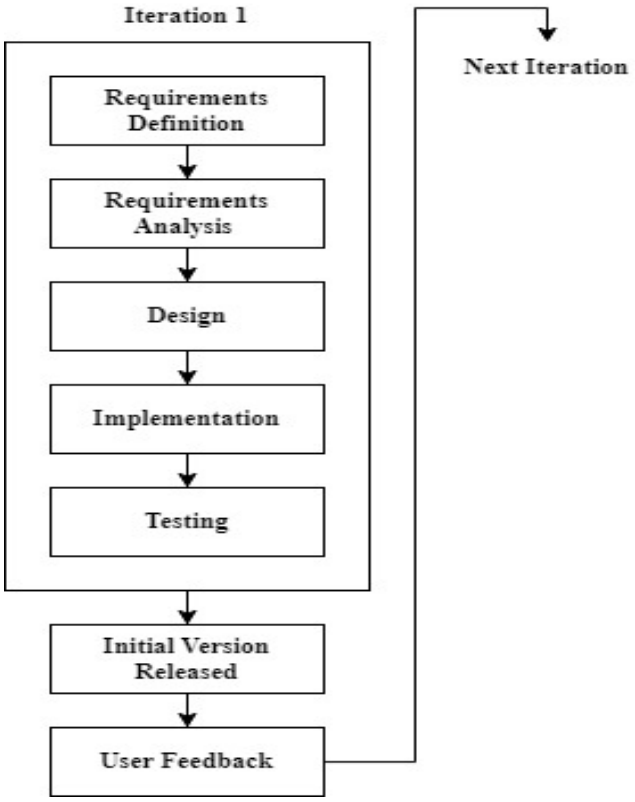

Figure 2. Iterative Model Diagram

Software development using the Iterative Model begins with the requirements gathering phase as the initial step. This process marks the beginning of the first iteration in the development cycle, where analysis of the technical and non-technical needs of the software is carried out. In the initial iteration, the first version of the software product is developed through the design, implementation, and testing stages. After the initial version is launched, user feedback is collected and used to evaluate and improve the product in subsequent iterations, including adjustments based on new requests or needs. As the iteration progresses, missing functionality or features are improved or added based on user feedback. After the iteration is complete, the design, implementation, and testing stages are carried out again, and the latest version of the software is released to obtain feedback from users which will form the basis for the next iteration (Gupta et al., 2022).

This study adopted a quantitative approach to evaluate the development and implementation of a school health information system known as "KesSekolah." The focus of this study was to assess the effectiveness of the system in supporting the implementation of the UKS program in schools in Serang City. Data were collected through distributing questionnaires to experts and analyzing system usage documentation. User Acceptance Testing (UAT) using a Likert scale was conducted to assess the satisfaction and effectiveness of the system from the user's perspective (Ciriello & Loss, 2022). The data obtained were then analyzed quantitatively to evaluate the extent to which the system met user expectations and identify areas that needed improvement. This method was designed to provide an in-depth understanding of the effectiveness of the system in managing data and improving the UKS program

Result and Discussion

The testing was conducted by three testers, who are experts. The testing process was carried out in a specially designed environment to ensure the accuracy and effectiveness of the tested product.

Table 1. Testing Environment

Tester/Examiner	Test Device	Testing Time
Dr. Suhendar S.Pd., M.T.	Mobile phone	August 9, 2024
Yuvita Oktarisa Ph.D	Mobile phone	September 3, 2024
Dr. Lukman Nulhakim, M.Pd	Mobile phone	September 13, 2024

There are two types of feasibility tests conducted, namely the feasibility test of learning media and the feasibility test of learning materials. Each type of feasibility test has different assessment aspects according to its focus and purpose. The feasibility test of learning media assesses the appearance, ease, reliability, and usefulness of the KesSekolah application as a means of delivering and receiving material, while the feasibility test of learning materials assesses the quality, suitability, and usefulness of the material being studied.

The purpose of this test is to find the advantages and disadvantages of the application, so that improvements can be made before being applied in learning. Testing involves two types of feasibility tests, namely the feasibility test of learning media and the feasibility test of learning materials. Each test has different assessment aspects according to their respective focuses and purposes. The feasibility test of

learning media assesses the appearance, ease of use, reliability, and benefits of the KesSekolah application as a means of delivering and receiving material. On the other hand, the feasibility test of learning materials assesses the quality, suitability, and benefits of the material being studied.

