Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

Evaluation of the E-Report System at State Junior High School in Sidemen District, Karangasem Regency

I Made Sudana[0000-0003-0785-7296], I Made Yudana[0009-0004-6255-425X], Basilius Redan Werang[0000-0003-2675-2887]

Department of Administration Education, Universitas Pendidikan Ganesha, Bali, Indonesia
sudana.2@student.undiksha.ac.id

Abstract. The purpose of this research is to find out separately or together the components of context, input, process, product and obstacles that occur in the implementation of the E-rapor system at Public Junior High Schools in Sidemen District, Karangasem Regency. This research uses the CIPP model. The population of the study was 102 people, consisting of all teachers in four public junior high schools in Sidemen District, namely Public Junior High School 1 Sidemen, Public Junior High School 2 Sidemen, Public Junior High School 3 Sidemen and Public Junior High School Satu Atap Sangkan Gunung. The sample in this study was 94 teachers. Data on each variable in this study were obtained through a questionnaire referring to a Likert scale of 1-4. This study uses a quantitative descriptive analysis method. The effectiveness of the E-rapor system is determined by changing the raw score into a Z-score, then transformed into a T-score and verified into the Glickman Quadrant. The results of data processing show 1) The effectiveness of the implementation of the E-rapor system in terms of context $\sum (+) > \sum (-)$ resulting in + (effective); 2) The effectiveness of the implementation of the E-rapor system in terms of input $\sum (+) > \sum (-)$ resulting in + (effective); 3) The effectiveness of the implementation of the E-rapor system is reviewed from the process $\sum (+) > \sum (-)$ so that it produces + (effective); 4) The effectiveness of the implementation of the E-rapor system is reviewed from the product $\sum (-) > \sum (+)$ so that it produces - (ineffective); 5) The results of the joint data analysis on the implementation of the E-rapor system obtained effective results (+ + + -). The obstacles accurrent in the implementation of E-rapor system program managers who were not from the school where the teaches or are still on honorary staff, limited educator capabilities, limited budget, lack of socialization of E-rapor system guidelines, and limited server capacity for users in the E-rapor system.

Keywords: CIPP, E-rapor System, Program Evaluation

1 Introduction

The challenges of the current era of globalization and the world have entered the era of the industrial revolution 5.0 and the advancement of the world of technology has greatly influenced various sectors. One of them is in the education sector. With many educational innovations that really help simplify the processes and administration needed in teaching and learning activities to be more facilitated. The existence of

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

several applications after successfully affecting educational performance is much more advanced and developing. Starting from E-learning, computer-based exams, to the existence of E-report cards. Digital technology plays a very important role in the world of education in Indonesia, especially in junior high schools [1], [2], [3]. Technology can be used to support teachers in the administration and management of student assessment data easily. Especially in an era like now where all student assessment recording activities have been computerized with the help of the internet which has begun to be developed with the help of applications.

Schools as a system will produce good output, if the inputs and processes run well [4], [5], [6], [7]. Because school is a system, inputs, processes, and outputs are an integrated unit. Making changes to one component will result in changes to the other components. Schools are currently required to have an information system and educational services that meet the needs of students, students' parents, the community and the school. Schools as a place of education have the goal of producing competent human resources who are able to compete in the era of globalization. To achieve this, several components of quality implementation are needed starting from regulations, educational resources and education personnel, curriculum, facilities and quality assessment systems.

Regulation of the Minister of Education, Research, and Technology Number 21 of 2022 concerning Educational Assessment Standards in Early Childhood, Primary Education, and Secondary Education Levels explains that assessment is the process of collecting and processing information to determine learning needs and developmental achievements or learning outcomes of students. The assessment of student learning outcomes is carried out in accordance with the objectives of the assessment in a fair, objective, and educational manner. In its implementation, the procedure for assessing student outcomes is carried out in accordance with the characteristics of the path, level, and type of education unit which includes the formulation of assessment objectives, the selection and/or development of assessment instruments, the implementation of assessments, the processing of assessment results, and reporting the results of assessments [8], [9].

The process of assessing student learning outcomes, both by educators and by education units, will be more systematic, comprehensive, more accurate, and faster if supported by computer application devices. In this regard, since 2017 the Directorate of Junior High School, Directorate General of Elementary and Secondary Education, Ministry of Education and Culture, has developed a version 1.0 Junior High School E-report application that is integrated with the Basic Education Data (Dapodik), including guidelines for its use. However, in line with the development of assessment policies, Dapodik, and needs in schools, efforts have been made to develop and improve the Junior High School E-report application. The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) through the Directorate of Junior High School released the latest updater for the Junior High School E-report application, namely the M.03 version. The innovation is intended to support Junior High Schools (SMP) that implement the Independent Curriculum Learning and Assessment Guidelines, as well as the 2013 Curriculum Assessment Learning Guidelines in carrying out the learning and assessment process in schools [10], [11]. Just like the M.01 version of the KM E-

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

car, the M.03 Version of the Junior High School E-report application updater was created to make it easier to administer the reporting of learning outcomes. Teachers only need to enter one grade per subject, complete with a description of the competencies that reflect those grades. This E-report application updater is an efficient solution because it can accommodate two curricula at once in one application system.

The E-report application is an option for teachers and educational units to report student learning outcomes to be submitted to parents or guardians as a tool. In addition to simplifying features, the Independent Curriculum E-report application also emphasizes functional aspects and is connected to Dapodik. This application is a facility for teachers to plan, process and report students' learning outcomes and is aimed at all levels in all educational pathways, both formal and informal education and those that use the Independent Curriculum and are integrated with Dapodik, so that assessment policies in the Independent Curriculum can be accommodated in this E-report [12], [13]. With this E-report card, it will be easier for teachers to assess students to see competency achievements and also evaluate learning outcomes, until later the printing of report cards for students. Technically this is a web-based application system that is expected to be able to convert manual patterns to digital patterns.

"Report card is a report on students' learning progress within a semester period." The report card contains information about the achievement of competencies that have been set in the curriculum [14], [15], [16]. The progress report on student learning outcomes is made as the responsibility of the school institution to the parents/guardians of students, school committees, the community, and other related agencies. The report is a means of communication and cooperation between schools, parents, and the community that is beneficial for the progress of students and school development." There will be an online report card, so that students and teachers no longer need to worry about it. The Independent Curriculum e-Report application is: 1) It can realize good learning quality through simplifying administrative affairs. One of them is simplifying administrative matters for teachers in reporting students' learning outcomes. 2) To be able to help teachers become system administrators. Not only teachers, but students also hope to be able to access it.

