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Development of a validation system (SVeR) based on the open journal system for testing the validity of learning tools

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ABSTRACT

The prevalence of unvalidated learning tools highlights a critical issue stemming from inefficient manual validation processes. This research addresses this by developing a valid, practical, and effective validation system (SVeR) for learning tools, integrated with an open journal system. Employing the Waterfall development model, the study involved 2 expert validators and 16 lecturers to assess the system's practicality and effectiveness. Data analysis utilized Aiken's V for validity, percentage techniques for practicality, and the kappa moment test for effectiveness. Results indicate SVeR possesses very high validity, with a content validity coefficient of 0.804. Practicality was also very high at 94.31% (convenient category), and effectiveness reached a kappa moment of 0.939, categorized as very high. These findings confirm that SVeR offers excellent validity, practicality, and effectiveness for assessing learning device suitability. Future research should test SVeR across institutions, compare systems, evaluate integration, and expand its applications.

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INTRODUCTION

Learning is one of the processes within the scope of education that will determine graduates' achievements and competency standards. As an essential process, learning requires several components to be present to lead to achieving each goal (Aziira et al., 2023; Muhsinin & Fatmawati, 2020). The teacher and the equipment are supporting components that make learning holistic, continuous, and targeted (Firdaus et al., 2023; Helmina et al., 2023). Teachers are important because the learning process will run if the guides and facilitators are appropriate to the scientific field, as with learning tools. Teachers and learning tools are determinants in achieving graduate competency standards at any level of education. They are launched not only at the basic education level but also at the higher education level.

In this case, semester learning plans are mandatory learning tools in higher education units. The obligation to make learning implementation plans in higher education aims to achieve graduate learning achievements reliably (Aziira et al., 2023; Muhsinin & Fatmawati, 2020). The importance of learning plans as one of the tools created by teachers is regulated in National Higher Education

Standards Number 3 of 2020, which states that learning tools (RPS) are semester learning process plans that are prepared for learning activities during one semester to meet the learning outcomes of graduates assigned to subjects. Studying. Apart from that, at several points, it is also mentioned that the RPS preparation process is also regulated in terms of its design so that, in the end, the RPS that will be produced is an RPS that is validated by a group of people who are authorised to assess and validate the RPS.

The RPS validation process ensures that the learning plans prepared meet the graduate learning outcomes assigned to the courses and that the learning process remains on track to realise the Institute's vision by the planned graduate profile. Several studies state that the validation process is carried out to check and measure the accuracy of the learning outcomes assigned to courses (Arikunto, 2012; Ayriza, 2013; Budiastuti & Bandur, 2020; Saputri & Guspatni, 2021). The same thing was also stated: the validation process in the RPS was carried out to assess the extent of accuracy and thoroughness in carrying out its functions to achieve graduate learning outcomes. From the explanation above, it is clear that the validation process for the RPS is essential to make the RPS a tool that can serve as a guide for lecturers in carrying out lectures so that they achieve the expected goals.

Unfortunately, the RPS validation process described above does not correspond to what happens in the field. Based on the survey results from the quality assurance center of the Faculty of Tarbiyah and Teacher Training, Mahmud Yunus State Islamic University, Batusangkar, it was found that only 28% of the RPS were validated from the total number of RPS in the odd semester 2023/2024. Based on the results of interviews conducted by several lecturers, most of the lecturers did not understand the validation flow and the validator team of the RPS they had created. Another finding based on an interview with one of the study program's quality control groups stated that difficulties in corrections were still carried out manually. The return process did not have an easy and effective flow, so the RPS validation process was often not carried out optimally. The discovery of this problem is one of the essential points that must be resolved so that the RPS used can be ensured in measuring the achievement of the burden of Graduate Learning Outcomes imposed on courses.

Problems related to the low number of validated RPS in the Tarbiyah and Teacher Training Faculty, especially in elementary school teacher education study programs, require appropriate solutions to alleviate the problem. Several things can be done, including developing an RPS validation system that is easily accessible to all groups, both the lecturers who create it and the verification team (Munthe et al., 2019; Salamun & Arisandi, 2020). Several related research results state that developing digitally integrated systems, such as websites, effectively solves the problem of validating and collecting documents (Darmini & Putra, 2009; Prastika, 2022). The same research also states that an RPS validation system needs to be created to facilitate the flow of communication between the validator team and users or creators so that it has a clear workflow, meaning that it is necessary to develop a centralized and integrated system (Apriany & Setiawan, 2022; Muslihudin et al., 2019; Nurafni et al., 2022).

The increasing prevalence of unvalidated learning tools underscores a critical need for efficient validation processes, moving beyond manual and often ineffective methods. While prior research has broadly explored the development of digital validation systems (Fajrin et al., 2016; Handayani et al., 2019; Setiawan et al., 2023; Bamary et al., 2022; Foumani & Goudariz, 2021; Kalavaini, 2021; Lialestani et al., 2021). This study distinguishes itself by specifically developing a Learning Tool Validation System (SVeR) based on an Open Journal System (OJS) integrated with the e-campus platform at Universitas Islam Negeri Mahmud Yunus Batusangkar. The novelty of this research lies in its specific contextual implementation and rigorous validation within a defined academic environment, namely UIN (State Islamic University) Mahmud Yunus Batusangkar, coupled with the strategic integration of OJS and e-campus to enhance update efficiency, optimize resource utilization, and ensure ubiquitous accessibility.

To ensure the system's relevance and acceptance, this research involved two expert validators who provided comprehensive assessments of SVeR's content and construct validity, alongside sixteen lecturers from UIN Mahmud Yunus Batusangkar as subjects for practicality and effectiveness testing. The primary focus of these results is to demonstrate that SVeR is not only theoretically valid

but also highly practical and effective in real-world application by lecturers within this specific higher education institution. This approach significantly differentiates the present study from previous works, offering robust empirical evidence for SVeR's viability as an innovative solution for learning tool validation in higher education.

In higher education, the course syllabus—often formally documented as a Semester Learning Plan (Rencana Pembelajaran Semester - RPS)—is a critical document that serves as an academic contract between the instructor and students. It is the primary guide for course delivery. The development of a high-quality syllabus is foundational to creating a learning experience that is structured, measurable, and aligned with the Program Learning Outcomes (PLOs) established by the academic department (Allen, 2004). An effective syllabus extends beyond a mere list of topics; it meticulously details course learning outcomes (CLOs), instructional methods, assessment strategies, and a systematic timeline (Fink, 2013). The process of ensuring the quality and appropriateness of a syllabus before its implementation is known as validation. Syllabus validation involves a review by subject matter experts or a quality assurance team to assess the alignment between program outcomes, course outcomes, instructional materials, and the evaluation system (Fink, 2013). This process ensures that the instructional plan is not only valid in its content but also constructively designed to facilitate student competency development. A well-documented validation process serves as evidence of institutional accountability and is an integral part of the quality assurance cycle in higher education (Biggs & Tang, 2011).

With the advancement of digital technology, numerous academic processes, including scholarly publishing, have migrated to online platforms. Open Journal Systems (OJS) is one of the most widely used web-based journal management platforms globally. Developed by the Public Knowledge Project (PKP), OJS was designed to facilitate the entire editorial workflow online, from author submissions and peer review to editing and final publication (Willinsky, 2005). The primary advantage of OJS lies in its structured and well-documented workflow, enabling editors to assign manuscripts to reviewers, set deadlines, manage revisions, and maintain a complete record of all communications within a centralized dashboard. Its flexibility also allows for customization of various components, including review forms, and its open-source nature has fostered widespread adoption and adaptation for various contexts beyond traditional journal publishing, such as conference management (Stranack, 2006). However, its adaptation as a validation system for academic documents like a course syllabus remains a largely unexplored area.

The validation process for a course syllabus in a university setting shares a striking workflow similarity with the peer-review process of a scholarly journal. In both scenarios, there is an "author" (the instructor developing the syllabus), an "editor" (the head of the department or curriculum team), and a "reviewer" (the validator or quality assurance unit). The instructor uploads a draft syllabus, the editor assigns it to a validator for assessment based on institutionally approved criteria, and the validator provides scores and qualitative feedback, which then forms the basis for the instructor's revisions. Currently, this validation process is often conducted manually using printed forms or disparate digital platforms (e.g., email and Google Forms). This approach frequently presents challenges related to instrument standardization, tracking revision history, and systematic archiving, which can complicate audits and accreditation processes (Biggs & Tang, 2011). The absence of an integrated system can impede the efficiency and transparency of the quality assurance cycle.