Table 2. Assessment of Learning Media Feasibility Test

Assessment Aspects	No	Rated aspect	Rating Scale				
			1	2	3	4	5
Appearance	1	How to present interesting material	0	0	0	1	2
	2	Layout arrangement is appropriate	0	0	0	1	2
	3	Selection of fonts makes it easy to read	0	0	0	1	2
	4	Font size is easy to read	0	0	0	0	3
	5	Text color is right so it is easy to read	0	0	0	0	3
	6	Choosing a suitable background	0	0	0	1	2
	7	Placement of images is good	0	0	0	1	2
	8	Image size is appropriate	0	0	0	1	2
	9	Image quality is good	0	0	0	1	2
	10	Relationship between illustrations, titles, and content of the material is appropriate	0	0	0	1	2
Convenience	11	Accessible at any time	0	0	0	1	2
	12	The features in this media are easy to use without the need for much explanation	0	0	0	1	2
	13	Users can operate this media without difficulty	0	0	0	2	1
	14	Easy to operate and does not require much technical skill	0	0	0	1	2
	15	Navigation in this media is intuitive and easy to follow	0	0	0	2	1
	16	Can find the material or features I need in this media easily	0	0	0	1	2
	17	Easy to access	0	0	0	1	2
	18	Lightweight to run smoothly on mobile devices	0	0	0	0	3
Reliability	19	Stable running	0	0	0	2	1
	20	Responds well	0	0	0	2	1
	21	Rarely experiences failure or disruption	0	0	0	1	2
	22	Can recover quickly if failure or disruption occurs	0	0	0	2	1
Benefits	23	Increase learning motivation	0	0	0	0	3
	24	Stimulate interesting learning activities	0	0	0	0	3
	25	Make it easier for teachers to provide materials	0	0	0	0	3
	26	Make it easier for students to get materials	0	0	0	0	3

Table 3. Assessment of the Feasibility Test of Learning Materials

Assessment Aspects	No	Rated aspect	Rating Scale				
			1	2	3	4	5
Quality	1	Accurate content	0	0	0	0	3
	2	Wide coverage of material	0	0	0	0	3
	3	Information in detailed material	0	0	0	1	2
	4	Selection of interesting material	0	0	0	0	3
	5	Use of clear language	0	0	0	1	2
	6	Students can study the material independently	0	0	0	1	2
Compliance	7	Material in accordance with Core Competencies	0	0	0	1	2
	8	Material in accordance with Basic Competencies	0	0	0	1	2
	9	Material in accordance with learning objectives	0	0	0	1	2
	10	Suitability of material with health topics	0	0	0	2	1
	11	Suitability of material with student conditions and characteristics	0	0	0	2	1
	12	Suitability of material delivery with student development	0	0	0	2	1
Benefits	13	Make it easier for students to understand material about health	0	0	0	0	3
	14	Clarify the delivery of information	0	0	0	0	3
	15	Support the learning process	0	0	0	1	2

The table and diagram above show the examiner's response to each aspect. The responses given by the examiner are collected, so that the response data shows how many examiners choose a certain value.

The response value data obtained is calculated to obtain the percentage of achievement. The calculation of the percentage of achievement involves calculating the

response value and the maximum value for each parameter.

The response value is the result of the number of responses in each interval multiplied by the value in that interval. So it is formulated as follows (Formula 1).

$$Response\ value = (Strongly\ Disagree\ Response \times 1) + (Disagree\ Response \times 2) + (Neutral\ Response \times 3) + (Agree\ Response \times 4) + (Strongly\ Agree\ Response \times 5) \quad (1)$$

The maximum value is the result of the number of responses multiplied by the maximum value, which is 5. So it is formulated as follows (Formula 2).

$$Maximum\ Value = Number\ of\ Responses \times 5 \quad (2)$$

The percentage of achievement is the ratio of the response value to the maximum value. So it is formulated as follows:

$$Percentage\ of\ Achievement = \frac{Response\ Value}{Maximum\ Value} \times 100\% \quad (3)$$

The percentage of achievement is interpreted descriptively, to see the feasibility of certain aspects and overall, based on the examiner's assessment. The following is an interpretation of the percentage of achievement.

Table 4. Classification of Percentage of Achievement

Percentage of Achievement	Interpretation
20% - 39,99%	Very Unworthy
40% - 59,99%	Not worthy
60%	Undecided
60,01% - 80%	Worthy
80,01% - 100%	Very worthy

The percentage of achievement is interpreted according to the table above, because it considers each value of the responses given. These values are then calculated to provide a descriptive interpretation of the level of eligibility.

