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Vocational High School 5 Telkom Banda Aceh's Occupational Safety and Health Module Design

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Abstract

In educational institutions, occupational safety and health are significant issues. Students and institutions may suffer losses as a result of accidents and issues with occupational health. Thus, it's critical that pupils have comprehensive understanding of K3. SMK Negeri 5 Telkom Banda Aceh observations revealed a deficiency in instructional resources for K3 instruction. Therefore, the goal of the research is to use the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) in conjunction with the Research and Development (R&D) technique to design an Occupational Safety and Health Module. Student response questionnaires, validation questionnaires from media experts, and material experts were used in the data collection process. According to the research findings, 92.5% of material experts and 77.5% of media experts believe that the K3 module is adequate from a media standpoint. Student responses also attain a score of 92.4%, suggesting that the K3 module is appropriate for use in education. In summary, the K3 module has emerged as a highly successful educational tool for maximizing students' engagement with K3.

Keywords*: Occupational Health and Safety, Work Safety Module, ADDIE*

Abstrak

Keselamatan dan kesehatan kerja merupakan hal penting dalam instansi pendidikan. Kecelakaan dan gangguan kesehatan kerja dapat menyebabkan kerugian pada siswa dan instansi. sehingga siswa penting dibekali dengan pengetahuan mendalam tentang K3 ini. Observasi telah dilakukan di SMK Negeri 5 Telkom Banda Aceh menunjukkan kurangnya bahan ajar untuk pembelajaran K3. sehingga, penelitian bertujuan untuk mengembangkan Modul Keselamatan dan Kesahatan Kerja dengan menggunakan metode Research and Development (R&D) dengan model ADDIE (Analisis, Desain, Pengembangan, Implementasi, Evaluasi). Pengumpulan data menggunakan angket validasi ahli media, ahli materi, dan angket respon peserta didik. Hasil penelitian menunjukkan persentase ahli media yang menganggap modul K3 layak dari segi media sebesar 77,5%, sementara ahli materi 92,5% dan respon peserta didik mencapai skor 92,4%, menunjukkan bahwa penggunaan modul K3 layak untuk digunakan dalam pembelajaran. Dapat disimpulkan bahwa modul K3 telah menjadi media pembelajaran yang efektif dalam mengoptimalkan minat belajar siswa terhadap K3.

Kata kunci*: Keselamatan dan Kesehatan Kerja, Modul Keselamatan Kerja, ADDIE*

Introduction

Occupational Safety and Health (OSH) regulations are put into place in collaboration with corporate and government entities to prevent incidents or accidents at work and lower the likelihood of accidents resulting from work-related activities [1]. Occupational safety and health are crucial not only in workplaces but also in any place,

such as educational institutions. Accidents and occupational health disturbances not only cause losses to students but also cause losses to school institutions, both directly and indirectly [2]. One of the Educational Institutions that implement OSH learning is the Vocational High School (SMK). SMK is an official Education organization tasked with producing workers who have capabilities, skills, and competencies so that its graduates can improve work results when joining the world of work [3]. The focus on teaching at SMK is not only with the existence of vocational learning that can prepare students to be ready to pursue a career in the business and industrial world (DU/DI) but with the close relationship of SMK with DU/DI to achieve the goal of forming the quality of VHS graduates that are in line with DU/DI demands [4].

The learning process only uses printed books, which primarily contain written learning material, and the method used is a lecture. This information is based on observations conducted on the topic of occupational safety and health at State Vocational High School 5 Telkom Banda Aceh. Consequently, instructors must employ instructional materials that maximize the process of learning about Occupational Safety and Health, such as the Occupational Safety and Health teaching module. A module is a learning resource designed in a structured manner based on a specific curriculum and compiled in the form of the smallest learning unit that allows students to learn it independently within a certain period of time to achieve mastery of the competencies taught [5]. The module is an approach of organizing educational materials that considers the function of education. Sequencing, which is the presenting of lesson content in a sequential manner, and synthesis, which is the endeavor to explain to students the connections between facts, concepts, procedures, and principles in learning material, are two methods for organizing learning materials [6].

Occupational safety and health (K3), as defined by the International Labour Organization (ILO), is the umbrella term for a number of initiatives designed to keep employees safe and healthy at work. According to the ILO, Occupational Safety and Health (OSH) is an integrated approach that encompasses risk assessment, identification, and control, safe work practices and policy implementation, and the creation of a safety and health-oriented work culture. Aspects like ergonomics, hygiene, handling dangerous substances, and wearing personal protection equipment are also included in K3 [7].