Addressing this gap, the present study proposes the adaptation of Open Journal Systems (OJS) into an electronic Validation System (SVeR) for course syllabi. By modifying user roles and customizing the review forms within OJS, the syllabus validation workflow can be managed in a more structured, transparent, and efficient manner. This system is envisioned to document every stage of the validation—from initial draft submission and validator assignment to instrument completion and final approval—within a single, integrated platform. This innovation offers a practical solution for higher education institutions to strengthen their internal quality assurance systems (SPMI) related to instructional planning.

METHOD

The Validation System (SVeR) based on the e-campus integrated open journal system was developed within the research and development (R&D) framework by applying the waterfall model, with four stages: needs analysis, system design, system implementation, and system testing. This system was developed using PHP programming and the Codeigniter framework.

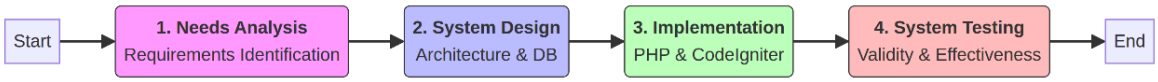

Figure 1. Research Framework

This system design was created to suit user needs so that it is more targeted. The development method is used to develop and measure the validity, feasibility, and effectiveness of the product being developed in this research. Learning is based on an open journal system that is integrated with e-campus. This research involved two primary groups of participants: two media expert validators and 16 lecturers as product trial participants. The media expert validators were selected based on their expertise in educational technology and learning system development to evaluate the feasibility of the developed system. The 16 lecturers were selected using purposive sampling based on specific criteria, namely lecturers who were actively involved in preparing, managing, or validating learning devices and had experience in using academic information systems. These lecturers were directly involved as users of the developed e-RPS Validation System (SVeR) to evaluate its practicality and effectiveness in supporting the learning device validation process. Secondary data sources were obtained from previous research studies on digitalizing academic information systems.

The types of instruments used in this research are interview guides and questionnaires. The interview guide contains several questions for exploring user information and analyzing user needs in the learning device validation process. The data collection instruments used in this study consisted of a semi-structured interview guide, an application validity questionnaire, a practicality questionnaire, and an effectiveness questionnaire. Each instrument was developed according to the objectives and stages of the research. The semi-structured interview guide was used during the needs analysis stage. It was intended to obtain qualitative information regarding the existing RPS validation process, the difficulties experienced by users, the information required during validation, and the expected features of the e-RPS Validation System, hereafter referred to as SVeR.

Table 1. Need Assessment Interview Guide

No.	Aspect Explored	Information Collected
1	Existing Validation Process	Procedures and stages currently used in validating RPS documents
2	User Difficulties	Problems encountered during submission, review, revision, and approval of RPS documents
3	Information Requirements	Information required by users during the RPS validation process
4	System Requirements	Features, menus, notifications, and workflows expected in SVeR
5	User Expectations	Expected benefits, ease of use, and efficiency of the developed system

The application validity questionnaire was administered to expert validators to assess the feasibility of SVeR. The instrument covered three main aspects, namely usefulness, design, and system operation. The questionnaire consisted of 17 items.

Table 2. Validity Questionnaire Blueprint

No.	Aspect	Indicator or statement
1	Usefulness	The OJS-based e-RPS Validation System facilitates the RPS validation process. The system facilitates the input of validated RPS documents into the e-campus platform. The system improves time and work efficiency. The system facilitates the uploading of RPS documents to the e-campus platform.
2	Design	Appropriateness and readability of the font size Appropriateness of the font type

No.	Aspect	Indicator or statement
		Appropriateness of the colour composition
		Appropriateness of the interface and background design
		Clarity of the menus and system navigation
3	System Operation	Ease of understanding the validation format and workflow
		Availability and clarity of system-use instructions
		Availability of a standardized RPS format and validation guidelines
		Ease of understanding the format of information generated by the system
		Ease of logging into the system
		Consistency between the requested input and the system output
		Speed of the system in responding to user requests
		Ease of entering user data and uploading documents

The practicality questionnaire was administered to users after they had operated SVeR. This questionnaire was used to assess whether the developed system could be used easily, efficiently, and conveniently in the actual RPS validation process.

Table 3. Practicality Questionnaire Blueprint

No.	Aspect	Indicator/Statement
1	Correctness	The SVeR based on Open Journal System provides convenience in the RPS validation process.
		The SVeR based on Open Journal System facilitates the input of RPS documents into the e-campus system.
		The use of SVeR based on Open Journal System is appropriate for improving the effectiveness of the RPS validation process.
4	Efficiency	The use of SVeR based on Open Journal System improves time and effort efficiency in the validation process.
		SVeR facilitates users in uploading RPS documents during the validation process.
		SVeR helps users complete the RPS validation process more effectively
7	Usability	The font size used in SVeR is appropriate and easy to read
		The font type used in SVeR is appropriate and easy to understand
		The colour composition used in SVeR is appropriate and comfortable for users.
		The design and background selection of SVeR support user convenience
		The menus and navigation features of SVeR are clear and easy to understand
		The validation format and workflow provided by SVeR are easy to operate.
		The user instructions provided in SVeR are clear and understandable.
		The standardized RPS format and validation guidelines help users perform the validation process.
		The output information generated by SVeR is easy to understand
		The login process in SVeR is easy to perform.
		SVeR facilitates users in entering data and uploading user documents.

The effectiveness questionnaire was administered to lecturers or users who had operated SVeR. The instrument was used to measure the perceived contribution of the system to the effectiveness of the RPS validation process. The questionnaire consisted of seven items grouped into two aspects, namely the effectiveness of system implementation and system utilization.

Table 4. Effectiveness Questionnaire Blueprint

No.	Aspect	Indicator/Statement
1	Process Effectiveness	The e-RPS Validation System helps lecturers obtain certainty regarding the validation status of learning devices.
		The e-RPS Validation System assists lecturers in completing the validation process of learning devices.
2	Content Effectiveness	The e-RPS Validation System improves the quality of RPS documents produced by lecturers.
3	Results Effectiveness	The e-RPS Validation System increases the number of validated RPS documents.

No.	Aspect	Indicator/Statement
4	Feedback Effectiveness	The e-RPS Validation System is beneficial for supporting users' work activities.
		Users are satisfied with utilizing the e-RPS Validation System to facilitate their work.
		Users intend to utilize the e-RPS Validation System regularly in the future.

While the Validity Instrument focuses on expert evaluation of the system's design and functionality, the Practicality Instrument assesses the system's real-world utility, ease of use, and overall benefit from the perspective of those who regularly interact with it. The data that has been collected is then analyzed in 3 ways, namely product validity analysis, product practicality analysis, and product effectiveness analysis. Analysis of the validity of the product that has been developed is carried out by processing data using Aiken's V formula as follows:

$$V = \frac{s}{n(c-1)} \quad (1)$$

Note:
V = Content validity coefficient, which is the rater agreement index regarding the validity of each criterion.
s = The lowest score reduces the score assigned to each rater in the category used, with (s = r –lo, where r is the rater's chosen score, and lo is the lowest score in the scoring category)
n = Number of raters
c = The number of categories that raters can choose from

The results of calculating the content validity coefficient (V) are expressed using the criteria in the following Table 5.

Table 5. Product Validity Criteria

No.	Validity Results (V)	Validity Criteria
1	0.76 – 1.00	Very High
2	0.51 – 0.75	High
3	0.26 – 0.50	Medium
4	0.00 – 0.25	Low

The practicality criteria used in this research are the percentage technique proposed by A. Muri Yusuf. In this technique, the researcher only looked for the percentage of teachers' needs in implementing the Pancasila student profile in elementary schools from each respondent's school origin. The formula used in this analysis technique is as follows.

$$P = \frac{f}{n} x100 \quad (2)$$

Note:
P = Percentage sought
f = Frequency total score
n = Maximum value

The practicality criteria for the product being developed are shown in Table 6 below.