In the E-report information system that has a role in this application, first are administrators, then teachers and homeroom teachers [17], [18], [19], [20]. To be able to operate the Independent Curriculum E-report application that needs to be used as a reference is the Dapodik. The E-report application applied to State Junior High Schools in Sidemen sub-district was carried out between 2017 and 2024. In the implementation of E-report cards, it turns out that many teachers and homeroom teachers are not ready for technological updates, especially the E-report card application. Actually, there are many instructions available that can be used by some teachers, but there are still unwanted things or mistakes in inputting students' grades. This can be known from the results of field studies that have been conducted by researchers in four schools that were used as research objects, including SMP Negeri 1 Sidemen, SMP Negeri 2 Sidemen, SMP Negeri 3 Sidemen and SMP Negeri Satu Atap Sangkan Gunung. From the results of the initial interviews conducted with the school, in this case represented by the deputy principal, the curriculum section, and also the respective school operators, there are several obstacles faced by the school in terms of the implementation of the E-report.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

Obstacles that arise when using E-report cards occur because human resources and assessment systems are still not optimal. Based on the results of the researcher's interview with the vice principal of the curriculum department at SMP Negeri 1 Sidemen, Mr. I Nyoman Parsa, S.Pd, he stated that the system is sometimes out of sync with Dapodik so he has to wait for synchronization first before using the E-report card. Then the results of the researcher's interview with the deputy principal of the curriculum section of SMP Negeri 2 Sidemen, namely Ni Nyoman Sridarmayanti, S.Pd, he stated that there are still some E-report card users in general who have not been able to directly use the application so that later it will have an impact on the input of student grades which can cause delays. Then the results of the researcher's interview with the deputy principal of the curriculum section of SMP Negeri 3 Sidemen, namely Mr. I Wayan Sujana, S.Pd stated that many teachers are still stuttering with technology so that it affects in working on the E-report card, besides that an unstable network will also affect the work on the E-report card itself because if there is an error in filling in the data in the system, the system will be disrupted and the report card cannot be printed, so accuracy is needed and then The results of the researcher's interview with the deputy principal of the curriculum section of SMP Negeri Satu Atap Saangan Gunung, Mr. Priyandaka, S.Pd also stated that the facilities and infrastructure are still very limited in the school so that it becomes a very significant obstacle, besides the delay in the arrival of the application renewal pet in the E-report.

The evaluation of the use of the Independent curriculum E-report card at SD N Ngasinan Semarang Regency has gone well from the input aspect in the fields of planning, human resources, financing, and appropriate infrastructure facilities, but there are several obstacles faced, namely the need for improvement in several fields, lack of infrastructure, internet networks, skills, and systems [21], [22]. The implementation of E-report cards in the Implementation of the Independent Curriculum at SMK Negeri 1 Luak District shows that the implementation of E-report cards in vocational schools has had several positive impacts [14], [23]. Most teachers and students report increased efficiency in assessment and reporting of learning outcomes. However, a number of challenges were also identified, including the availability of technology infrastructure, teachers' skills in using the system, and uncertainties related to data security.

In addition to some obstacles or problems faced, the use of E-report cards also received a positive response, especially from teachers. The satisfaction of E-report card users at SMP Negeri 1 Sukasada is as follows: 1) The E-report card contains completeness, benefits, transparency and information needs needed by the 83.6% percentage in the Very Satisfied category; 2) Teachers as users of the E-report card are satisfied with the accuracy of the E-report card, which contains indicators of information accuracy, display accuracy, output and system proficiency with a percentage of 77.3%; 3) Teachers are very satisfied with the form of E-report card which contains indicators of menu structure, appearance and color with a percentage of 82%; 4) E-report card in the convenience of users containing user-friendly and effective indicators with a result score of 797 and a criterion score (Ideal Score) of 1,080,; 5) Teachers are satisfied with the timeliness of access and data processing time, with a percentage of 70.6%, so that overall the level of teacher satisfaction in using E-report cards has a percentage of 78%, which means that they are in the satisfied category.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

Based on the problems faced by the four schools that were used as research sites, and some relevant previous research results, the researcher was interested in conducting a program evaluation research entitled "Evaluation of the E-report System at State Junior High School in Sidemen District, Karangasem Regency".

The main problem in this study is related to the effectiveness of the implementation of the E-report system in junior high schools, especially in the context of human resource readiness, technological infrastructure, and system synchronization with Dapodik as a national database. Although the E-report system is designed to simplify the process of reporting learning outcomes and support the Independent Curriculum, the reality on the ground shows various obstacles, such as limited teachers' ability to operate the application, technical disruptions due to unstable networks, and incompatibility with the system's needs. This problem is important to be evaluated systemically to assess whether the inputs, processes, outputs, and results of the use of E-report have run optimally and support the purpose of educational assessment in accordance with applicable regulations.

The problems raised have been contextualized in a relevant way with the Independent Curriculum policy and the digital transformation of education in Indonesia. This can be seen from the explanation of the purpose of developing the E-report application that supports the Independent Curriculum, as well as the integration of this system with Dapodik as a form of effort to modernize education governance. The authors also highlight the challenges that arise from the application of these new technologies, including limited infrastructure, lack of teachers' ICT competence, and incompatibility of the system with the needs of schools, which reflect the gap between policies and practices on the ground.

Although the explicit part stating the purpose of the research is not formally presented in a special paragraph, the direction and focus of the research is clearly implied in the last sentence of the introduction: "the researcher is interested in conducting research on the evaluation of the program entitled 'Evaluation of the E-Raport System in State Junior High Schools in Sidemen District, Karangasem Regency'." This shows that there is an alignment between the title of the research and the focus of the problem being studied. However, to improve the academic quality of the manuscript, it would be good if the research objectives were explicitly written in the form of a direct statement indicating the aspects to be evaluated (input, process, output, outcome).

The scope of the research seems to be quite appropriate to the complexity of the issues raised. The author clearly mentions input elements (human resources, infrastructure), processes (application usage, teacher training, data synchronization), and outputs and outcomes (data accuracy, report card printing, user satisfaction). This suggests that this study is designed to comprehensively assess the system using a systemic perspective. The suitability of this scope supports the credibility of the evaluation to be carried out, as well as facilitates an in-depth analysis of the effectiveness of the implementation of the E-report system.

The conceptual framework of this manuscript has led to the use of systems theory by stating that schools as a system consist of interrelated inputs, processes, and outputs. This explanation is consistent with the system evaluation model that is widely used in education studies. In addition, the author also cites a number of references regarding

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

the use of technology in assessment and mentions the link to application development by the Ministry of Education and Culture. However, strengthening the theory of program evaluation or assessment models such as CIPP (Context, Input, Process, Product) will further strengthen the theoretical basis of this research.

This research shows good integration with the Regulation of the Minister of Education and Culture No. 21 of 2022 concerning assessment standards. The author directly quotes the substance of the regulation, starting from the definition of assessment, the principles of its implementation, to the operational procedures. This provides a strong legal foundation and confirms the urgency of research in the context of national regulation. Thus, this regulation is not only a normative background, but also an important component in justifying the need for the evaluation of the E-report system that is being developed in schools.

2 Method

2.1 Research Design

Judging from the approach, this study uses an empirical approach (ex-post facto) with an ex-post facto approach in relation to the variables that have occurred and the researcher does not need to give treatment to the variables being studied [24]. Research with an ex-post facto approach is research that is conducted to research the events that occurred and then trace back through the data to find the factors that caused the events to be studied. This type of research is evaluative research that will answer the effectiveness or failure of the implementation of the E-report system in State Junior High Schools in Sidemen District, Karangasem Regency. The disclosure of the background of the implementation of the E-report system, specifically conducted through interviews, is to explore in depth all the motives behind the E-report system.