Law No. 1 of 1970 serves as the primary legislative foundation that the government utilizes to define and regulate Occupational Safety and Health (K3). Consequently, the agreement between employers and the government about OSH as a work culture that is implemented in factories and offices complies with the Minister of Manpower Decree Number Kep.463/MEN/1993 addressing OSH culture. Vocational High Schools (SMK) use the information or material regarding Occupational Safety and Health (K3) as one of their discussion topics [8]. Employers would gain from the inclusion of complete SMK material in the SMK curriculum in the future since it will save them money on the cost of sending employees to occupational safety and health training, particularly for SMK graduates. Therefore, it is important for K3 material not only to be delivered basically, but it is better if it is presented in detail and depth [8]. This will certainly benefit prospective SMK graduates with the aim of reducing the risk of accidents or health problems when participating in the learning process at school [9]. It is

possible to immediately reduce the likelihood of accidents and health issues for all students by using the K3 concept in the school setting [10].

Method

The Research and Development (R&D) approach is used in this investigation. Its main goal is to produce training materials for the topic of occupational health and safety that are module-based. The model used is based on the Analyze, Design, Development, Implementation, and Evaluation (ADDIE) framework, as seen in Figure 1, and the research approach used is qualitative.

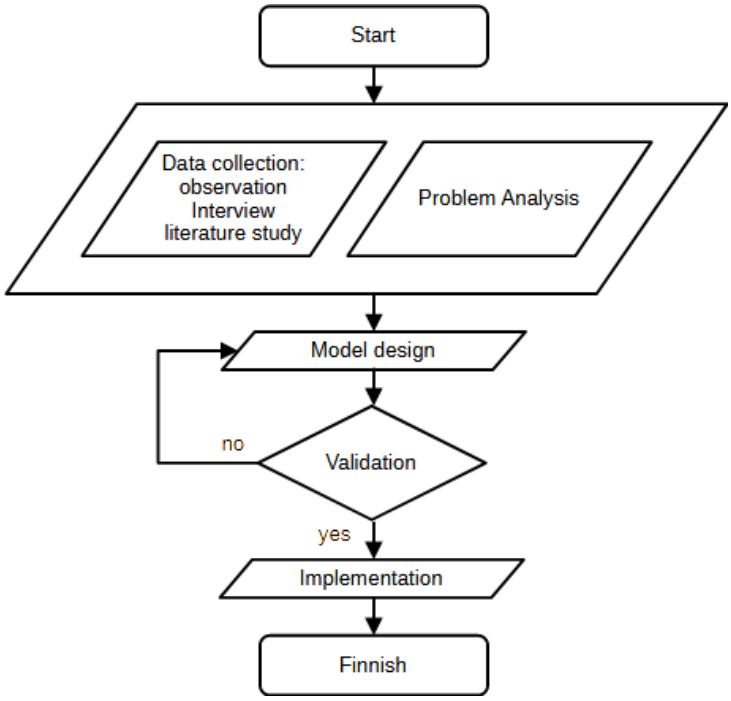

Figure 1. Research Flowchart

The following description is used when doing the research. The first step in the process is needs analysis, which starts with in-person observations of the teaching and learning process in schools, teacher interviews, curriculum reviews, and an examination of the instructional media utilized in the classroom. The primary goal is to compile data and identify solutions pertaining to problems and the requirements for the safety and health module's development in the field of occupational health and safety. The next stage is design, which is gathering the components needed to make health and safety materials. To improve students' focus and motivation, this involves structuring the module's material and designing an eye-catching layout.

Following the completion of the media design, subject matter experts and media experts validate the work throughout the development stage. Students evaluate the material to identify any errors and make corrections before it is presented to them for feedback. Subsequently, the implementation phase occurs, during which the validated media is presented to students at State Vocational High School 5 Telkom Banda Aceh. Each student provides feedback through questionnaires based on their experience with the displayed module.

Lastly, assessment is crucial. To ascertain the appropriateness of the produced media, data from the media and subject matter expert validation questionnaires are examined in conjunction with student input. To improve the safety and health module's quality, any flaws found throughout the review process will be fixed. Assessments can be carried out both along the way and at the end of the development process. The research instruments used include expert validation sheets and questionnaires for teacher and student responses in the 10th grade at State Vocational High School 5 Telkom Banda Aceh. The subjects of this study encompass all 25 students in the 10th grade at State Vocational High School 5 Telkom Banda Aceh. The data analysis technique employed to assess the suitability of media, content, and language utilizes (1)[11].

$$V = \frac{f}{n} x100\% \quad (1)$$

V : Validation scores
f : Scores obtained
n : maximum scores

The collected student responses are subsequently analyzed using the formula given by (2)[11].