Table 6. Product Practicality Criteria

No.	Percentage (%)	Practicality Criteria
1	81 – 100	Very Practical
2	61 – 80	Practical
3	41 – 60	Quite Practical
4	21 – 40	Less Practical
5	0 – 20	Not Practical

The analysis of system effectiveness data is seen from four dimensions: content, process, results, and feedback. Indicators are determined for each dimension. The data collected is analysed using the moment kappa formula as a reference.

$$Moment\ Kappa\ (k) = \frac{\rho - \rho e}{1 - \rho e} \quad (3)$$

Note:
K = Kappa moment that shows the effectiveness of the product
p = The realised proportion is calculated by dividing the number of values the user gives by the maximum number of values.
pe = The proportion that is not realised is calculated by subtracting the maximum value from the total value given by the validator, divided by the maximum value.

The criteria for calculating effectiveness tests can be seen in Table 7 below.

Table 7. Product Effectiveness Category

No.	Effectiveness Ratio	Achievement Level
1	0.81 – 1.00	Very High
2	0.61 – 0.80	High
3	0.41 – 0.40	Medium
4	0.21 – 0.40	Low
5	0.01 – 0.20	Very Low
6	≤ 0.00	Ineffective

RESULTS AND DISCUSSION

Results

Needs Analysis Stage

An initial needs analysis was conducted to determine user needs and market share related to the open journal system-based e-RPS validation system. The needs analysis was conducted by interviewing several lecturers in the PGMI (Primary Madrasah Teacher Education) study program regarding validation process issues and initial survey descriptions recorded on e-campus, which were tracked through the quality assurance centre account. The results of the number of learning devices uploaded and validated in the even semester 2023/2024 obtained the following statistical data.

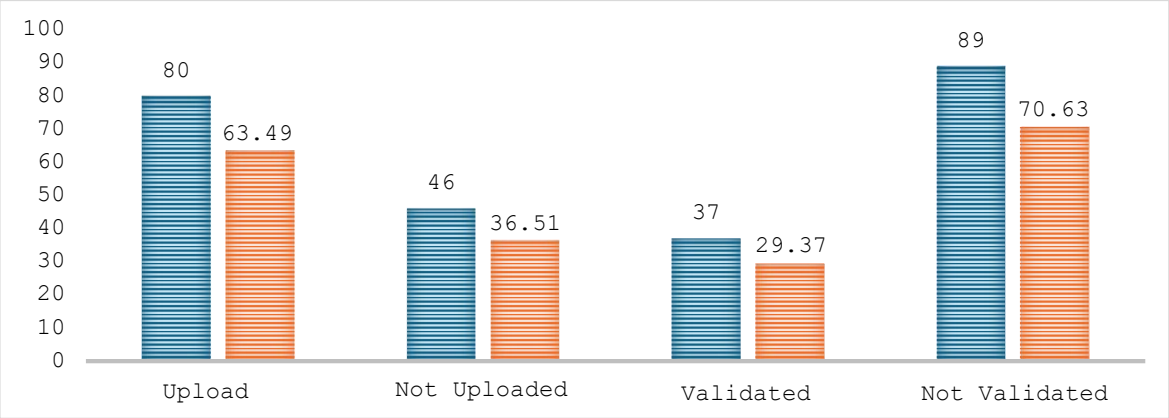

Figure 2. Number of Validated and Unvalidated Learning Devices

Figure 2 shows a graph of the number and percentage of RPS uploaded and validated by lecturers who teach in the elementary school teacher education study program. Based on Graph 2, it can be seen that there are 126 lecturers, 37 of whom have used validated learning tools, while 89 lecturers, or 70.63%, use learning tools that have not been validated. This figure shows that the number of learning tools that are not validated has reached a very high level because more than half of the lecturers do not have measurable/validated learning tools. The finding of many learning tools

that are not validated means that the entire learning process is not following the learning outcomes stated in the study program curriculum.

The high number of learning devices that are not validated indeed has causes that need to be analyzed. Based on the results of interviews conducted by several lecturers who teach in the elementary school teacher education study program, it was stated that the majority had difficulties and did not know the lecturers who would validate the learning tools. This is as per the results of interviews conducted by researchers with WR lecturers, as follows.

"*More precisely, I don't know which lecturer will validate it, so I just upload it and give it to the student." (W1/19 Juli 2024)*

"I don't know who to validate the learning tools with, nor do I know the lecturer." (W2/02 Agustus 2024)

In addition, several other arguments related to the cause of the findings that most lecturers did not validate were because they did not know the validation process and flow that had to be carried out. In contrast, other findings stated they did not have time to go to campus to validate manually. As stated in the interview results by lecturer ES, these findings are as follows.

"*Because I am from Padang City, I only go to campus when teaching; I am confused about where to validate it, with whom, or to the study program; sometimes, I only discuss it with senior lecturers who happen to teach the same course". (W3/04 Agustus 2024).*

Based on the results that have been found, it can be concluded that the ignorance of the personnel who will review and the validation process flow is the main problem of the high number of unvalidated RPS. This means that the RPS validation process requires a unique strategy that can accommodate the difficulties and causes of the issues of unvalidated RPS used by lecturers. The most crucial thing at this time, and one of the needs to accommodate the problems that have been found, is to develop a flexible validation system that can be accessed by all lecturers, saving time, energy, and materials.

System Design Stage

This stage is done by designing the architecture, including sequence and class diagrams, including conceptual data models (CDM) and physical data models (PDM), component design by creating logic flows in pseudocode form, and interface design as a rough description of the system interface. We are designing sequence and class diagrams, including conceptual and physical data models. Some examples of displays from sequence and class diagrams can be seen in Figure 3.

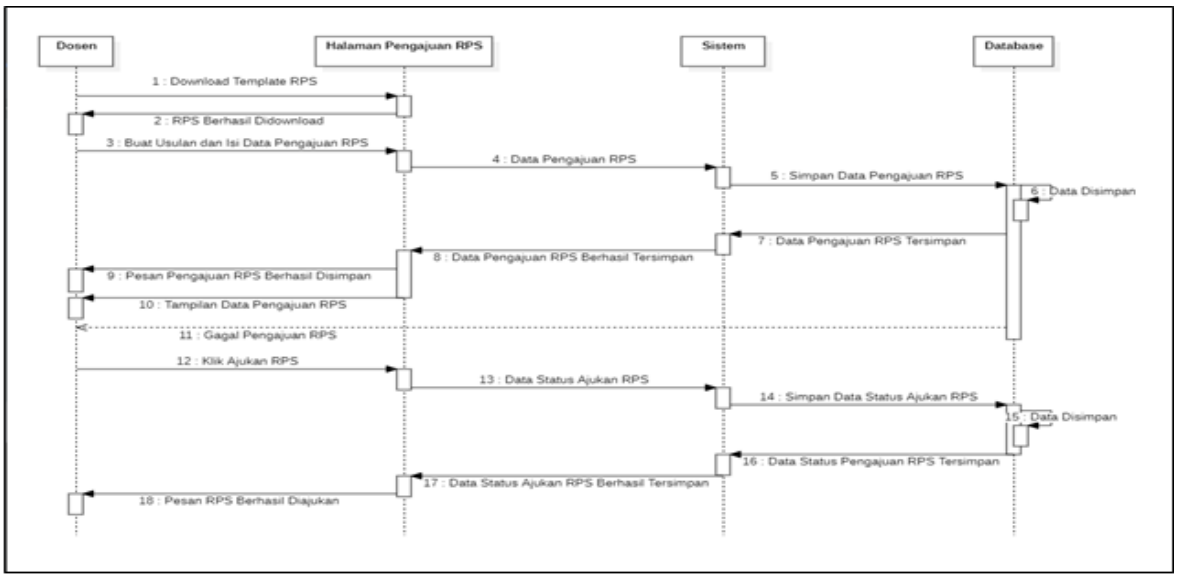

Figure 3. Learning Device Assessment Submission Flow by Lecturers via the System

Based on Figure 3, it can be seen how the flow and process of submitting learning devices to be validated through the SVeR that has been developed. The figure above illustrates the flow of the learning device input process carried out by lecturers, with the flow of lecturers downloading the learning device template and inputting courses, curriculum, study programs, and scientific groups. After this process is completed, the learning device will enter the admin database before being submitted to a reviewer, which is taken based on lecturers who are members of a particular scientific group. The learning device has been input and submitted by the admin. Then, a reviewer is appointed to carry out the validation process and assessment of the learning device that the lecturer has input. In the following process, the reviewer provides an evaluation of the feasibility of the learning device with the assessment notes that have been determined by the system. The following is a sequence diagram of the flow of the device validation process carried out by the Reviewer, as seen in Figure 4.