If all statements are answered with a Neutral response, then the percentage of achievement reaches 60%, which indicates that the level of eligibility is in the Undecided category, because the assessment aspects have not been fully met. If the responses given range from Disagree to Strongly Disagree, the percentage of achievement will be below 60%, which is 59.99% or less, and this is interpreted as Not Eligible. If the examiner gives an Agree response to all statements, then the percentage of achievement will reach 80%, which indicates that the application is declared Eligible, because all aspects of the assessment have been met. Meanwhile, if the responses range from Agree to Strongly Agree, the percentage of achievement will be more than 80%, precisely 80.01% or more, which means the level of eligibility is Very Eligible.

The following are the calculation results for Response Value, Maximum Value, Percentage of Achievement, and it's Interpretation for each parameter:

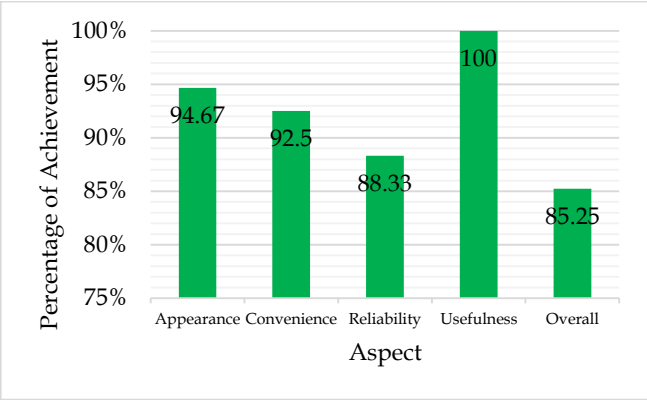

Figure 3. Percentage Diagram of Learning Media Feasibility Test Achievement

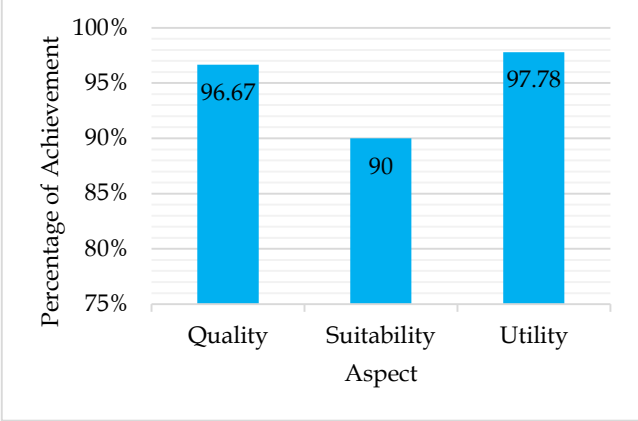

Figure 4. Percentage Diagram of Learning Material Feasibility Test Achievement

Table 5. Test Interpretation Results

Eligibility	Aspect	Interpretation
Learning Media	Appearance	Very Feasible
	Convenience	Very Feasible
	Reliability	Very Feasible
	Usefulness	Very Feasible
Learning Materials	Quality	Very Feasible
	Suitability	Very Feasible
	Utility	Very Feasible

The results of the User Acceptance Testing (UAT) yielded very satisfactory outcomes. The health information system developed, known as KesSekolah, successfully met high standards and user expectations. The highest evaluation of the usefulness of the learning media, which was 100%, indicated that KesSekolah was very effective as a tool to support the learning process.

This score demonstrates that the system plays a significant role in supporting the School Medical (UKS) program, providing valuable tools for managing school health.

Regarding system reliability, the test results showed a score of 88.33%, reflecting that users consider the system sufficiently reliable for daily use with minimal issues. This aspect of reliability is critical to ensure that the system functions consistently and efficiently in managing health data, which is vital for the success of the UKS program.

The system's interface received a score of 94.67%, suggesting that its design meets aesthetic and usability standards, delivering a comfortable user experience. The ease of use also scored positively at 92.5%, indicating that users found the system user-friendly and easy to navigate, which is essential for ensuring smooth adoption by its target users.

The quality of the learning materials was evaluated at 96.67%, indicating that they were considered of very high quality and useful to users. This confirms that the materials align with educational standards and contribute significantly to the health education process. The material relevance score was 90%, meaning the materials were generally relevant to educational needs in schools, although there is still room for improvement to better suit various educational contexts.

