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Development of Interactive Learning Media Based on Website Using Google Sites at SMK Negeri 1 Samarinda

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***Abstract*—**The rapid advancement of information technology requires the education sector to adapt by adopting modern learning methodologies. SMK Negeri 1 Samarinda, a leading vocational institution, faces challenges in providing engaging learning materials, especially in the Computer Network Engineering (TJKT) department. Observations show that conventional media, such as PowerPoint presentations, printed modules, and WhatsApp groups, are often monotonous, reducing student motivation. This research aims to develop interactive website-based learning media using Google Sites for the Basic Vocational Program subject. The study employed the Planning, Production, and Evaluation (PPE) development model. Data were collected through observations and questionnaires, analyzed using descriptive methods. The developed media was evaluated by one content expert, three media specialists, and tested with 28 students from Class X TJKT. Results indicate that the media received an average score of 4.6 from content experts (highly feasible), 4.4 from media experts (highly feasible), and an 84.56% positive response from students. The website includes instructional materials, educational videos, interactive games, assessment tools, and feedback mechanisms, accessible on any internet-connected device. This web-based platform enhances student engagement through multimedia integration and offers flexible resource access, serving as an effective solution to limited educational infrastructure. The implementation addresses technological constraints while preparing students for the digital workplace they will encounter in their future careers.

***Keywords*—**Interactive Learning, Website Learning, Google Sites, Vocational Education, Multimedia Learning.

I. INTRODUCTION

The rapid advancement of information and communication technology has significantly impacted various aspects of human life, particularly education. As a key driver of human development, education not only fosters technological innovation but also requires the strategic use of these advancements to achieve its goals more effectively and efficiently (Rijal & Jaya, 2020). This digital transformation has shifted knowledge delivery and acquisition from traditional, teacher-centered methods to dynamic, interactive, and student-centered learning environments.

Recent studies underscore the importance of integrating technology into education. Mashudi et al., (2023) found that interactive digital media boosts student engagement and improves learning outcomes in elementary schools. Similarly, Adzkiya & Suryaman (2021) showed that Google Sites significantly enhances English language learning for fifth-grade students. These findings highlight technology's growing role in creating effective and engaging learning environments.

Vocational High Schools (SMK) must align their teaching methods with industry needs and technological developments. Unlike general high schools, SMK programs focus on equipping students with practical skills for immediate workforce entry, making it essential to adopt advanced teaching technologies (Abdi et al., 2024). Integrating digital tools in vocational education enhances learning experiences and builds digital competencies critical for technology-driven careers (Ghosh & Ravichandran, 2024).

Classroom observations at SMK Negeri 1 Samarinda revealed that students lose focus when PowerPoint is used to explain complex technical concepts, such as computer architecture and network protocols, due to difficulties visualizing processes through static slides. Using WhatsApp to share materials also poses challenges, as content becomes scattered across chats, complicating systematic access and organization.

SMK Negeri 1 Samarinda, particularly its Computer Network and Telecommunication Engineering (TJKT) department, struggles to provide engaging learning media tailored to student needs. Located at Jalan Pahlawan No. 04, Dadi Mulya, Samarinda Ulu District, this school is a top choice for students pursuing vocational education. However, it faces limitations in technological infrastructure and teaching resources.

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Observations in August 2024 showed that many classrooms lack LCD projectors, and the TJKT department's lab has only 16 computers—insufficient for all students. As a result, many students, especially new ones, must bring their own laptops. Teachers, managing multiple classes (X, XI, and XII), often rely on students to learn independently. Traditional media, such as printed modules, PowerPoint presentations, and WhatsApp groups, are seen as monotonous and fail to inspire motivation, particularly for subjects needing visualization and practical application.

Web-based learning has gained relevance in modern education, especially post-COVID-19, which accelerated digital transformation in the sector. Wijaya et al., (2020) found that technological readiness and interactive design are key to successful web-based learning, reinforcing the need for platforms like Google Sites in today's digital education ecosystem.