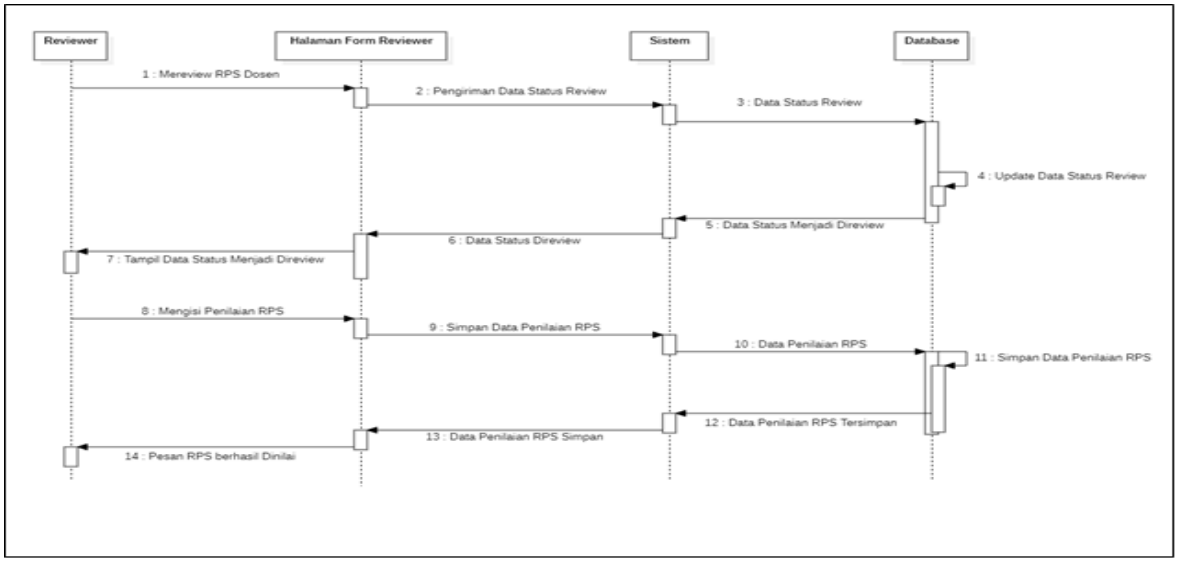

Figure 4. Learning Device Assessment Process Flow by Reviewers via the System

Figure 4 shows the learning device assessment process flow contained in the developed system, SVeR. The reviewer validates after the admin appointments. The system design stage also involves creating a class diagram, as seen in Figure 5 below.

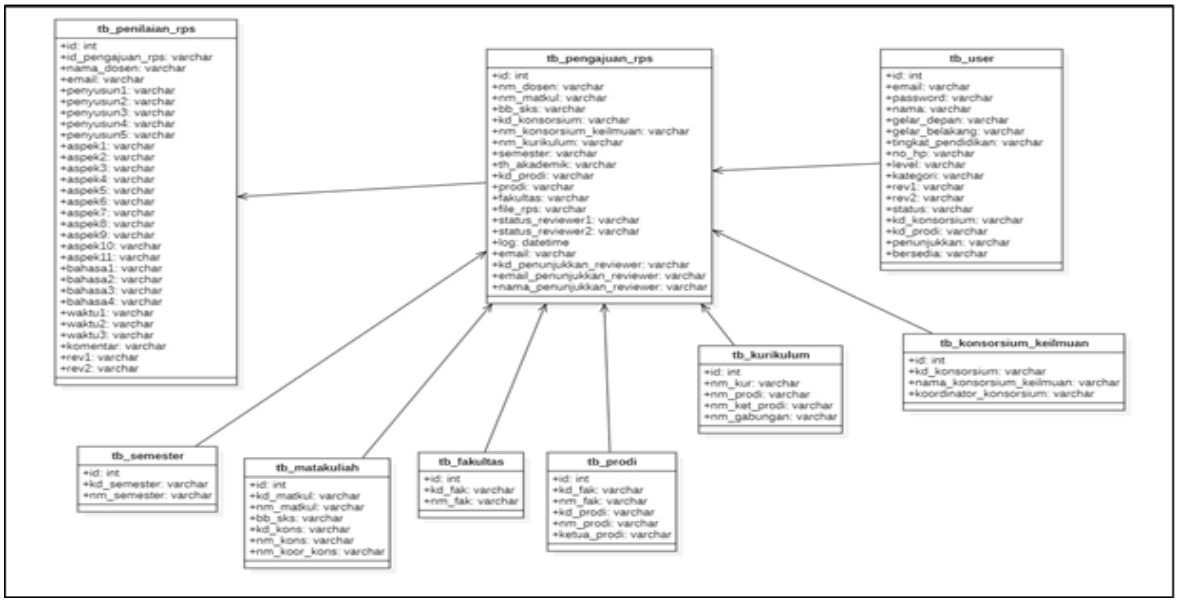

Figure 5. SVeR Class Diagram View

Expert Validation Results

The validity test of the developed product includes three aspects: usability, design, and operation. The validity test data obtained were analyzed using Aiken's V formula. This calculation produces a content validity coefficient, a reference for the developed system's content validity level. In this study, it is known that n = 3 because it involves two media expert validators who are referred to as s1 and two expert validators who are then referred to as s2, while c = 4. After all, the rater can select four categories when scoring: 4 = perfect, 3 = good, 2 = less good, and 1 = not good. As for lo = 1, the lowest score that the rater can select is 1. The recapitulation of the data from calculating the content validity coefficient from the e-RPS validation system based on the open journal system developed using Aiken's V formula is shown in full in Table 8.

Table 8. Results of Student Worksheet Validation by Experts

No.	Aspects	Validator		∑s	n(c-1)	v	Category
		S1	S2				
1	Usability	8	10	18	24	0.750	Very High
2	Design	9	14	23	30	0.767	Very High
3	Operation	18	23	41	45	0.854	Very High
Average						**0.804**	**Very High**

Note: s = the score given by the validator minus the lowest score on the scale (r-lo); n = number of validators; c = number of assessment categories.

Based on the calculation results in Table 8, the validation system based on the open journal system integrated with the developed e-campus has a very high overall validity level, with a final content validity coefficient of 0.804. This figure is obtained from the average of the three aspects assessed in the validity of SVeR: the usability aspect of 0.750, the design aspect of 0.767, and the operational aspect of 0.854.

Product Practicality Test

The practicality or accuracy testing of the validation system (SVeR) based on an open journal system integrated with e-campus developed in this study was conducted by testing it on 16 lecturers who teach at the Elementary School Teacher Education study program, Mahmud Yunus State Islamic University, Batusangkar. The practicality test of the developed e-RPS validation system refers to three aspects of assessment: correctness, efficiency, and usability. The results of the practicality test carried out on the three aspects assessed are obtained in Table 9.

Table 9. Practicality of the SSI-Based Student Worksheet Based on Student Responses

No.	Indicator	Score Acquisition	Max Score	Percentage (%)	Category
1	Correctness	285	300	95	Very Practical
2	Efficiency	353	375	94.13	Very Practical
3	Usability	423	450	94	Very Practical
∑		**1061**	**1125**	**94.31**	**Very Practical**

Based on the calculation results obtained using the percentage formula, the average practicality value of the e-RPS validation system based on an open journal system integrated with e-campus obtained a score of 94.31% with a convenient category. The achievement of the practicality percentage of the developed SVeR has exceeded the target, even entering the range of 81 - 100 with an efficient criterion. This achievement was obtained in detail from the assessment of 3 aspects by users who had conducted the SVeR trial, with more information on the correctness aspect obtaining a percentage of 95%, the efficiency aspect reaching 94.13%, and the usability aspect reaching 94%, where these three aspects are in the efficient category.