Overall, this test indicates that the health information system developed has met excellent standards and does not require further improvements. The system effectively supports and enhances the UKS program at SMP Kota Serang, and it is hoped that it will provide significant benefits for both teachers and students while contributing to improving school health quality. The success of this system highlights the effectiveness of the development approach taken and the system's alignment with user needs.

In the context of Industry 4.0 and the potential emergence of Industry 5.0, the advancements in digital technology that have played a critical role in developing systems like KesSekolah should be noted. Technological progress, especially in computing, has enabled faster and more complex data processing, which is essential for developing efficient systems for data management, such as this health information system (Afifulloh & Cahyanto, 2021). Moreover, the rise of the cloud computing technologies has further supported the development of such digital solutions by providing real-time data access and scalable infrastructure without the need for substantial physical infrastructure (Lee & Shvetsova, 2019).

The ongoing digital transformation aligns with the goals of the UKS program, enabling a more integrated, data-driven approach to school health management. This transition reflects the broader societal changes prompted by the ongoing shifts in the global technological landscape, which aim to enhance productivity, efficiency, and the quality of life across various sectors, including education (Nurhayati et al., 2019). The successful deployment of the KesSekolah system demonstrates the potential of digital technologies to improve education, particularly by providing flexible, efficient, and accessible tools that enhance learning and administration processes in schools.

Conclusion

Based on the results obtained, it is concluded that the health information system developed, "KesSekolah", has successfully met the eligibility according to learning media experts and learning material experts. This system shows very good quality in terms of learning media eligibility, reliability, appearance, and ease of use. The highest assessment on the usefulness of learning media, shows that this system is effective in supporting and improving the School Medical (UKS) program. With high scores on various aspects, including system reliability and ease of use, it is certain that this system is ready to be widely implemented to improve health management in schools. The implementation of this system is expected to provide significant benefits, both for teachers and students, and contribute to improving the quality of health in the school environment.

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Author Contributions

Vina Oktiarina: writing-original draft preparation, result, discussion, methodology, conclusion; Yayat Ruhiat, Ujang Jamaludin : analysis, proofreading, review, and editing.

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Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

References

Afifulloh, M., & Cahyanto, B. (2021). Analisis Kebutuhan Pengembangan Bahan Ajar Elektronik di Era Pandemi Covid-19. *Jurnal Pendidikan Dasar Indonesia*, *6*(2). https://doi.org/10.26737/jpdi.v6i2.2515

Albhantany, M. R., Kholiq, A., Anshori, A., Hizkia, J., & Ringo, S. (2022). Implementasi Sistem Informasi Akademik Berbasis Web (Studi Kasus di Universitas Tanri Abeng Jakarta). *Jurnal Sistem Komputer dan Kecerdasan Buatan (SisKom-KB)*. *1*, 37–47. https://doi.org/10.47970/siskom-kb.v6i1.325

Aldira Lubis, N., Fadila Ramadhani, P., Salmanda, D., Mukhlasin, A., & Fadlan. (2024). Implementasi Teknologi Informasi Dan Komunikasi Dalam Manajemen Organisasi Pendidikan. *Jurnal Ilmu Pendidikan Dan Matematika*, *1*, 10–14. https://doi.org/10.62383/katalis.v1i3.493

Amri, I., & Aji, A. P. (2019). Rancang bangun sistem aplikasi penerimaan siswa baru menggunakan metode agile di smk modellink kabupaten sorong. *Insect (Informatics and Security): Jurnal Teknik Informatika*, *4*(2), 51–57. https://doi.org/10.33506/insect.v4i2.557.

Anita, & Astuti, S. I. (2022). Digitalisasi Dan Ketimpangan Pendidikan: Studi Kasus Terhadap Guru Sekolah Dasar Di Kecamatan Baraka. *Jurnal Pendidikan Dan Kebudayaan*, *7*(1), 1–12. https://doi.org/10.24832/jpnk.v7i1.2509

Ciriello, R., & Loss, S. (2022). *Cognitive Biases in User Acceptance Testing of Cloud Software: A Vicious Cycle of User Disengagement?* https://ssrn.com/abstract=4102953

Fauzi, A. I. (2018). *Rancang Bangun Sistem Informasi Akademik (Studi Kasus : Mi Jam'iyyatul Khair)*. Universitas Islam Negeri Syarif Hidayatullah.