Interviews with students and teachers in September 2024 highlighted the demand for interactive, flexible learning media accessible anytime, anywhere. Students sought engaging media to combat boredom, while teachers, using tools like Google Classroom, WhatsApp, and printed modules, acknowledged these methods' limitations for digital-native students.

Although prior research has explored web-based media in education, its application in vocational settings, especially for technical subjects like computer networking, remains underexplored. Jendra et al., (2024) showed Google Sites' effectiveness for guidance services, but not for technical vocational subjects. Muniarsih & Nurlina (2023) found it useful for writing skills but not technical education.

Google Sites offers a promising solution, enabling multimedia integration (text, images, videos, quizzes) and supporting collaboration and independent learning. Kaban (2021) noted that Google Sites can help teachers present teaching materials, assignments, and modules with enhanced creativity through various content formats. Additionally, the platform supports collaboration between teachers and students, and facilitates independent learning aligned with 21st-century needs. Its accessibility across different internet-connected devices makes it particularly suitable for the current educational landscape where hybrid and remote learning has become increasingly common.

This research's novelty lies in applying Google Sites to technical vocational education, specifically the Basic Vocational Program in computer networking. Unlike studies focused on general or non-technical subjects, it addresses vocational students' unique needs with tailored educational games and quizzes. The hypothesis is that this interactive web-based media will enhance engagement and learning outcomes at SMK Negeri 1 Samarinda, particularly in conceptual understanding and practical skills.

The hypothesis In this research is that the integration of interactive web-based learning media using Google Sites will enhance student engagement and learning outcomes in the Basic Vocational Program at SMK Negeri 1 Samarinda, with significant improvements particularly in conceptual understanding and practical application capabilities.

This study aims to develop interactive website-based learning media using Google Sites for the Basic Vocational Program in Class X at SMK Negeri 1 Samarinda, using the PPE model. The process involves needs analysis, instructional design, website creation, and effectiveness evaluation via expert validation and student feedback. The media is expected to boost student interest, engagement, and outcomes, offering an engaging, accessible learning environment that prepares students for technological careers while fostering digital literacy and self-directed learning.

II. Literature Review

A. *Interactive Learning Media*

Interactive learning media enable action-reaction interactions between users and the medium. Haleem et al., (2022) define them as software and hardware that deliver educational content and provide feedback. Amatullah & Joko (2022) describe them as systems allowing users to control and combine media like text, audio, video, graphics, and animation.

Learning media serve key functions including communicative (facilitating teacher-student interaction), motivational (boosting learning enthusiasm), meaningful (developing cognitive, affective, and psychomotor skills), perception alignment (ensuring shared understanding) and individuality (adapting to student needs) (Rahayuningsih et al., 2022) According to Noetel et al., (2021) note their benefits: clear information presentation, student attention capture, and transcendence of time and space limits.

At SMK Negeri 1 Samarinda, interactive media are vital for simulating practical experiences amid limited equipment, adapting elementary-level principles Mashudi et al., (2023) to vocational technical skills.

B. *Google Sites as Learning Media*

Google Sites is a web-based platform for creating educational interfaces. Kaban (2021) highlights its ability to deliver materials, assignments, and modules creatively via text, images, and videos. Its advantages include:

1. Flexible access: Available anytime, anywhere with internet.
2. Interactive features: Supports quizzes, discussion forums, and video integration.
3. Multimedia integration: Combines text, images, audio, and video.
4. Content updates: Easily refreshed for relevance.
5. Collaboration: Facilitates teacher-student interaction.

Aprilia (2022) notes limitations like lacking drag-and-drop design and native script support, addressable via Google Apps Script or WordPress. Studies like Ningsih et al., (2023) and Mubarok (2023) affirm Google Sites' impact on learning outcomes, while

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Rijal & Jaya (2020) and Krisdiyansah & Hakim (2023) highlight its creativity and effectiveness for modern students. Roosita et al., (2022) established connections between interactive media and student learning enthusiasm. These studies provide foundational knowledge for implementing digital learning solutions in various educational contexts.