This study explicitly uses the CIPP (Context, Input, Process, Product) evaluation model developed by Stufflebeam as an analytical framework in evaluating the E-report system at State Junior High School in Sidemen District. The four dimensions of CIPP are adequately described in the research variables section, where the context includes the vision, mission, goals, and competencies of human resources; inputs include teacher and admin readiness, organizational structure, funding, and supporting facilities; The process involves socialization and training on the use of the application; while the product concerns the output and quality of the E-report implementation itself. This separation and classification suggest that the CIPP evaluation framework is applied systematically and comprehensively to assess the effectiveness of program implementation, although it would be even stronger if it is accompanied by a more explicit theoretical justification on the theoretical foundation.

2.2 Population and Research Sample

Population

Population is a generalized area consisting of objects or subjects that have certain qualities and characteristics that are determined by the researcher to be studied and then

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

drawn [25]. In this study, the research population was determined based on the research objectives, namely school residents who are very closely related to the implementation of the E-report card system at State Junior High Schools in Sidemen District. So in this study, the data was revealed through the management and implementing personnel. It can be concluded that the population in this study is all teachers in four State Junior High Schools in Sidemen District, Karangasem Regency.

Sample

A sample is a part of the number and characteristics that the population has [26], [27]. The sampling technique used in this study uses the purposive sampling technique (sampling according to the purpose). The purposive sampling technique is a technique for sampling data sources with certain considerations [28]. The reason for using the purposive sampling technique is because not all samples have criteria that are in accordance with the phenomenon being studied. Therefore, the author chose the purposive sampling technique which sets certain considerations or criteria that must be met by the samples used in this study. The theory used in determining the sample is with the theory of Yamane and Isaac and Michael [28] Taking into consideration the number of known populations and the calculation of the sample can be calculated using the formula:

$$n = \frac{N}{1 + N(e)^2}$$

Information:
n = Number of samples required
N = Total population
E = Sampling error rate, usually 5%

Based on the population size table presented by Yamane and Isaac Michael with a population of 100 people, the number of samples for four State Junior High Schools in Sidemen District that use the E-report system is as many as 94 people, with details can be seen in the table below.

The sampling strategy using the purposive sampling approach for four State Junior High Schools in Sidemen District was justified quite well, namely based on the criteria of direct involvement in the use of the E-report system and their proximity to the phenomenon being studied. Although this approach is adequate for local evaluative studies, the limitation of geographical focus is a challenge in terms of generalization of findings to the national level. The findings from one sub-district in Karangasem Regency cannot be directly generalized to all junior high schools in Indonesia that have very diverse geographical characteristics, infrastructure, and human resource capacity. Therefore, the results of this study are more appropriately positioned as a contextual study that can provide an initial picture, as well as open opportunities for comparative studies and the expansion of the scale of research to other regions to obtain a more representative picture nationally.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

2.3 Research Variables

Variables are assessed as part of the existence of an event or phenomenon whose form in this case is a concept that will then be used as a focal point in the implementation of research [29], [30], [31]. This research is an evaluation research that will directly involve four variables which include context variables, input variables, and process variables, and also include the use of product variables. Context variables include: the vision of the implementation of the E-report card, the mission of the implementation of the E-report card, the purpose of the implementation of the E-report card, and the competence of human resources. The input variables are organizational structure, educator readiness, E-report card administration readiness, funding, supporting facilities and infrastructure readiness, and the completeness of academic administration guidelines. Process variables include: socialization of E-report cards for teachers and learning how to use the program. Product variables include output and quality of the E-report card program itself.

2.4 Data Collection Techniques

Questionnaire

The questionnaire contains a list of structured questions with available alternative answers, so respondents only need to choose answers according to their personal aspirations, perceptions, attitudes, circumstances or opinions. In other words, a questionnaire is a data collection by providing or distributing a list of questions to respondents in the hope of providing a response to the list of questions. In this study, the questionnaire method was used to collect data on the effectiveness of the implementation of the E-report system in State Junior High Schools in Sidemen District reviewed from the CIPP component using an instrument in the form of questionnaire guidelines.

Documentation

Documentation is the process or activity of recording pbjek, either in the form of audio objects, video objects, or audio-visual objects. The documentation method means a way of collecting data by searching for existing data either in the form of documents, photo objects or with audio and video. The documentation method needed in this study is an internal document at the State Junior High School in Sidemen District which can be in the form of data or other supporting documents.

2.5 Data Analysis Methods and Techniques

The main data of this study are primary and secondary. Primary data is data obtained directly from the first source while secondary data is data obtained indirectly from the first source, but rather from the second or third source [32]. In this study, primary data was directly obtained from the source in the form of Context, input, process, and product variables through questionnaires, while secondary data data was obtained from the documentation method, namely to check the validity of the data obtained from the

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

questionnaire. The data structure includes data from context, input, process, and product variables in the form of numbers (quantitative).

3 Results and Discussion

3.1 Result

This study applies the CIPP (Context, Input, Process, Product) evaluation model explicitly and systematically to evaluate the effectiveness of the implementation of the E-report system in State Junior High Schools in Sidemen District. The four dimensions of the CIPP have been adequately described: the context dimension includes the vision, mission, objectives, and competencies of HR; Inputs include organizational structure, teacher and admin readiness, funds, infrastructure, and academic guidelines; the process includes socialization and training in the use of the system; and products include the output and quality of the E-report system. This approach is in line with the educational evaluation framework developed by Stufflebeam, making the CIPP framework a strong and relevant conceptual basis for examining technology-based programs in the school environment. However, the integration of other supporting theories such as model adoption technologies or national digital assessment standards has not been further discussed to enrich the evaluation perspective.

The sampling strategy using the purposive sampling technique, by selecting four State Junior High Schools in Sidemen District, has been methodologically explained and calculated using the Yamane and Isaac Michael formula. Although the number of samples (94 people) is adequate and in accordance with the teacher population in the region, the justification for the geographical selection which is limited to Sidemen District is still understudied in terms of representation in the national context. Given that geographical characteristics, infrastructure, and technological readiness can vary greatly between regions in Indonesia, the results of this study are limited in terms of generalization. To expand external validity, reflection should be added on how the local context of Sidemen can be compared or contrasted with other regions, especially in the framework of the implementation of the Independent Curriculum and national digital transformation.

In measuring the effectiveness category of the E-report system at State Junior High School in Sidemen District, Karangasem Regency, a quantitative descriptive analysis was carried out and used T-score analysis. Descriptive analysis was carried out on the four variables, namely the variables context, input, process and product. After each one is analyzed with a T-score, the direction of effectiveness is then determined. The results of data analysis for the variable scores of context, input, process and product with T-scores can be seen in Table 1.

Variable	Frequency			Information
	F (+)	F (-)	Result	
Context	50	44	+	Positive

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

H		+	Positive

Table 1.