Effectiveness of Student Worksheet on Science Concepts

The effectiveness test of the validation system product based on the Open Journal System to test the Feasibility of learning devices includes four assessment criteria: content effectiveness, process effectiveness, result effectiveness, and reciprocal effectiveness. The calculation of the

effectiveness test of the product that has been developed uses the kappa moment formula. The magnitude of the kappa moment represents the level of effectiveness of the system being developed. The analysis for the effectiveness test of the SVeR product is carried out by comparing the four criteria of the developed system product with the validation system that is currently in effect. Table 10 shows the results of calculating the magnitude of the kappa coefficient of the developed SVeR product.

Table 10. Analysis of SVeR Product Effectiveness Test Results

No.	Indicator	ρ-ρ_e	1- ρ_e	(ρ-ρ_e)/1- ρ_e	Category
1	Process Effectiveness	0.882	0.941	0.938	Very High
2	Content Effectiveness	0.906	0.953	0.951	Very High
3	Results Effectiveness	0.843	0.922	0.915	Very High
4	Feedback Effectiveness	0.898	0.949	0.946	Very High
Average		**0.884**	**0.942**	**0.939**	**Very High**

Based on Table 10 above, it can be seen that overall, the assessment of the effectiveness test conducted has an effectiveness level of 0.939 with a very high level of effectiveness. Furthermore, the achievement of the results of the effectiveness test with a very high category from SVeR is also seen in four other indicators, such as process effectiveness with a very high effectiveness category of 0.938, content effectiveness with a value of 0.952 with a very high category, effectiveness of results with an achievement of 0.915 in the very high category, and feedback effectiveness with a value of 0.946 in the very high category.

User Acceptance and System Efficacy

The achievement of a very high level of effectiveness in the product developed, namely SVeR, is believed to be because developing a learning device validation system based on this open journal system is beneficial and facilitates the work of lecturers and reviewers to assess the feasibility of learning devices. To ensure the high effectiveness given by lecturers using SVeR, the researcher took the initiative to add questionnaire items about testimonials and assessments from users about SVeR and its functionality in facilitating the work of lecturers. 15 out of 16 lecturers who filled in the questionnaire gave a rating of 9 on a scale of 1-10 because SVeR helps lecturers facilitate the validation flow of the developed learning devices. Another reason put forward by users about the high effectiveness of SVeR is that this product is very innovative. After all, it facilitates access to semester learning plans, meets reviewers or learning device assessment teams, and saves more time, energy, and materials.

Table 11. User Feedback and Score Ratings for the System for Validation and Evaluation of RPS (SVeR)

No.	Time Stamp	Inisial	Rating	Reason
1	10/6/2024 11:14:25	WR	8	Highly innovative in facilitating lecturers' RPS validation.
2	10/6/2024 11:20:57	DAA	8	Score 8; this greatly simplifies all lecturers' task of validating their RPS.
3	10/6/2024 11:24:40	MAM	8	I give an 8 because it represents how much this application simplifies my work.
4	10/6/2024 11:29:15	IH	10	Outstanding; it significantly simplifies our work.
5	10/6/2024 11:33:02	ES	9	Because the presence of SVeR will assist my job as a lecturer in validating my learning materials.
6	10/6/2024 11:39:25	IN	9	I strongly agree with the implementation of SVeR as it greatly supports our work effectiveness as lecturers, especially for validating learning materials.
7	10/6/2024 11:54:34	RY	9	This development is highly beneficial in assisting the validation process and workflow.
8	10/6/2024 12:04:54	RA	9	Facilitates access for RPS validation.
9	10/6/2024 13:11:34	NP	9	Extremely helpful in simplifying the validation workflow, eliminating the need for manual validation.

No.	Time Stamp	Inisial	Rating	Reason
10	10/6/2024 15:04:42	WF	9	I give a score of 9 for the developed SVeR because it is generally very good and assists lecturers with RPS validation. This is a new, positive innovation that impacts the quality improvement of lecturers' RPS.
11	10/6/2024 19:00:49	ZH	9	This development is very useful and simplifies my work for validating my learning materials.
12	10/6/2024 19:09:34	SWN	8	Because it greatly assists the lecturer's work in validating the RPS, preventing the use of an RPS that is not/not yet suitable for application during lectures.
13	10/6/2024 19:45:55	NL	9	Outstanding, I am very assisted by this application.
14	10/6/2024 20:30:01	RD	8	Score 8, as a symbol of innovation and how it simplifies my process of validating my learning materials.
15	10/6/2024 20:33:53	YL	9	Score 9 because it eases my job as the head of the scientific consortium in validating the RPS of lecturers teaching in PGMI. Hopefully, this developed application will always be updated if easier and more appealing features become available in the future.
16	10/6/2024 21:49:17	EH	9	I give a score of 9 because it greatly assists in ensuring the availability of validated RPS, thereby supporting the acceleration of the learning process on campus.
17	10/7/2024 9:04:49	SM	8	This development is a brilliant idea that facilitates the RPS validation process for me.

Beyond the statistical findings, As Shown the Table 11, the qualitative feedback gathered from the academic staff provided strong corroborating evidence for the System for Validation and Evaluation of RPS (SVeR)'s efficacy and high user acceptance. The system was overwhelmingly perceived as an "outstanding" and "brilliant idea" (Respondent 4, 17), with nearly all respondents assigning high scores (mean ≈8.88). The positive reception centered on two main themes: workflow simplification and enhancement of quality assurance.

Firstly, users consistently highlighted SVeR's ability to streamline academic procedures. Several lecturers noted that the application "greatly simplifies the work" (Respondent 2) and facilitates access for RPS validation (Respondent 8). This efficiency was crucial, as the system successfully "simplif[ied] the validation workflow, eliminating the need for manual validation" (Respondent 9), thereby saving significant time for both faculty and administrative staff. Furthermore, the convenience extended to specialized roles, with one consortium head stating SVeR "eases my job... in validating the RPS" (Respondent 15).

Secondly, the feedback underscored SVeR's role in improving the quality and relevance of learning materials. Respondents perceived SVeR as an "innovative" tool (Respondent 1, 14) that contributes positively to the "quality improvement of lecturers' RPS" (Respondent 10). Crucially, the system was recognized for "assisting in ensuring the availability of validated RPS" (Respondent 16), which directly supports the acceleration and suitability of the learning process by preventing the use of RPS that is "not/not yet suitable for application during lectures" (Respondent 12). Overall, the uniform and high-value qualitative feedback confirms the system's practical benefits, affirming that SVeR successfully meets the functional and efficiency needs of its users.

Discussion

Based on the results of the research at each stage that has been carried out, it was found that the development of an e-RPS validation system based on an open journal system integrated with e-campus was based on user needs related to the procedures, flow, and efficiency of the validation process of learning devices that resulted in several problems, such as the lecturer's ignorance of the validation flow and process, the lecturer who developed the RPS did not know the validator, and various other limitations such as materials, workforce and time. These problems triggered the high number of RPS in the Elementary School Teacher Education Study Program that had not been validated, reaching 70.63% with 89 RPS. The high number of RPS that were not validated certainly

triggered ambiguity in implementing learning that was not aligned with the Graduate Learning Outcomes and Course Learning Outcomes as stated in the curriculum (Ordu, 2021; Romero & Quilumbaquín, 2022; Farhang et al., 2023; Kouser & Majid, 2021). This argument aligns with several previous studies stating that learning devices spearhead educators in mapping and planning and guide achieving the desired learning objectives (Ahmed, 2023; Ovcharuk et al., 2020; Parwata & Sudiatmika, 2020). Uncertainty about the accuracy of learning tools will trigger many things (Nurlaelah et al., 2021; Anggrella et al., 2023; Setiyowati et al., 2023), such as failure to achieve learning objectives and unmeasured achievements due to a mismatch between the topic and the final objective.