C. Basic Expertise Program

The Basic Expertise Program covers computer basics, hardware, assembly, and BIOS (Basic Input Output System).

A computer is a collection of electronic machines consisting of millions of components that work together to form an organized system capable of performing tasks based on given instructions. Kaban (2021) defines a computer as an electronic system performing tasks per instructions.

Hifni et al., (2023) emphasize rising demand for assembly skills due to market growth, flexibility, and cost savings, critical for vocational students..

III. METHODS

This research is a Research and Development (R&D) study to create and test interactive website-based learning media using Google Sites.

A. Development Model

The PPE (Planning, Production, Evaluation) model by Richey and Klein was used for its systematic approach to educational product development (Rustandi et al., 2022). The PPE model used in this research includes three phases: Planning, Production, and Evaluation. The development process is shown in Figure 1.

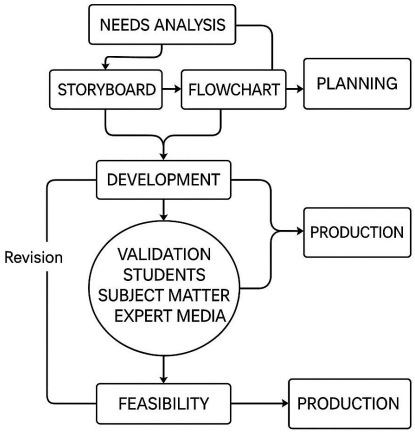

Figure 1. PPE Development Flow

1. Planning

The planning stage begins with a needs analysis Needs analysis began with observations during the KKN-PLP program (August 2024) and interviews (September 2024) at SMK Negeri 1 Samarinda. Learning used Project-Based Learning and lectures, with teachers managing multiple classes, necessitating independent study. Existing media (modules, PowerPoint) were deemed unengaging. The planning assessed feasibility, facility support, and teacher skills, targeting visual and interactive content preferences of TJKT students.

2. Production

This stage involved creating a design blueprint for the learning product. The production phase included two main aspects :

a. Instructional Design: This component focused on the pedagogical structure of the learning materials.
b. Learning Materials: This component involved the preparation of content to be presented in the media.

Both aspects were visualized through flowcharts and storyboards. The flowchart in Figure 1 shows the development process following the PPE model, illustrating the relationship between the analysis, design, and evaluation phases.

3. Evaluation

Evaluation is the process of testing and assessing the extent to which the developed product meets established specifications. The purpose of this stage is to determine whether the product meets the desired expectations. The evaluation process included several steps:

a. Product validation data analysis: Data obtained from product validation by material and media experts were analyzed to assess product feasibility based on expert perspectives.
b. User/student data analysis: Feedback provided by students was analyzed to understand their opinions and assessments of the developed product.
c. Final product: After going through the validation and revision process in the previous stage, the final product in the form of learning media was produced.

B. Research Time and Location

Conducted from January to February 2025 at SMK Negeri 1 Samarinda, Jalan Pahlawan No. 04, Dadi Mulya, Samarinda Ulu District, East Kalimantan, with testing on February 25-26, 2025.

C. Research Subjects and Objects

Subjects were 36 Class X TJKT students (24 male, 12 female), with 28 sampled for testing. The object was the Google Sites-based learning media for the Basic Expertise Program.

D. Data Collection Techniques

Data collection in this research utilized two primary methods: observation and questionnaires. Observation was conducted to comprehensively explore the needs of students and teachers, allowing the developed interactive learning media to be designed to not only

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attract students' interest but also be easy to use and efficient for teachers in achieving educational goals. Questionnaires were used to collect information by providing questions or statements to respondents. Two types of questionnaires were employed: closed questionnaires containing questions with predetermined answer choices, Jendra et al., (2024) suggest using a Likert scale questionnaire to collect information by providing questions or statements to respondents, using a Likert scale checklist to assess media feasibility, which were completed by media experts, material experts, and students; and open questionnaires allowing respondents to provide detailed answers according to their perspective, with the feedback and suggestions considered for improvements in media development, which were completed by material experts.