Recapitulation of Context Variable Calculation Results

Based on Table 1. above, it can be seen that in the context variable, ∑ i (+) = 50 > ∑ (-) = 44, thus producing (+) (positive). Thus, it can be stated that the implementation of the use of the E-report application in State Junior High Schools in Sidemen subdistrict, Karangasem Regency, is considered from the context of the assessment to be quite effective. To make it easier to find out what weaknesses appear in the context variables, it can be done by paying attention to the analysis that exists in each item of each questionnaire item. The results of this test process are summarized in Table 2.

Table 2. Recapitulation by Item of Each Context Questionnaire Item

No	Score Z	Direction
1	1,118571	Positive
2	-0,26633	Negative
3	2,077346	Positive
4	-1,11857	Negative
5	-0,26633	Negative
6	0,053265	Positive
7	0,266326	Positive
8	0,479387	Positive
9	0,159796	Positive
10	1,01204	Positive
11	-1,11857	Negative
12	-1,01204	Negative
13	-1,54469	Negative
14	0,159796	Positive
Total +		8
Sum-		6
Result		Positive

Based on Table 2. It can be explained that the direction of the analysis results shows that the "context" variable has an overall positive perception, with the frequency of positive scores (50) higher than negative scores (44). Of the 14 questionnaire items

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

analyzed, it can be explained that the direction of the context instrument is positive, where the number of positive respondent directions is 8 and the negative respondent direction is 6.

The results of the input data analysis are carried out in providing a response or a second problem, where verification can be carried out by means of the process of calculating the results of data analysis that was carried out previously. After the raw data obtained from the input variable is successfully transformed into a T-score, it is further described in Table 3.

Table 3. Recapitulation of Input Variable Calculation Results

Variable	Frequency			Information
	F (+)	F (-)	Result	
Input	56	38	+	Positive
H			+	Positive

Based on Table 3. above, it appears that in the input variable, ∑ i (+) = 56 > ∑ (-) = 38, thus producing (+) (positive). Thus, it can be stated that the implementation of the use of the E-report application in State Junior High Schools in Sidemen District, Karangasem Regency is considered from the input of the assessment to be quite effective. To make it easier to find out what weaknesses appear in the input variables, it can be done by paying attention to the analysis on each item of each questionnaire item. The results of this test process are summarized in Table 4.

Table 4. Recapitulation by item of each input questionnaire item

No	Skor Z	Direction
1	0,121319	Positive
2	-1,57714	Negative
3	0,520956	Positive
4	-1,97678	Negative
5	-0,0785	Negative
6	0,121319	Positive
7	1,020504	Positive
8	0,421047	Positive
9	0,321138	Positive
10	1,420142	Positive
11	0,620866	Positive
12	-0,87778	Negative
13	0,920594	Positive
14	-0,97769	Negative

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

No	Skor Z	Direction
Sum +		9
Sum -		5

Based on Table 4. It can be explained that the direction of the analysis results shows that the "input" variable has an overall positive perception, with the frequency of positive scores (56) higher than negative scores (38). Of the 14 questionnaire items analyzed, it can be explained that the direction of the input instrument is positive, where the number of positive respondent directions is 9 and the respondent direction is negative 5.

The results of the data analysis process are carried out in providing responses or second problems, where verification can be carried out by means of the calculation process of data analysis results carried out previously. After the raw data obtained from the process variables is successfully transformed into a T-score, it is further described in Table 5.

Table 5. Recapitulation of Process Variable Calculation Results

Variable	Frequency			Information
	F (+)	F (-)	Result	
Process	56	38	+	Positive
H			+	Positive

Based on Table 5. above, it can be seen that in the process variable, $\sum$ i (+) = 57 > $\sum$ (-) = 37, thus producing (+) (positive). Thus, it can be stated that the implementation of the use of the E-report application in State Junior High Schools in Sidemen District, Karangasem Regency is considered to be quite effective. To make it easier to find out what weaknesses appear in the process variables, it can be done by paying attention to the analysis on each item of each questionnaire item. The results of this test process are summarized in Table 6.

Table 6. Recapitulation by item of each item of the Process Questionnaire

No	Skor Z	Direction
1	0,174964	Positive
2	-0,162	Negative
3	0,596174	Positive
4	-1,42563	Negative
5	0,259206	Positive
6	1,27011	Positive
7	1,101626	Positive
8	0,174964	Positive

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

No	Skor Z	Direction
9	0,8489	Positive
10	0,933142	Positive
11	-1,59412	Negative
12	-1,34139	Negative
13	-0,83594	Negative
Sum +		8
Sum -		5
Result		Positive

Based on Table 6. It can be explained that the direction of the analysis results shows that the "process" variable has a positive perception overall, with the frequency of positive scores (57) higher than negative scores (37). From the 13 questionnaire items analyzed, it can be explained that the direction of the process instrument is positive, where the number of positive respondent directions is 8 and the negative respondent directions are 5.

The results of product data analysis are carried out in providing responses or second problems, where verification can be carried out by means of the process of calculating the results of data analysis that was carried out previously. After the raw data obtained from the product variable is successfully transformed into a T-score, it is further described in Table 7.

Table 7. Recapitulation of Product Variable Calculation Results

Variable	Frequency			Information
	F (+)	F (-)	Result	
Product	46	48	-	Negative
H			-	Negative

Based on Table 7. above, it appears that in the product variable, $\sum$ i (+) = 46 > $\sum$ (-) = 48, thus producing (-) (negative). Thus, it can be stated that the implementation of the use of the E-report application in State Junior High Schools in Sidemen District, Karangasem Regency is considered from the assessment product to be ineffective. To make it easier to find out what weaknesses appear in product variables, it can be done by paying attention to the analysis that exists on each item of each questionnaire item. The results of this test process are summarized in Table 8.

Table 8. Recapitulation per item of each item of the Product Questionnaire

No	Skor Z	Direction
1	-0,02332	Negative
2	-1,14288	Negative

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

No	Skor Z	Direction
3	-1,42277	Negative
4	-1,28283	Negative
5	-0,30321	Negative
6	-0,16327	Negative
7	1,656014	Positive
8	0,95629	Positive
9	1,23618	Positive
10	0,6764	Positive
11	-0,44316	Negative
12	0,256566	Positive
Sum +		5
Sum -		7
Result		Negative

Based on Table 8. It can be explained that the direction of the analysis results shows that the "process" variable is negative where the number of negative respondents is 7 and the direction of positive respondents 5 means that there are more negative respondents than positive respondents.