The finding of the high number of unvalidated RPS requires a concrete solution to reduce and minimise the number of unvalidated RPS. The results of the search through interviews to analyse the needs of lecturers for the validation process have been implemented. The recommendations and needs of lecturers as developers of learning devices in the form of RPS are for a systematic digitalisation of the validation process of learning devices so that it will reduce many negative impacts that arise. The system digitalisation process is one of the solutions built and developed in this research process. Digitalisation is needed to facilitate matters (Gorenšek & Kohont, 2019; Kraus et al., 2021; Rakovská, 2020; Zaborovskaia et al., 2020) and reduce the negative impacts of the weak manual validation process. This opinion is based on arguments about the advantages of various digital media and systems developed by previous researchers that system development will increase productivity and work efficiency (Bezrukova et al., 2022; Kravchenko et al., 2019; Mentsiev et al., 2020; Todorov & Todorova, 2021). Therefore, it is clear that the e-RPS Validation system based on an open journal system integrated with e-campus is a product development idea that will minimize the impacts of the high number of unvalidated RPS (Dayi & Mtshali, 2026; Susilo et al., 2026).

The development results have produced a new product called the Validation System based on an open journal system integrated with e-campus, which is then abbreviated as SVeR. The overall content validation results of SVeR based on Aiken's V formulation are 0.804, which is a very high category. The results of this study align with the theory put forward by Aiken that the content validity coefficient is calculated based on the research results from a panel of experts of n people on an item in terms of the extent to which the item is measured. This argument is in line with Guilford's opinion that an information system with validity above 0.8 can be feasible as a system that can measure the achievement of its development goals (Diputra et al., 2020; Mohajan, 2017). The results of this study are also in line with several previous studies (Hasmawaty et al., 2020; Tomoliyus & Sunardianta, 2020). The system development validity index is the starting point for achievement and measurability as a benchmark for system feasibility testing by achieving valid criteria (Nurjanah et al., 2023; Widyaningsih et al., 2021). A system is feasible if the final result of measuring the content validity coefficient is in the valid category. This proves that SVeR as a system development product is possible and guarantees the system's performance capability in achieving the formulated research objectives.

The practicality test of SVeR usage has a percentage of achievement results in the convenient category. The convenient category was obtained because the results of the practicality test reached a rate of 94.31%, which was collected based on the average of the three aspects, namely correctness, efficiency, and usability. Achievements in the convenience category indicate that SVeR is a correct, efficient, and easy-to-use system for carrying out the RPS validation process, as tested on 16 users. This refers to the opinion of Vaske et al., (2002), which defines practicality as ease in using a product or teaching material; the higher the level of practicality, the easier a product is to use (user-friendly). This is in line with the opinion that practicality is the level of usability of media or products based on the results of development (Kadir et al., 2019; Maulana et al., 2024; Yang et al., 2021).

Furthermore, the effectiveness test results were measured based on four indicators, namely content effectiveness, process effectiveness, outcome effectiveness, and feedback effectiveness, which also obtained a value in the very high effectiveness category. The high SVeR effectiveness value is supported by the pattern and process of assessing the validation of learning devices that are easy and flexible to be carried out by lecturers anytime and anywhere. The same thing also happens with system accessibility; lecturers can use SVeR without meeting directly with the learning device validator, which takes time, energy, and materials. The results of the SVeR effectiveness test also

found something unique: several lecturers gave testimonials and gave a score of 9 out of 10 because the presence of SVeR not only supports lecturers' performance in terms of testing the feasibility of the learning devices they make but also increases lecturers' productivity in developing devices well and making them quickly accessible. The high effectiveness test results from users about SVeR, as well as good testimonials about ease, flexibility, and productivity, reflect the development of a website-based system and have a flow based on the work system and open journal system procedures that allow all activities to be carried out quickly, both assessment, data archiving, to the publication of learning devices that have been tested and assessed by reviewers. These results strengthen several previous studies on the effectiveness of system development, stating that development products carried out digitally make work easier and increase user work productivity (Kurniawan, 2022; Raković et al., 2022; Sholichah et al., 2023). The same thing was revealed: information technology helps education management obtain accurate, fast, accessible data and information and facilitates distance learning needs (Al-ayed et al., 2019; Renaldo et al., 2022). Therefore, the development of SVeR as a system used to validate learning devices is effectively used by users, as the assessment results that have been given.

The validation system developed has been measured for its validity, practicality, and effectiveness. The success of this development is supported by development procedures adapted to the analysis of user needs. So that you get a product that meets user expectations, in this way, the developed validation system contributes not only to personal needs as users to obtain appropriate learning tools but also to improving the quality of learning, as well as the vision and mission of the institution. Learning tools validated through this system will guide lecturers in carrying out the learning process so that graduates' planned vision, mission, goals, and learning outcomes can be optimal. The most crucial contribution from the development of SVeR is the fulfillment of accreditation assessment points in criterion 6 point 48 regarding the completeness of curriculum documents, including validated learning tools and assessment matrices that are relevant, up-to-date, and coherent. SVeR will assist the performance of study programs in compiling, gathering, and validating learning tools included in the accreditation assessment criteria in criterion 6 point 48, which is the core point of assessing the completeness of curriculum documents when carrying out accreditation. The fulfillment of validated learning tools will produce maximum value for study programs in achieving superior accreditation rankings based on regulations issued by independent educational accreditation institutions.

CONCLUSION

The findings of this study demonstrate that the developed e-RPS Validation System (SVeR), which is based on the Open Journal System and integrated with the e-campus learning environment, is a valid, practical, and effective system for supporting the validation process of learning devices. The expert validation results indicated that SVeR achieved a very high level of content validity, with an average Aiken's V coefficient of 0.804. The practicality evaluation showed that the system was categorized as very practical, with an overall practicality score of 94.31%, consisting of correctness (95%), efficiency (94.13%), and usability (94%). Furthermore, the effectiveness evaluation indicated a very high level of effectiveness, with an average coefficient of 0.939. The effectiveness dimensions included process effectiveness (0.938), content effectiveness (0.951), results effectiveness (0.915), and feedback effectiveness (0.946). These findings confirm that SVeR can improve the process of documenting, validating, and managing learning device validation activities in a more systematic, efficient, and targeted manner.

From a theoretical perspective, this study contributes to the development of digital validation models for educational management by demonstrating how an online journal-based platform can be adapted to support structured learning device validation workflows. Practically, SVeR provides an alternative solution for higher education institutions to improve the management, documentation, and monitoring of learning device validation processes. The system can support lecturers, validators, and academic managers by providing a more transparent validation mechanism compared with conventional manual procedures.

However, this study has several limitations. First, although SVeR has been designed to support integration with the e-campus environment, full implementation has not yet been realized due to the absence of institutional policies and socialization from higher education leaders. Second, the system evaluation was conducted in a single institutional setting with a limited number of participants, which may restrict the generalizability of the findings to other higher education contexts. Third, this study did not include longitudinal evaluation to examine the long-term impact of SVeR on validation completion rates, workflow efficiency, or sustained user adoption. Fourth, the effectiveness assessment relied primarily on user perceptions, which may introduce subjective bias. In addition, the very high effectiveness scores indicate the possibility of a ceiling effect, where respondents tend to provide highly positive evaluations and limit the ability to identify differences in system performance.

Future studies are recommended to conduct multi-institutional trials involving diverse higher education contexts and larger participant groups. Further research should also investigate longitudinal changes in validation completion rates before and after SVeR implementation, compare SVeR with other digital workflows such as learning management system (LMS)-based validation processes, and evaluate its integration with broader academic information systems. Moreover, future development can expand the application of SVeR to other academic validation processes, including examination paper validation, teaching module validation, and other learning-related document management systems.

REFERENCES

Ahmed, A. O. A (2023). Using efficient planning for achieving course learning outcomes in EFL Classes at Taif University. *European Scientific Journal, ESJ*, *19*(29), 21-36. https://doi.org/10.19044/esj.2023.v19n29p21

Al-ayed, S. I., Al-tit, A. A., & Alashjaee, A. (2019). The effect of digital transformation on organizational performance by a mediating role of digital innovation. *Migration Letters*, *20*(7), 380–394. https://doi.org/10.59670/ml.v20i7.4313

Allen, M. J. (2004). *Assessing academic programs in higher education.* Anker Company.

Anggrella, D. P., Izzati, L. R., & Sudrajat, A. K. (2023). Improving the quality of learning through lesson plan preparation workshops for an independent learning model. *Indonesia Journal of Community Service and Empowerment*, *4*(1), 162–171. https://doi.org/10.22219/jcse.v4i1.24581

Apriany, R., & Setiawan, S. (2022). Perancangan sistem informasi pembayaran sekolah berbasis web pada SIT Al Haraki. *Jurnal Keilmuan Teknologi Informasi dan Ilmu Manajemen*, *2*(2), 32–39. http://jurnalilmiah.id/index.php/Justifi/article/view/43

Arikunto, S. (2012). *Fundamentals of educational evaluation*. Rineka Cipta.