E. Research Instruments

The Material Expert Questionnaire contained 10 indicators across 2 components. The Material Suitability component included 4 indicators: material suitability with learning objectives, material suitability with student skill level, appropriate language use, and question suitability with teaching material content. The Material Quality component comprised 6 indicators: clarity of teaching material content, completeness of material from beginning to end, ease of material understanding, depth of material delivered, attractive images or videos, and material's ability to stimulate student interest.

The Media Expert Questionnaire included 22 indicators across 5 components. The Display Design component contained 7 indicators: color composition, layout proportions, element placement, graphic-visual-text correlation, title clarity, and design attractiveness. The Ease of Use component featured 4 indicators: systematic presentation, operational ease on various devices, content operation ease, and page navigation ease. The Consistency component had 3 indicators: layout consistency, font consistency, and terminology consistency. The Benefits component incorporated 4 indicators: ability to focus student attention, ease of learning activities, material delivery facilitation, and teaching process facilitation. The Graphics component consisted of 4 indicators: color use, image illustration clarity, and font type and size readability.

The Student Response Questionnaire comprised 15 indicators across 5 components. The Learning component included 2 indicators: material organization and delivery. The Material component contained 2 indicators: material selection and quality. The Media Display component featured 3 Indicators: text, images, and learning videos. The Usage component had 3 Indicators: usage instructions, media interaction, and operation. The Experience component consisted of 3 indicators: usage experience and benefits.

F. Data Analysis Techniques

Data analysis in this research used quantitative descriptive analysis techniques, with the following steps:

1. *Scoring Provisions*

   Qualitative data from questionnaires were converted to quantitative data using a Likert scale with a score of 5 for "Strongly Agree", 4 for "Agree", 3 for "Moderately Agree", 2 for "Disagree", and 1 for "Strongly Disagree".

2. *Average Score Calculation*

   To calculate the average score and categorize the feasibility level, two formulas are used. Equation (1) calculates the average score obtained from respondents.

$$\bar{X} = \sum x / n \quad (1)$$

Where (1):
$\bar{X}$ = Average score
$\sum x$ = Total score
n = Number of respondents and number of questions

3. *Conversion to 5-Scale Value*

   The scores obtained were converted into a 5-point scale using the following classification based on the ideal mean (X_i) and ideal standard deviation (SB_i) Equation (2) converts the score into a 5-point feasibility scale:

$$X > X_i + 1.80 \times SB_i \quad (2)$$
$$X_i + 0.60 \times SB_i < X \leq X_i + 1.80 \times SB_i$$
$$X_i - 0.60 \times SB_i < X \leq X_i + 0.60 \times SB_i$$
$$X_i - 1.80 \times SB_i < X \leq X_i - 0.60 \times SB_i$$
$$X \leq X_i - 1.80 \times SB_i$$

Where (2):
X = Actual (empirical) score
X_i = Ideal Mean
X_i = 1/2 (Maximum Score + Minimum Score) = $1/2\,(5+1) = 3$
SB_i = Ideal Standard Deviation
SB_i = 1/5 (Maximum Score – Minimum Score) = $1/6\,(5-1) = 0.67$

As shown in Table 1, the Likert scale interpretation guidelines provide a clear framework for evaluating the feasibility of the developed media.

Table 1. Likert Scale Score Interpretation Guidelines

No.	Score Interval	Criteria
1	$X > 4.08$	Very Feasible
2	$3.36 < X \leq 4.08$	Feasible
3	$2.64 < X \leq 3.36$	Moderately Feasible
4	$1.92 < X \leq 2.64$	Not Feasible
5	$X \leq 1.92$	Very Not Feasible

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4. Feasibility Percentage Calculation

For student responses, the results obtained were analyzed using percentages to determine the validity criteria of the developed learning media, Equation (3) provides a method to calculate the percentage of scores obtained from student responses.

$$\text{Percentage}(\%) = \left(\frac{\text{Total Score Obtained}}{\text{Maximum Score}}\right) \times 100\% \quad (3)$$

The interpretation scale for student response percentages is shown in Table 2

Table 2. Feasibility Percentage Interpretation Scale

Percentage	Criteria
81% - 100%	Very Feasible
61% - 80%	Feasible
41% - 60%	Moderately Feasible
21% - 40%	Not Feasible
< 21%	Very Not Feasible

IV. Results and Discussion

A. *Development Process and Website Features*

Conducted at SMK Negeri 1 Samarinda from January to February 2025, with testing on February 25-26, 2025, this study involved 36 Class X TJKT students. The PPE model guided development.