Table 9. Recapitulation of Calculation Results of Analysis of Context, Input, Process and Product Variables at the Same Time

Variable	T-Score Direction			Information
	F +	F -	Result	
Context	50	44	+	+ + + -
Input	56	38	+	
Proses	57	37	+	
Product	46	48	-	

Based on Table 9. It can be explained that the context variable $\sum (+) > \sum (-)$ so that it produces + (effective), for the input variable $\sum (+) > \sum (-)$, so that it is able to prove the value of the direction that is + (effective), for the process variable $\sum (+) > \sum (-)$, so as to produce (+) (effective), and for the product variable $\sum (-) > \sum (+)$, so as to produce the direction of the value (-) (ineffective). So overall it produces (+ + + -). Thus, it can be explained that the effectiveness of the E-report system at State Junior High Schools in Sidemen District, Karangasem Regency is reviewed from the context, input, process, and product components are classified as effective in quadrant II as seen in the Glickman quadrant below.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

3.2 Discussion

E-rapor is a web-based application developed by the Ministry of Education and Culture to replace the manual report card system with this application expected to change the current educational paradigm from manual to digital patterns. The E-report application is an application for processing knowledge values, skill values, attitude values that have been carried out by educators so that the final score and its description are formed automatically in accordance with the student's achievement in each basic competency assessed, after the homeroom teacher inputs extracurricular scores, student attendance, achievements, attitude descriptions, and homeroom notes, the E-report will compile it into a report on student competency achievements [34]. The above evaluation is based on the results in the implementation of the use of the E-report application in State Junior High Schools in Sidemen District, Karangasem Regency is considered effective (+ + + -). Reviewed from each variable in the evaluation, it was found that the context variable was found in the effective (+) category, the input variable was found in the effective (+) category, the process variable was found in the (+) category, and the product variable was found in the (-) category

In the context variable, the effectiveness of using this E-report application is due to several factors. Based on the items of the instruments that have been distributed from the 14 statements given to the respondents, 8 statements were responded positively and 6 were responded negatively. Context indicators , which received a positive response from respondents were; the implementation of the E-report system in accordance with the policies of the leadership and the school, the E-report system in accordance with the applicable legal basis, E-report cards are needed in optimizing the performance of educators (teachers), components of the vision and mission and goals, the management of the E-report system is active in updating the E-report system in dapodik. This indicates that teachers' understanding of policies from leaders and schools is quite good. E-report cards are also needed by teachers because they get a positive response, this indicates that the E-report application is very helpful in supporting teacher performance in supporting assessments carried out by teachers to students. The vision, mission and goals of the E-report system also received a positive response, indicating that teachers are able to understand the E-report system itself well [35].

Meanwhile, the context indicators that received a negative response were; the legal basis of the E-report system, the E-report program implemented in schools, the management of the E-report system, and the socialization of the E-report system both from the relevant agencies and the E-report manager to teachers. This is because not all teachers understand the applicable legal basis of the E-report system, most teachers only know the existing application but are reluctant to learn more about the legal basis and history of making the E-report application. Apart from the legal basis that many teachers still do not understand related to the legal basis, actually the competence of human resources is very good, but there are some of the E-report managers who are school operators, not teachers, this is because the E-report application is integrated with the school data so that the responsibility is not fully in the school, only providing socialization when it is going to instill grades into the E-report system at the end of the

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

semester, this has an impact on the understanding of teachers and also homeroom teachers.

The results of this study are in line with the results of the research conducted [36] with the title "Implementation and Training on the Use of Web-Based E-report cards for Student Assessment at Mitra Bintaro Junior High School, Tangerang City" The results of the study show that the process of assessing student learning outcomes, both by educators and by educational units, will be more systematic, comprehensive, more accurate, and faster if supported by the application of information and communication technology. In this regard, the Directorate of Junior High School Development, Directorate General of Primary and Secondary Education, Ministry of Education and Culture, has developed an E-report application for junior high schools that is integrated with the Basic Education Data (Dapodik). The Junior High School E-report program is a web-based application, where in one school this application is simply installed on a server or computer that functions as a server. The training activities in order to provide understanding for subject teachers and homeroom teachers at Mitra Bintaro Junior High School in managing subject scores using E-report cards, have generally gone well and smoothly. Based on the results of the evaluation of the training that has been carried out, it is concluded that participants can feel the benefits of the implementation of the training on the implementation of the E-report based assessment system.

The input variables in this study are effective in supporting the implementation of the use of the E-report application. This can be seen from all input statements that received positive (+) results, namely of the 13 statements given to respondents, 8 statements were responded positively and 5 were responded negatively. The indicators that received positive feedback from respondents were; readiness of educators (teachers), readiness of E-report administrators (ICT Team), funding, as well as completeness and guidelines for academic administration. This indicates that the readiness of educators' abilities in this case teachers and the ability of E-rapor admins have run well in using the E-rapor application itself, in addition to that funding and the completeness and academic administration guidelines are very adequate in supporting the use of the E-rapor application by users, in this case teachers. Indicators of input evaluation that received negative responses were organizational structure, student acceptance/response, facilities/infrastructure, completeness and academic administration guidelines. This is because the organizational structure in the E-report system is arguably inadequate and the lack of qualifications possessed by the E-report manager, in addition to that, the manager of the E-report system in schools is mostly only the task of helping in managing/additional tasks given by the supervisor and not the main priority task in managing the E-report only, this will have an impact if there are obstacles in the implementation of the user's E-report report, in this case the teacher will usually be confused and only waiting for the E-report admin to fix the system to be reused. The indicators of acceptance/response of students (students) also need attention because they get negative responses, this is because usually the E-report card that has been distributed to students at the end of the semester usually students rarely check or see thoroughly the results of the E-report card from each student/student related to typing errors, mistakes in making student identities, usually students will report when they have graduated from school.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

Indicators of facilities and infrastructure also need attention because there is not enough facilities or infrastructure to support the process of implementing E-report cards in several schools, for example, the internet or wifi network which is usually disrupted. On the other hand, there are also some teachers who do not have laptop facilities in entering grades into the system at the end of the semester. For academic administration guidelines, there is also a negative response, this is because the processing of student data, one of which is dapodik, usually there is an error in the procedure for synchronizing student data, later it will affect the results of the E-report card, when it is printed, there will be an error and usually the homeroom teacher will be confused to overcome the problem. In addition, there are still many grade input procedures, final grade processing procedures and teachers' access to the system. However, this can usually be overcome with mentoring by peers who already understand or mentoring carried out by E-report administrators, even with the support of policy makers in schools for the E-report system, making a significant impact, including making teachers more active, teachers in working or evaluating students faster and of course the results are also very effective and very efficient.