Ayriza, Y. (2013). Penyusunan dan validasi modul "social life skill" bagi pendidik anak-anak prasekolah. *Jurnal Penelitian dan Evaluasi Pendidikan*, *12*(2), 213–231. https://doi.org/10.21831/pep.v12i2.1428

Aziira, A. H., Kamil, H., & Kartika, A. D. (2023). Pembangunan sistem informasi pengelolaan rencana pembelajaran semester (RPS). *Jurnal Nasional Teknologi dan Sistem Informasi*, *9*(2), 103–112. https://doi.org/10.25077/teknosi.v9i2.2023.103-112

Bamary, K., Behboudi, M. R., & Abbasnejad, T. (2022). An ICT Performance evaluation model based on meta-synthesis approach. *Journal of Information Systems and Telecommunication*, *10*(3), 229–240. https://doi.org/10.7208/chicago/9780226655895.003.0001

Bezrukova, N., Huk, L., Chmil, H., Verbivska, L., Komchatnykh, O., & Kozlovskyi, Y. (2022). Digitalization as a trend of modern development of the world economy. *WSEAS Transactions on Environment and Development*, *18*(13), 120–129. https://doi.org/10.37394/232015.2022.18.13

Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university: What the student does* (4th ed.). McGraw-Hill Education.

Budiastuti, D., & Bandur, A. (2020). *Validitas dan Reliabilitas Penelitian*. Mitra Wacana Media

Darmini, A. A. S. R., & Putra, I. N. Wi. A. P. (2009). Pemanfaatan teknologi informasi dan pengaruhnya pada kinerja individual pada Bank Perkreditan Rakyat di Kabupaten Tabanan. *Jurnal Ilmiah Akuntansi dan Bisnis*, *4*(1), 1–15. file:///D:/PEMANFAATAN_TEKNOLOGI_INFORMASI_DAN_PENGARUHNYA_PA.pdf

Dayi, N., & Mtshali, T. I. (2026). Evaluating the GET electrical technology syllabus for transition into FET specialisations in Gauteng Technical Schools. *Jurnal Inovasi Teknologi Pendidikan*, *13*(1), 70–81. https://doi.org/10.21831/jitp.v13i1.90695

Diputra, K. S., Tristiantari, N. K. D., & Jayanta, I. N. L. (2020). Gerakan literasi digital bagi guru-guru sekolah dasar. *JCES (Journal of Character Education Society)*, *3*(1), 118–128. https://doi.org/10.31764/jces.v3i1.1483

Fajrin, N., Kamelia, L., & Juhana, T. (2016). Instalasi dan implementasi open journal system di local area network laboratorium telematika STEI-ITB. *SENTER*, (pp. 26-27). UIN Sunan Gunung Djati Bandung. https://senter.ee.uinsgd.ac.id/repositori/index.php/prosiding/article/view/senter2016p3

Farhang, A. P. Q., Hashemi, A. P. S. S. A., & Ghorianfar, A. P. S. M. (2023). Lesson plan and its importance in teaching process. *International Journal of Current Science Research and Review*, *06*(08), 5901–5913. https://doi.org/10.47191/ijcsrr/v6-i8-57

Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses* (2nd ed.). Jossey-Bass.

Firdaus, T. A., Putra, R. H., Arifandi, F., Anam, M. K., & Lathifah, L. (2023). Implementasi sistem rencana pembelajaran semester berbasis web untuk mempermudah proses pembelajaran. *Jurnal Teknoinfo*, *17*(1), 156-169. https://doi.org/10.33365/jti.v17i1.2348

Foumani, M. F., & Goudariz, S. M. (2021). The Development of a Hybrid Error Feedback Model for Sales Forecasting. *Journal of Information Systems and Telecommunication*, *9*(34), 131–140. https://doi.org/10.29252/jist.9.34.131

Gorenšek, T., & Kohont, A. (2019). Conceptualization of digitalization: Opportunities and challenges for organizations in the Euro-mediterranean area. *International Journal of Euro-Mediterranean Studies*, *12*(2), 93–115. https://www.dlib.si/details/URN:NBN:SI:DOC-XBGA1JHF?&language=eng

Handayani, I., Febriyanto, E., & Shofwatullah, M. (2019). Peningkatan sistem pengelolaan e-journal berbasis open journal system (OJS) 2.3.4 ke versi 3.1.0.1. *Jurnal Ilmiah SISFOTENIKA*, *9*(1), 1–13. https://doi.org/10.30700/jst.v9i1.422

Hasmawaty, H., Syam, H., & Saman, A. (2020). Validity, practicality, and effectiveness: The last step in development of entrepreneurship education based role-playing for kindergarten. *Universal Journal of Educational Research*, *8*(12B), 8092–8101. https://doi.org/10.13189/ujer.2020.082611

Helmina, H., Santoso, H., Nurdin, N., & Ikhsan, M. (2023). Perancangan sistem evaluasi Dosen oleh Mahasiswa (Edom) Universitas Muhammadiyah Jambi berbasis website. *Jurnal Informatika, Sistem Informasi dan Kehutanan (FORSINTA)*, *2*(1), 14–20. https://doi.org/10.53978/jfsa.v2i1.263

Kadir, J. S., Zaim, M., & Refnaldi, R. (2019). Developing instruments for evaluating validity, practicality, and effectiveness of the authentic assessment for speaking skill at junior high

school. *6th International Conference on English Language and Teaching (ICOELT 2018) Developing*, (276), 98–105. https://doi.org/10.2991/icoelt-18.2019.14

Kalavaini, K. et al. (2021). Predicting student performance for early intervention using classification algorithms in machine learning. *Journal of Information Systems and Telecommunication*, *9*(36), 226–235. https://doi.org/10.52547/JIST.9.36.226

Kouser, S., & Majid, I. (2021). Technological tools for enhancing teaching and learning process. *Towards Excellence*, *13*(1), 366–373. https://doi.org/10.37867/te130133

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *SAGE Open*, *11*(3). https://doi.org/10.1177/21582440211047576

Kravchenko, O., Leshchenko, M., Marushchak, D., & Vdovychenko, Y. (2019). Digitalization as a global trend and growth factor of the modern economy. *CEUR Workshop Proceedings*, *2422*, 434–443. https://doi.org/10.1051/shsconf/20196507004

Kurniawan, M. S. (2022). The role of information technology in improving the effectiveness of education management. *Journal on Education*, *04*(04), 1658–1665. https://repository.poltekapp.ac.id/id/eprint/3860/

Lialestani, M. M., Khamseh, A., & Radfar, R. (2021). Digital transformation model, based on grounded theory. *Journal of Information Systems and Telecommunication*, *9*(36), 275–284. https://doi.org/10.52547/JIST.9.36.275

Maulana, I., Ganefri, G., & Yulastri, A. (2024). Practicality of using e-learning learning media in entrepreneurship courses. *Journal International of Lingua and Technology*, *3*(1), 163–174. https://doi.org/10.55849/jiltech.v3i1.583

Mentsiev, A. U., Engel, M. V, Tsamaev, A. M., Abubakarov, M. V, & Yushaeva, R. S.-E. (2020). The concept of digitalization and its impact on the modern economy. *Proceedings of the International Scientific Conference "Far East Con" (ISCFEC 2020)*, *128*(March), 10–15. https://doi.org/10.2991/aebmr.k.200312.422

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, *17*(4), 59–82. https://doi.org/10.26458/1746

Muhsinin, U., & Fatmawati, K. (2020). Validitas dan praktikalitas rencana pembelajaran semester (RPS) terintegrasi research based learning. *Jurnal Ilmiah Universitas Batanghari Jambi*, *20*(1), 201-206. https://doi.org/10.33087/jiubj.v20i1.791

Munthe, B. O., Amalia, F., & Cholissodin, I. (2019). Pengembangan sistem informasi penilaian dan evaluasi kinerja karyawan dengan metode weighted product berbasis web. *Pengembangan Teknologi Informasi dan Ilmu Komputer*, *3*(9), 9095–9104. https://j-ptiik.ub.ac.id/plugins/generic/pdfJsViewer/pdf.js/web/viewer.html?file=https%3A%2F%2Fj-ptiik.ub.ac.id%2Findex.php%2Fj-ptiik%2Farticle%2Fdownload%2F6348%2F3055%2F44333