Firdaus, H., & Anriani, N. (2022). Evaluasi Program Praktek Kerja Industri Pada Sekolah Menengah Kejuruan Menggunakan Model CIPP. *Jurnal Ilmiah Profesi Pendidikan*, *7*(4). https://doi.org/10.29303/jipp.v7i4.1011

Gupta, S., Banga, J., Dabas, S., & Bhatia, Dr. M. K. (2022). A Comprehensive Study of Software Development Life Cycle Models. *International Journal for Research in Applied Science and Engineering Technology*, *10*(12), 354–358. https://doi.org/10.22214/ijraset.2022.47868

Gurung, G., Shah, R., & Jaiswal, D. P. (2020). Software Development Life Cycle Models-A Comparative Study. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 30–37. https://doi.org/10.32628/cseit206410

Handoyono, N. A., & Purnomo, S. (2020). Identifikasi Kebutuhan Pembelajaran Praktik Servis Sepeda Motor dengan Konsep Teaching Factory. *Wacana Akademika: Majalah Ilmiah Kependidikan*, *4*(2).

Hryhorivna, R. T., Serhiivna, T. V., & Mykolayovych, K. D. (2022). Life cycle models, principles and methodologies of software development. *International Scientific and Practical Conferense*, 394–401.

Jeremi, J., Dewi, L. P., Wahyudi, K., Petra, U. K., & Siwalankerto, J. (2019). *Sistem Informasi Akademik Berbasis Web untuk Mendukung Pembelajaran Jarak Jauh di SD Anak Bangsa*.

Merdekawati, A., & Rahayu, L. K. (2022). Sistem Pengolahan Nilai Siswa Secara Online. *Jurnal Teknik Informatika Kaputama*, *6*(2).

Pebriani, Y. D., Studi, P., Informasi, S., Darma, U. B., & Palembang, K. (2022). *Aplikasi Akademik Berbasis*. *1*(14), 392–404.

Popa, O., Mihele, C., Făgărăşan, C., & Pîslă, A. (2021). Leadership approach towards Agile, Waterfall and Iterative implementation of the software development products. *IOP Conference Series: Materials Science and Engineering*, *1169*(1), 012017. https://doi.org/10.1088/1757-899x/1169/1/012017

Pradana, Y. F., & Kuswinardi, W. (2020). Rancang Bangun Aplikasi Android Penilaian Kinerja Guru Dengan Metode Agile Development Di Man 1 Kabupaten Malang. *Jurnal Terapan Sains dan Teknology.* *2*(1), 182–191. https://doi.org/10.21067/jtst.v2i3.4177

Putra, Y. I., Fadli, R., & Dahry, S. (2023). Meta analyzing the ease of use of e-modules in learning. *Jurnal Inovasi Teknologi Pendidikan*, *10*(4), 338–343. https://doi.org/10.21831/jitp.v10i4.62229

Rafly, M., Jepri, J., & Hartuti, P. M. (2021). Sistem Informasi Akademik Sdn Kebon Pala 07 Pagi Berbasis Java. *Seminar Ristek*. 904–910. https://doi.org/10.30998/semnasristek.v5i1.5095

Ramdhayani, E. (2023). Pentingnya Literasi Dalam Menumbuhkan Nilai-Nilai Karakter Di Era Digital. *Jurnal Kependidikan*, *7*(2), 67–73.

Shabir, A. (2022). Ujicoba Penggunaan Teknologi Virtual Reality sebagai Media Pembelajaran. *Jurnal Pendidikan Tambusai*, *6*(1). https://www.youtube.com/watch?v=I3E7LtxySmk&list=PLVefD23kvZxXI1xesJLXF4BwC

Wicaksana, E. J., Lestari, W., Tanti, L. A., & Odrina, R. (2020). Efektifitas Pembelajaran Menggunakan Moodle Terhadap Motivasi Dan Minat Bakat Peserta Didik Di Tengah Pandemi Covid -19. *Jurnal Edukasi Dan Teknologi Pembelajaran*, *1*(2).

Wilson, V., Swanlund, S., Kapoor, V., Gabbard, M., & Srinath, C. (2023). Software Development Life Cycle. *Journal of the Society for Clinical Data Management*, 1–24. https://doi.org/10.47912/jscdm.343

Yuangga, J. R., & Agustina, R. (2021). *Rancang Bangun Sistem Monitoring Akademis Siswa Berbasis Android Di SDN 01 Tlogosari*. *3*(1), 34–41.