The results of this study are in line with the results of research conducted by [33], [37] with the title "Evaluation of the CIPP Model Program on the Science Learning Process" which found that the implementation of science learning at SMP IT Raudlatul Jannah was quite effective in terms of learning implementation requirements in the form of the number of study groups, teacher workload, the number of textbooks owned by the school and the management of a complete and well-organized classroom. The results of the evaluation of the context component showed an adequate profile of junior high schools for learning. Input evaluation shows curriculum, teaching materials, teachers, and supporting infrastructure. Process evaluation shows that the implementation of learning and learning requirements is quite effective. Product evaluation shows the achievement of learning objectives based on criteria. The process variables in this study are generally very supportive in the implementation of the E-report card system at State Junior High Schools in Sidemen District, Karangasem Regency. This can be seen from the 13 statements given to respondents, 8 statements were positively responded to and 5 statements were negatively responded to by respondents. If you look at the results provided by the respondents, the overall process of implementing the E-report card system has gone quite well. However, there are several statements that also receive negative responses from respondents in its implementation so that attention needs to be paid to the implementation of the E-report system, especially at State Junior High Schools in Sidemen District, namely (1) providing socialization both to E-report administrators and teachers, considering that there are still some teachers who do not understand the use of the E-report system in the process of its use and implementation so that this socialization must be carried out continuously and sustainably, not only given socialization when they will have input the scores to the report card, this will make admins and teachers confused with the short time (2) learning how to use the E-report card system program to teachers, especially at State Junior High School in Sidemen District, must be done more often, considering that the ability between one teacher and another is not the same in the field of technology. (3) teachers who are used to technology will usually rarely find obstacles in the implementation of the E-report system because it is

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

very flexible and can be done anywhere, both from home and at school. However, in this case, there are still several problems or obstacles faced by some teachers who are incapable of understanding technology or also have the ability to stutter technology, so this problem or obstacle is certainly a quite serious obstacle. Teachers who have skills that seem to stutter technology, then of course require a long time in understanding or learning a system and also require long assistance both from the E-report admin and from peers who already understand the E-report system itself. Conditions as described above are also experienced in schools that also experience obstacles or problems with the use of the E-report system program in four State Junior High Schools in Sidemen District, Karangasem Regency.

The product variables in this study were not effective, this can be seen from the 12 statements given to respondents, 7 statements received negative responses and 5 statements received positive responses. Although the planning and implementation of the E-report system itself, especially in State Junior High Schools in Sidemen District, has been very good, several obstacles have been found in the E-report system, including: (1) some users are not satisfied with the E-report system program, usually due to changes in the application of the E-report system which continues to change so that teachers have to start learning again (2) Limited server capacity in the E-report system, this usually occurs when users (teachers) simultaneously access the E-report system, this will cause the website to be slow or even completely inaccessible. (3) The E-report card application system is highly dependent on the data in Dapodik, this will have an impact if there is a problem in the Dapodik data, it will have an effect on the E-report system. (4) There are difficulties in downloading report cards, especially the latest version of E-report cards, so users must need help from the E-report card admin himself. (5) there is not enough time or readiness for teachers to understand the E-report program due to the lack of digital literacy regarding the application of the E-report card system, so the relevant agencies are expected to provide more intensive assistance to some users who do not fully understand the implementation of the E-report system. (6) Limited access in the E-report system program is because not all teachers and schools have stable internet access and adequate devices (computers or laptops) to access and use the E-report application. This has an impact on teachers who can later access the E-report card will experience panic and confusion. (7) Technical problems that often occur in the E-report system as well as other information systems are susceptible to technical problems such as server problems, internet network disruptions, or errors in data updates. This can hinder the process of accessing the E-report application or sending data, as well as slowing down the assessment and reporting process.

The results of this study are in line with the results of the research conducted [38], [39] with the title "Audit of E-report Information System Using Cobit 4.1 Domain Me Framework (Monitor and Evaluate) at SMA Muhammadiyah 1 Kepanjen Malang" which found that an information system audit was carried out to determine the level of maturity of IT management (E-report cards) whether it was in accordance with the established procedures and standards. An information system that has been implemented cannot always meet the needs of the organization, in addition to being able to meet some needs but there are also often system failures or system errors, this can occur due to errors or misuse of the E-report information system. The results of the research that

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

have been conducted in the ME (Monitor and Evaluate) domain are at level 4, namely Managed and Measurable with an average value of 3.91. This means that the maturity level of the existing E-report information system is currently below the expected maturity level, so it is necessary to make improvements to be able to be at the expected level.

The results of this study are also in line with the research conducted by [22], [40] by conducting research entitled "Evaluation of Industrial Work Practice Programs in Vocational High Schools Using the CIPP Model" which found that the evaluation of industrial work practice programs on the context variable showed a percentage of 29%, this shows that the context variables consisting of the objective aspects of the preschool program, pre-school environment, and pre-school are in accordance with the curriculum in the non-formal category. good. With these results, it means that there is a need for improvement in the purpose of implementing industrial work practice programs, the selection of pre-industrial environmental conditions and the need for synchronization between the curriculum in schools and the curriculum in industry.

The evaluation of the industrial work practice program on the input variable showed a percentage of 33%, this shows that the input variable consisting of aspects of student readiness in the implementation of praerin, the availability of debriefing materials from schools and industry, and the realization of curriculum implementation in the category are not good. Through this data, it shows that there is a need for better debriefing so that students are better prepared to carry out work practice programs in the industry. The evaluation of the industrial work practice program on the process variable showed a percentage of 50%, this shows that the process variables consist of aspects of the implementation of monitoring students in industrial work practices, the involvement of students in the learning process in work practice activities in the industry, and cooperation between students and employees in the pre-industrial and The ability of students to solve problems in the category is quite good. The evaluation of the industrial work practice program on the product variable showed a percentage of 33%, this shows that the product variable consisting of aspects of improvement in the mastery of competencies in the category is not good. Based on this data, the competence of students after pre-school has not improved. This is due to the procces, context and inputs that have not been maximized. Based on the average analysis of the percentage of data from the distribution of questionnaires through the CIPP model, an average of 36.25% was obtained, this shows that the implementation of the industrial work practice work program at SMKN 4 Kota Serang of the automotive light vehicle engineering expertise program shows a bad category.

Overall, although the context, input, and process variables show good effectiveness, ineffective product variables become obstacles. However, E-report cards also provide a number of very important benefits for teachers, including ease of management of grades and reporting of student learning outcomes, increased time efficiency in intesting grades, and better data accessibility. In addition, E-report cards can also help teachers in analyzing student development and also in providing more accurate and appropriate feedback. So that the effectiveness of the implementation of the E-report program is not only determined by the sophistication of the system, but also by the readiness of human resources in operating it and also the readiness of educators' abilities. Intensive

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

training and mentoring for teachers is the key to the successful implementation of the E-report program. Training and mentoring activities are effective in improving teachers' competence in input grades on the E-report application [41], [42]. Thus, the implementation of E-report cards supported by adequate infrastructure and improving teacher competence is expected to improve the quality of assessment and transparency in reporting student learning outcomes.

4 Conclusion

Based on the results of the research that has been conducted, it can be concluded that the application of the E-report system in State Junior High School in Sidemen District, Karangasem Regency shows good effectiveness in three of the four aspects of CIPP evaluation (Context, Input, Process, and Product). In detail, in terms of context, the E-report card system is considered effective because it is in accordance with the needs of schools and education policies. In terms of input, the availability of human resources and facilities that are sufficient to support the implementation of this system. In terms of process, the implementation of E-report cards ran smoothly and according to procedures despite some technical challenges. However, in terms of product/output, the results are considered ineffective because they have not fully met the expected final goal in reporting learning outcomes optimally. The overall evaluation based on the four components resulted in an effectiveness pattern of + + + -. In addition, various obstacles were found in the implementation of the E-report system. Some E-report card managers do not come from their home school or do not have the status of civil servant teachers, so their involvement and responsibility are limited. The organizational structure of the system management is also inadequate because the admin concurrently serves as the manager of the dapodik. The socialization of the E-report system, which is rarely carried out, makes some teachers completely leave the task of inputting grades to the admin. The limitation of teachers' ability to use E-report cards occurs due to the lack of continuous training from the office and internal schools. In addition, the guidelines for using the system have not been thoroughly conveyed to teachers, causing confusion. The operational budget is also limited, not all needs can be met through BOS funds. Low server capacity causes the system to experience frequent interruptions when used simultaneously. The dependence of the E-report system on data from Dapodik is also a challenge because if there is an error in Dapodik's data, then the E-report card will also be affected. Finally, technical issues such as network outages, data update errors, and server issues still occur frequently and hinder overall system performance.