Muslihudin, M., Imamudin, M. A., Mohidin, S.Kom, M.T, I., Musa, S.T., M.Kom, S. B., Badu, F., irfan & soyusiawaty dewi, Zain, S. A., Sari, E. M., & Arif, M. (2019). Pengembangan sistem informasi penerimaan siswa baru berbasis web di SMA 1 Annuqayah Sumenep. *Jurnal Ilmiah Pendidikan dan Informatikan*, *4*(2), 53-62. https://doi.org/10.21107/edutic.v4i2.3914

Nurafni, Tjandi, Y., Mappeasse, M. Y., Suhardi, I., & Riska, M. (2022). Pengembangan sistem informasi pelaporan kinerja guru pada keterlaksanaan pembelajaran berbasis dashboard di SMKN 3 Takalar. *Information Technology Education Journal*, *1*(2), 7–17. https://doi.org/10.59562/intec.v1i2.228

Nurjanah, S., Istiyono, E., Widihastuti, W., Iqbal, M., & Kamal, S. (2023). The application of Aiken's V method for evaluating the content validity of instruments that measure the implementation of formative assessments. *Journal of Research and Educational Research Evaluation*, *12*(2), 2023–2125. https://doi.org/10.15294/jere.v12i2.76451

Nurlaelah, N., Syahid, A., Fuady, M. I. N., & Lestari, M. F. (2021). Improving learning activities and outcomes of students by application of observation-based learning. *Universal Journal of Educational Research*, *9*(3), 479–486. https://doi.org/10.13189/ujer.2021.090307

Ordu, U. B. A (2021). The role of teaching and learning aids/methods in a changing world. *New Challenges to Education: Lessons from Around the World*, *19*, 210–216. https://eric.ed.gov/?id=ED613989

Ovcharuk, O., Ivaniuk, I., Soroko, N., Gritsenchuk, O., & Kravchyna, O. (2020). The use of digital learning tools in the teachers' professional activities to ensure sustainable development and democratization of education in European countries. *E3S Web of Conferences*, *166*, 1-6. https://doi.org/10.1051/e3sconf/202016610019

Parwata, K. Y. L., & Sudiatmika, A. A. I. A. R. (2020). The effectiveness of learning tools in science learning. *Journal of Physics: Conference Series*, *1503*(1), 1-8. https://doi.org/10.1088/1742-6596/1503/1/012049

Prastika, Y. (2022). *Pengembangan pembelajaran e-learning berbasis syam-ok pada mata kuliah manajemen pembelajaran di Progam Studi Teknologi Pendidikan*. [Thesis, Universitas Negeri Makassar. http://eprints.unm.ac.id/24241/%0Ahttp://eprints.unm.ac.id/24241/1/SKRIPSIJILID.pdf

Raković, L., Sakal, M., & Matkovic, P. (2022). Digital workplace: Advantages and challenges Digital workplace – advantages and challenges Дигитално радно место – предности и изазови. *Анали Економског Факултета у Суботици – The Annals of the Faculty of Economics in Subotica*, *58*(47), 65–78. https://doi.org/10.5937/AnEkSub2247065R

Rakovská, J. (2020). The impact of digitization and automation of production on the role of the workforce in companies in Slovakia. *SHS Web of Conferences*, *83*, 1-7. https://doi.org/10.1051/shsconf/20208301055

Renaldo, N., Suhardjo, Suharti, Suyono & Cecilia (2022). Benefits and challenges of technology and information systems on performance. *Journal of Applied Businerss and Technology*, *3*(3), 302–305. https://doi.org/10.35145/jabt.v3i3.114

Romero, M. V. D., & Quilumbaquín, E. C. A. (2022). Herramientas educativas como apoyo en la enseñanza. *Mendive. Revista de Educación*, *20*(4), 1099–1108. https://dialnet.unirioja.es/servlet/articulo?codigo=8730168

Salamun, S., & Arisandi, D. (2020). Sistem monitoring kinerja Dosen pada institusi perguruan tinggi swasta (Studi kasus: Universitas Abdurrab). *Digital Zone: Jurnal Teknologi Informasi dan Komunikasi*, *11*(2), 198–208. https://doi.org/10.31849/digitalzone.v11i2.4304

Saputri, Y. G., & Guspatni, G. (2021). Validitas dan praktikalitas media pembelajaran PowerPoint-iSpring terintegrasi pertanyaan prompting pada materi larutan elektrolit dan nonelektrolit kelas X SMA/MA. *Entalpi Pendidikan Kimia*, *2*(1), 57–65. https://doi.org/10.24036/epk.v2i1.128

Setiawan, R., Kurniadi, D., & Supriatna, Y. (2023). Perancangan sistem informasi monitoring dan pelaporan kinerja aparatur sipil negara berbasis web dan Android. *Jurnal Algoritma*, *20*(1), 156–167. https://doi.org/10.33364/algoritma/v.20-1.1281

Setiyowati, R., Fatihah, H., Handoko, A. I., Chairunnisa, D., & Parianda, P. J. (2023). The urgency of using teaching materials based on e-book problem-based learning. *Proceedings of the Fifth Sriwijaya University Learning and Education International Conference (SULE-IC 2022)*, *1*, 59–64. https://doi.org/10.2991/978-2-38476-010-7_8

Sholichah, A. S., Alam, M., & Sastradiharja, E. E. J. (2023). Digitalization of education and its impact on urban society: A study on junior high school teachers. *Al-Ishlah: Jurnal Pendidikan*, *15*(3), 2895–2905. https://doi.org/10.35445/alishlah.v15i3.2103

Stranack, K. (2006). The role of open source software in scholarly publishing. *First Monday*, *11*(10). https://doi.org/10.5210/fm.v11i10.1402

Susilo, A., Fauziyyah, A., Hartari, A., Nurdiana, D., & Endah, E. Y. (2026). Enhancing student academic services through AI-driven virtual assistants using the RAG method at Universitas Terbuka. *Jurnal Inovasi Teknologi Pendidikan*, *13*(1), 57–69. https://doi.org/10.21831/jitp.v13i1.83632

Todorov, I., & Todorova, N. (2021). Managing sustainability of national security: Implications for Ukraine. *E3S Web of Conferences*, *307*, 1–15. https://doi.org/10.1051/e3sconf/202130709001

Tomoliyus, T., & Sunardianta, R. (2020). Validitas Aiken's instrumen tes untuk mengukur reaktif agility olahraga khusus tenis meja. *Jurnal Keolahragaan*, *8*(2), 148–157. https://doi.org/10.21831/jk.v8i2.32492

Vaske, J. J., Whittaker, D., Shelby, B., & Manfredo, M. J. (2002). Indicators and standards: Developing definitions of quality. In *Wildlife Viewing in North America: A Management Planning Handbook*, (pp. 143–171). Corvallis. https://www.researchgate.net/publication/250613443_Indicators_and_Standards_Developing_Definitions_of_Quality

Widyaningsih, S. W., Yusuf, I., Prasetyo, Z. K., & Istiyono, E. (2021). The development of the hots test of physics based on modern test theory: Question modeling through e-learning of Moodle LMS. *International Journal of Instruction*, *14*(4), 51–68. https://doi.org/10.29333/iji.2021.1444a

Willinsky, J. (2005). Open Journal Systems: An example of open source software for journal management and publishing. *Library Hi Tech*, *23*(4), 504–519. https://doi.org/10.1108/07378830510636300

Yang, Z., Laffréchine, K., Bony-Dandrieux, A., Dolidon, H., & Barroca, B. (2021). Practical indicators for road infrastructure resilience to flood risks in France, case study of Nantes Ring Road network. *FLOODrisk 2020 – 4th European Conference on Flood Risk Management*, 207–213. https://doi.org/10.3311/floodrisk2020.11.21

Zaborovskaia, O., Nadezhina, O., & Avduevskaya, E. (2020). The impact of digitalization on the formation of human capital at the regional level. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 1–24. https://doi.org/10.3390/joitmc6040184