During the Planning stage, observations conducted in August 2024 and interviews in September 2024 revealed that learning activities primarily used Project Based Learning and lecture methods. Teachers often had to handle multiple classes (X, XI, and XII), requiring students to learn independently. The existing learning media (modules, PowerPoint presentations, and WhatsApp groups) were found to be less engaging, resulting in decreased student motivation and interest. Students expressed desire for more interactive learning media that could increase their learning spirit and include educational games related to the learning material.

Based on these identified problems, teachers needed diverse learning media for the Basic Program of Expertise subject that could be accessed on smartphones and from any location, serving as an alternative learning resource. This need became the foundation for developing the Google Sites-based interactive learning media.

The Evaluation stage Involved testing and assessing how well the developed product met the established specifications through validation by material experts and media experts, as well as student responses. This stage included product validation data analysis, user/student data analysis, and finalizing the learning media product after validation and revision.

The developed Google Sites-based learning media includes several main interfaces:

1. Website Front Page: Contains university and school logos, navigation menu buttons, school images, and school information. This serves as the main entry point for users accessing the learning material. The main entry point of the website is displayed in Figure 2.

Figure 2. Website Front Page

2. Material Page: Presents learning materials for the Basic Program of Expertise subject, divided into five chapters: History and Concepts of Computer Systems, Computer Hardware Components, Computer Assembly, Basic Input Output System (BIOS), and Hard Disk Partitioning and Formatting. The materials are organized sequentially to facilitate student understanding. The learning materials are organized into five chapters as shown in Figure 3.

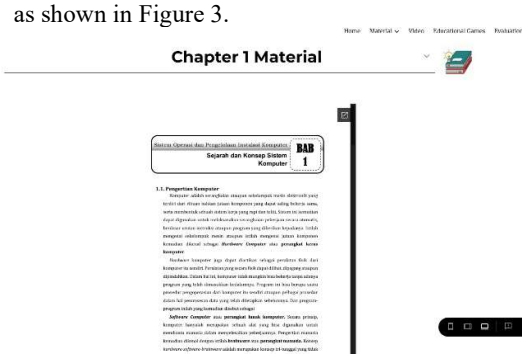

Figure 3. Material Page

3. Educational Game Page: Provides interactive quizzes where students can test their knowledge through a series of image-based questions. After students select their answer, they are automatically directed to the next question. If students provide an incorrect answer, they will not be informed of the correct answer before they successfully answer, encouraging them to think critically and attempt again. The interactive quiz feature is presented in Figure 4, allowing students to test their knowledge through image-based questions.

Figure 4. Educational Game Page

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4. Learning Video Page: Offers curated YouTube videos related to the learning materials, providing visual demonstrations of key concepts to enhance student understanding. These videos supplement the text-based materials and cater to visual learners. As shown in Figure 5, the learning video page provides curated YouTube videos to enhance student understanding through visual demonstrations.

Figure 5. Learning Video Page

5. Profile Page: Presents brief biodata about the learning media developer, giving students context about who created the resource they are using. Information about the learning media developer is presented in Figure 6.

Figure 6. Profile Page

6. Instructions Page: Explains the navigation and function of buttons in the developed learning media, helping users understand how to effectively use the website's features. Figure 7 shows the instructions page which explains navigation and functionality of the website.