References

[1] R. Firdausi, B. Mardikawati, N. Huda, R. Riztya, and S. F. Rahmani, “Peningkatan Literasi Digital Dikalangan Pelajar: Pengenalan dan Praktek Penggunaan Teknologi Pendidikan dalam Komunikasi,” no. 5, 2023.

[2] A. Erianda, D. Prayama, and F. Rozi, “Pelatihan Pengelolaan Media Digital sebagai Media Promosi dan Penjualan pada Kampung Manggis Kecamatan Pauh Kota Padang,” *Jiptek :*

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

Jurnal Pengabdian Ilmu Pengetahuan dan Teknologi, vol. 1, no. 1, pp. 1–5, 2023, doi: 10.62527/jiptek.1.1.2.

[3] S. A. Baihaqi and S. Widodo, "Pengaruh Digital Marketing melalui Meta Ads terhadap Brand Awareness UMKM Kopi," *Jurnal Pendidikan dan Teknologi Indonesia*, vol. 5, no. 4, pp. 1043–1051, 2025, doi: 10.52436/1.jpti.713.

[4] T. Adolphus, "Problems of Teaching and Learning of Geometry in Secondary Schools in Rivers State , Nigeria," *International Journal of Emerging Sciences*, vol. 1, no. 2, pp. 143–152, 2011.

[5] A. Adji and H. Hidayatulloh, "Management of Education Quality Improvement in Junior High School," *Indonesian Journal of Education Methods Development*, vol. 18, 2022, doi: 10.21070/ijemd.v18i.649.

[6] B. Agustian and M. Mawardah, "IMPROVE THE SENSORY AND MOTOR ABILITIS OF CHILDREN USING EDUCATIONAL GAMES AGE 5-7 YEARS IN PRIMARY SCHOOL 24 RAMBUTAN," *Abdi Dosen : Jurnal Pengabdian Pada Masyarakat*, vol. 7, no. 4, Art. no. 4, Dec. 2023, doi: 10.32832/abdidos.v7i4.1910.

[7] A. A. A. Almarzuqi and H. Mat, "The Effectiveness of Blended Learning on STEM Achievement of Secondary School Students," *IJARBSS*, vol. 14, no. 1, p. Pages 1645-1661, Jan. 2024, doi: 10.6007/IJARBSS/v14-i1/20140.

[8] T. Education, Y. Chen, and C. Chang, "The Impact of an Integrated Robotics STEM Course with a Sailboat Topic on High School Students ' Perceptions of Integrative STEM , Interest , and Career Orientation Robots in the STEM Curriculum," *EURASIA Journal of Mathematics, Science & Technology Education*, vol. 14, no. 12, 2018.

[9] A. H. Abdullah, M. Mokhtar, N. D. A. Halim, D. F. Ali, L. M. Tahir, and U. H. A. Kohar, "Mathematics teachers' level of knowledge and practice on the implementation of higher-order thinking skills (HOTS)," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 13, no. 1, pp. 3–17, 2017, doi: 10.12973/eurasia.2017.00601a.

[10] L. Cruz Castro, H. Shoaib, and K. Douglas, "Computational Thinking Frameworks used in Computational Thinking Assessment in Higher Education. A Systematized Literature Review.," in *2021 ASEE Virtual Annual Conference Content Access Proceedings*, 2021. doi: 10.18260/1-2--36824.

[11] J. Fraillon, J. Ainley, W. Schulz, D. Duckworth, and T. Friedman, "IEA International Computer and Information Literacy Study 2018 Assessment Framework," *IEA International Computer and Information Literacy Study 2018 Assessment Framework*, no. August, 2019, doi: 10.1007/978-3-030-19389-8.

[12] M. Apiola and E. Sutinen, "Design science research for learning software engineering and computational thinking: Four cases," *Computer Applications in Engineering Education*, vol. 29, no. 1, pp. 83–101, 2020, doi: 10.1002/cae.22291.

[13] H. Ahmad, Syamsuddin, Febryanti, and A. Latif, "Development of student worksheets assisted by GeoGebra application in improving higher-order thinking ability in mathematics learning," *Journal of Physics: Conference Series*, vol. 1882, no. 1, pp. 1–8, 2021, doi: 10.1088/1742-6596/1882/1/012048.

[14] W. Prompolmaueng, A. Wetmaha, and P. Jamsri, "A Game Development to Promote Computational Thinking," in *2021 13th International Conference on Information Technology and Electrical Engineering (ICITEE)*, 2021, pp. 116–121. doi: 10.1109/icitee53064.2021.9611850.

[15] R. F. Adler and H. Kim, "Enhancing future K-8 teachers ' computational thinking skills through modeling and simulations," *Journal Education and Information Technologies*, vol. 23, no. 4, pp. 1501–1514, 2017.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

[16] A. I. Al-Hatem, M. Masood, and H. Al-Samarraie, "Fostering student nurses' self-regulated learning with the Second Life environment: An empirical study," *Journal of Information Technology Education: Research*, vol. 17, pp. 285–307, 2018, doi: 10.28945/4110.
[17] M. Anjaeni, "Effect of Application of the Discovery learning Model on Mathematics Learning outcomes of Elementary Students," *Social, Humanities, and Educational Studies (SHES): Conference Series*, vol. 4, no. 6, Art. no. 6, Sep. 2021, doi: 10.20961/shes.v4i6.70552.
[18] R. Yusnanto and A. Rahayu, "Application of Learning Video Based on Visual, Auditory, and Kinesthetic Learning Styles to Increase Thermodynamics Learning Motivation at Grade XI in High School:," presented at the 3rd Tarumanagara International Conference on the Applications of Social Sciences and Humanities (TICASH 2021), Jakarta, Indonesia, 2022. doi: 10.2991/assehr.k.220404.278.
[19] L. Shanmugam, F. Khalid, W. N. W. Hashim, and N. E. B. Mohd Shafie, "Improving Students' Achievement on Computational Thinking Skills Via Mobile Application Development Module," *International Journal of Academic Research in Progressive Education and Development*, vol. 10, no. 1, pp. 607–619, 2021, doi: 10.6007/ijarped/v10-i1/9228.
[20] W. Tongjun, "The Dao of Mathematical Creativity, Symmetry Theories, and Yin-Yang Philosophy With Their Classroom Applications," *Management Studies*, vol. 8, no. 5, pp. 306–313, 2020, doi: 10.17265/1539-8072/2020.10.005.
[21] S. Aziz, M. Mahmood, and Z. Rehman, "Implementation of CIPP Model for Quality Evaluation at School Level: A Case Study," *Journal of Education and Educational Development*, vol. 5, no. 1, pp. 189–206, Jun. 2018.
[22] A. S. Oyelere, F. J. Agbo, and S. S. Oyelere, "Formative evaluation of immersive virtual reality expedition mini-games to facilitate computational thinking," *Computers & Education: X Reality*, vol. 2, p. 100016, 2023, doi: 10.1016/j.cexr.2023.100016.
[23] W. Boonjeam, K. Tesaputa, and A. Sri-ampai, "Program Development for Primary School Teachers' Critical Thinking," *International Education Studies*, vol. 10, no. 2, pp. 131–138, 2017, doi: 10.5539/ies.v10n2p131.
[24] G. A. Syafarina and Z. Zaenuddin, "Prediksi Klik Iklan Online Menggunakan Regresi Logistik: Studi Empiris Tentang Pendekatan Berbasis Data," *Technologia : Jurnal Ilmiah*, vol. 16, no. 2, pp. 226–231, 2025, doi: 10.31602/tji.v16i2.15943.
[25] N. Suriani, Risnita, and M. S. Jailani, "Konsep Populasi dan Sampling Serta Pemilihan Partisipan Ditinjau Dari Penelitian Ilmiah Pendidikan," *J.Ihsan*, vol. 1, no. 2, pp. 24–36, Jul. 2023, doi: 10.61104/ihsan.v1i2.55.
[26] S. Ceylan and Z. Ozdilek, "Improving a Sample Lesson Plan for Secondary Science Courses within the STEM Education," *Procedia - Social and Behavioral Sciences*, vol. 177, no. July 2014, pp. 223–228, 2015, doi: 10.1016/j.sbspro.2015.02.395.
[27] J. H. Ryoo *et al.*, "Early Mathematics Skills From Prekindergarten to First Grade: Score Changes and Ability Group Differences in Kentucky, Nebraska, and Shanghai Samples," *Journal of Advanced Academics*, vol. 25, no. 3, pp. 162–188, 2014, doi: 10.1177/1932202X14538975.
[28] S. Emİr, "Contributions of Teachers ' Thinking Styles to Critical Thinking Dispositions (Istanbul-Fatih Sample)," vol. 13, no. 1, pp. 337–347, 2013.
[29] H. Y. Durak and M. Saritepeci, "Analysis of the relation between computational thinking skills and various variables with the structural equation model," *Computers & Education*, vol. 116, pp. 191–202, 2017, doi: 10.1016/j.compedu.2017.09.004.
[30] H. J. Lee and J. Kim, "A structural analysis on Korean young children's mathematical ability and its related children's and mothers' variables," *Early Child Development and Care*, vol. 186, no. 10, pp. 1675–1692, 2016, doi: 10.1080/03004430.2015.1122597.

Journal of Science and Education (JSE)
Vol 6, Issue 1, September 2025, Pages 970-992
ISSN: 2745-5351 (Media Online)
DOI: https://doi.org/10.58905/jse.v6i1.598

[31] D. Kaya, D. Izgiol, and C. Kesan, "The investigation of elementary mathematics teacher candidates' problem solving skills according to various variables," *International Electronic Journal of Elementary Education*, vol. 6, no. 2, pp. 295–313, 2014.
[32] J. F. T. Nese and C. Lai, "Technical Report # 1320 A Primer on Longitudinal Data Analysis In Education University of Oregon University of Oregon • 175 Education 5262 University of Oregon • Eugene , OR 97403-5262," 2012.
[33] D. L. Stufflebeam and G. Zhang, *The CIPP Evaluation Model: How to Evaluate for Improvement and Accountability*. New York: Guilford Publications, 2017.
[34] E. R. Kurniasi, R. Vebrian, and A. Arsisari, "Development of Student Worksheets Based Computational Thinking for Derivatives of Algebra Function," *JTAM (Jurnal Teori dan Aplikasi Matematika)*, vol. 6, no. 1, pp. 212–222, 2022.
[35] A. T. Wahyuni, E. Salim, and S. Sari, "Pengaruh Daya Tarik Iklan, Celebrity Endorser terhadap Minat Beli melalui Citra Merek Produk pada Pelanggan TikTok Shop sebagai Variabel Intervening," *ARZUSIN*, vol. 5, no. 1, pp. 347–364, 2025, doi: 10.58578/arzusin.v5i1.5039.
[36] K. Trimawati, T. Kirana, and R. Raharjo, "Pengembangan Instrumen Penilaian IPA Terpadu dalam Pembelajaran Model Project Based Learning (PjBL) untuk Meningkatkan Kemampuan Berpikir Kritis dan Kreatif Siswa SMP," *quant. j. inov. pendidik. Sains*, vol. 11, no. 1, p. 36, Apr. 2020, doi: 10.20527/quantum.v11i1.7606.
[37] N. Nurviana, "Evaluasi Model Context, Input, Process, Product (CIPP) Pada Program Unggulan Riset MAN 3 Palembang," *JURNAL KAJIAN ISLAM MODERN*, vol. 9, no. 01, pp. 57–76, 2023, doi: 10.56406/jkim.v9i01.205.
[38] S. H. Bariyah and K. A. N. Imania, "Implementasi Blended Learning Berbasis Moodle Pada Jurusan Pendidikan Teknologi Informasi," *Jurnal Petik*, vol. 4, no. 2, pp. 106–113, 2018, doi: 10.31980/jpetik.v4i2.10.
[39] D. S. Tan, J. Phang, M. H. Kho, Z. Zaspin, and Z. Julyance, "Analisis Pengaruh Faktor Individu, Citra Merek, dan Iklan Sosial Terhadap Perilaku Konsumen dalam Pembelian Merek Pakaian Fashion di Kota Batam," *Jurnal Ekonomi Manajemen Sistem Informasi*, vol. 6, no. 3, pp. 1204–1216, 2025, doi: 10.38035/jemsi.v6i3.2227.
[40] H. Syukur, "Program Tafaqquh Takhasus Arobiyyah: Analisis dan Evaluasinya," *SIRAJUDDIN : Jurnal Penelitian dan Kajian Pendidikan Islam*, vol. 3, no. 2, pp. 24–40, 2024, doi: 10.55120/sirajuddin.v3i2.1857.
[41] F. Syah and M. Maswir, "Kegiatan Pelatihan Mengelola Event di Kelurahan Meruyung Depok," *Mitra Akademia: Jurnal Pengabdian Masyarakat*, vol. 3, no. 1, 2020, doi: 10.32722/mapnj.v3i1.2824.
[42] S. Maharani, T. Nusantara, A. R. As'ari, and Abd. Qohar, "Computational Thinking : Media Pembelajaran CSK (CT-Sheet for Kids) dalam Matematika PAUD," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, vol. 5, no. 1, pp. 975–984, 2020, doi: 10.31004/obsesi.v5i1.769.