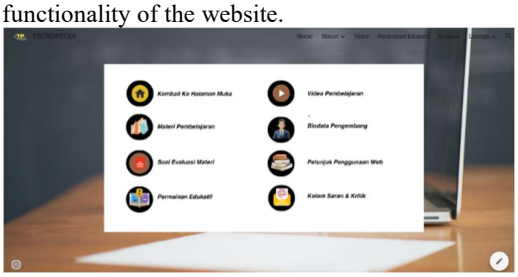

Figure 7. Instructions Page

7. Suggestions and Criticism Page: Provides columns to fill in name, email, and provide criticism and suggestions through Google Form. The aim is to collect useful feedback for continuous improvement of the developed media. The feedback mechanism through Google Form is displayed in Figure 8.

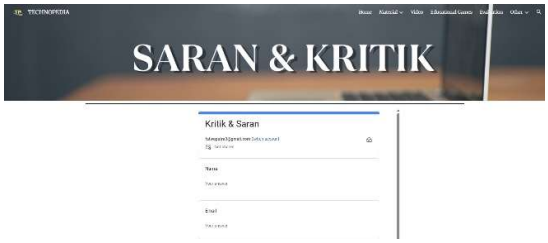

Figure 8. Suggestions and Criticism Page

B. Validation Results and Quality Assesment

1. Material Expert Validation: The material validation was conducted by Mr. Arvanda Eka Ramadhan, S.Kom, the teacher of the Basic Program of Expertise subject. He evaluated the website-based learning media using a questionnaire with a Likert scale containing 5 alternative answers (Strongly Agree, Agree, Moderately Agree, Disagree, Strongly Disagree). The validation focused on 2 components with 10 indicators.
2. For the material suitability aspect (including material alignment with learning objectives, suitability for student skill levels, language appropriateness, and question relevance), the average score was 4.8, categorizing it as "Very Feasible."
3. For the material quality aspect (including content clarity, completeness from beginning to end, ease of understanding, depth of material, attractiveness of images/videos, and ability to stimulate student interest), the average score was 4.5, categorizing it as "Very Feasible." These results are summarized in Table 3, which presents the average scores for each component assessed by the material expert.

Table 3. Material Expert Validation Result

Component	Average Score
Material Suitability	4.8
Material Quality	4.5
Overall Mean	**4.6**

4. The overall assessment from the material expert yielded an average score of 4.6, placing it in the "Very Feasible" category. This confirms that the material provided on the learning media is highly suitable for the Basic Program of Expertise subject in Class X at SMK Negeri 1 Samarinda. A detailed comparison of the media experts' evaluations can be seen in Table 4.

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Table 4. Media Expert Validation Result

Aspect Evaluated	Expert 1	Expert 2	Expert 3
Design & Layout	5	4	5
Visual Consistency	4	4	4
Content Clarity	5	5	5
Usefulness & Benefits	5	4	5
Average Score	**4.7**	**4.3**	**4.4**

5. Media Expert Validation: The media validation was conducted by three media experts: Mr. Ramaulvi M. Akhyar, S.Kom., M.Kom (expert 1), Mr. Fahmi Romisa, S.Kom., M.Kom (expert 2), and Mr. Wais Malik Kurniawan, S.Tr.Kom (expert 3). They assessed the media before testing using a questionnaire with a Likert scale. The questionnaire covered 22 Indicators across five components.
6. The overall assessment from the media experts yielded an average score of 4.4, placing it in the "Very Feasible" category. This confirms that the developed media is highly suitable for testing in the Basic Program of Expertise subject in Class X TJKT at SMK Negeri 1 Samarinda. The highest score was achieved in the benefits aspect (4.8) which reflects the media's ability to focus student attention and facilitate the teaching process. This aligns with the needs Identified in the initial analysis, where students required media that could enhance motivation and support independent learning. The multimedia and interactive elements, such as learning videos and educational quizzes, significantly contributed to this high score by providing a richer and more dynamic learning experience compared to conventional methods.
7. Based on the expert feedback, several revisions were made to the media. The "Social Media Of School" display was changed from text-only to logo icons, and the text spacing on the Learning Video Page was adjusted from 1.25 to 1.5 based on Media Expert 3's suggestions.
8. Student Response Validation: The student validation involved 28 samples from the total 36 students in Class X TJKT. The assessment used a questionnaire based on 5 components and 11 aspects, with the same 5-point Likert scale as the expert validations.
9. The student responses covered aspects of learning (86.20%), material (80.71%), display (80.71%), usage (76.20%), and experience (74.52%). The overall average was 84.56%, categorizing the media as "Very Feasible" according to the interpretation scale (81%-100% = Very Feasible). The student response evaluation focused on five aspects. The percentages for each evaluated aspect are presented in Table 5 below:

Table 5. Student Response Questionnaire Result

Aspect	Percentage (%)
Learning	86.20%
Material	80.71%
Display	80.71%
Usage	76.20%
Experience	74.52%
Overall	**84.56%**

C. Effectiveness and Implementation Impact

The development conducted in this research used the Research and Development (R&D) approach focused on creating a website-based learning media for the Computer and Network Basics material in the Basic Program of Expertise subject. This media was specifically designed for Class X TJKT students at SMK Negeri 1 Samarinda for the 2025/2026 academic year, implementing the PPE (Planning, Production, and Evaluation) development model.

The Planning stage Identified a key challenge: the learning process for the Basic Program of Expertise subject was using methods that students found less varied and engaging. Students often had to learn independently without sufficient guidance, with materials simply sent through WhatsApp. The developed website-based interactive learning media addresses this problem by providing a more engaging, accessible, and comprehensive learning resource.

The Production stage resulted in a well-structured learning media with materials arranged sequentially to facilitate student understanding of key concepts. The media includes multiple-choice evaluations to assess learning outcomes.

The Evaluation stage confirmed the high quality of the developed media through expert validations and student responses. Material experts rated the content's suitability and quality at 4.6 (Very Feasible), while media experts rated the overall design and functionality at 4.4 (Very Feasible). Student responses were overwhelmingly positive at 84.56% (Very Feasible).

The website-based learning media using Google Sites was designed to present comprehensive materials on Computer Systems, Hardware Components, Computer Assembly, BIOS, and Hard Disk management. It facilitates independent learning without time or location constraints, though it still requires internet connectivity. Rather than replacing traditional teaching, this media complements existing methods, providing teachers with an alternative teaching resource and giving students more flexible access to materials.

A significant advantage of this website-based learning media over conventional resources is its interactive elements. Beyond just accessing materials, students can engage with educational games, watch

learning videos, and complete evaluations, making the learning experience more dynamic and engaging.

The high validation scores from both experts and students confirm that the developed Google Sites-based learning media is very feasible and effective as an alternative learning resource for the Basic Program of Expertise subject. It successfully addresses the initial problem of insufficient engagement and provides a modern, interactive learning tool that aligns with students' preferences and needs in today's digital education landscape.

V. CONCLUSION

This study produces interactive learning media based on a website using the Google Sites platform aimed at the Basic subjects of the Expertise Program in class X of SMK Negeri 1 Samarinda. Based on the validation results from material experts and media experts as well as positive responses from students, the media developed was declared very feasible and effective for use in the learning process.

For further development, several recommendations can be considered. Future iterations could include collaborative features that allow students to interact and work together on virtual projects. Additionally, implementing a caching system would enable offline access for students with limited internet connectivity. The media could be enhanced through integration of more sophisticated interactive simulations for complex computer networking concepts. Furthermore, developing a mobile-friendly version optimized for small-screen devices would increase accessibility. It is also important to consider ongoing training for teachers to maximize the potential of this learning media.

This media is able to answer the needs of interesting, flexible, and relevant learning with the characteristics of students in the digital era. Interactive features such as digital materials, learning videos, quizzes, and attractive visual displays increase students' learning motivation and make it easier to understand the material. With high accessibility and ease of use, Google Sites has proven to be the right solution in presenting varied and technology-based learning innovations in vocational schools. Further development can be done by adding a variety of features, expanding the scope of teaching materials, and conducting trials at other levels or subjects to strengthen the generalization of findings.

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