$$P = \frac{F}{N} x100\% \quad (2)$$

P : Percentage
F : Skores Achieved
N : Maximum scores

Result and Discussion

a. Analyze

Direct observation in the educational setting and in-person interviews with Mr. Marwan, S.Pd., M.Pd. on January 31, 2023 are part of the ADDIE method's analytical phase. The in-depth understanding of the real scenario regarding the instructional materials linked to K3 is provided by the direct observation at State Vocational High School 5 Telkom Banda Aceh. The findings of the observation show that the school does not currently have any modules available for the K3 topic.

b. Design

The next stage of the OHS module's development is the design phase. Initially, a list of OHS-related references is assembled, comprising academic articles and books, especially those that discuss OHS concepts in the context of schools [12]. Then the module is designed, starting with the design of an attention-grabbing cover to draw in students. The title, author's name, and pertinent details about the university and program are all included on the cover. There will also be an introduction, a table of contents with subheadings, and usage instructions for the module [13]. To get learners interested, each component—Core Competencies, Basic Competencies, Competency Achievement Indicators, and learning objectives—will be emphasized. The learning objectives and competency achievement indicators will be taken into account while creating the module's material [14].

c. Development

Development is the following phase. The purpose of this step is to evaluate the validity with regard to language, content, and media. Figure 2 presents the validation results. The media suitability score for the K3 module research is 77.5%, as indicated by Figure 2. The K3 module's emphasis on media usage shows alignment and efficacy in providing learners with K3 content, according to expert media validation. While this score indicates a high degree of validity, media professionals' assistance is still necessary to improve the efficacy of the media.

The K3 module's content is accurate and of high quality, as evidenced by the content validation result of 90%. The depth of material covered in the module is in line with competency requirements. Content enrichment, assuring material relevance to learning goals, and suitable language application are among the recommendations made by content experts. The K3 module's language validation findings show an 89% score, which is in the high validity range. This score, which was determined after careful evaluation by linguists, represents the quality and correctness of the text in the module.

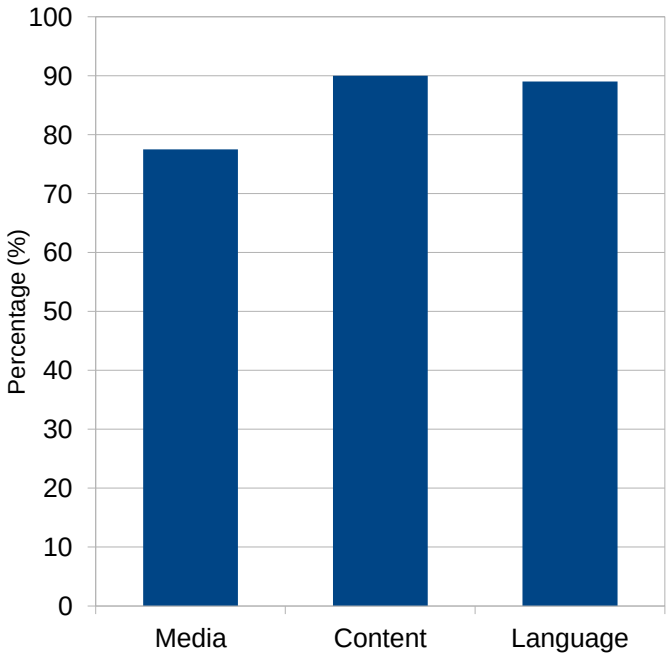

Figure 2. Expert Validation Results

d. Implementation

The implementation phase of the K3 module primarily aims to comprehend the responses and impacts generated among learners. The student responses are documented in Table 1.

Table 1. Results of Student Responses

Indicator	Nr.	Value Criteria					Total	Percentage per Item	Percentage per Indicator
		1	2	3	4	5			
Clarity of Material	1	0	0	0	9	16	118	94,4%	95,2%
	2	0	0	0	5	20	120	96,0%	
Ease of Use	3	0	0	2	9	14	112	89,6%	89,6%
Display Attractiveness	4	0	0	4	5	16	114	91,2%	92,5%
	5	0	0	0	5	20	122	97,6%	
	6	0	0	2	12	11	111	88,8%	

Module Content Design	7	0	0	2	11	12	112	89,6%	91,5%
	8	0	0	3	6	16	115	92,0%	
	9	0	0	1	9	15	116	92,8%	
Total Scores and Percentage							**1040**	**92,4%**	

With a 92.4% acceptance rate, the student reactions to the OHS module are very good, as seen in Table 3. This indicates that the program effectively engages and inspires students to learn about OHS. The positive feedback also indicates how well the module did in offering a captivating substitute for traditional teaching techniques. The input and recommendations from students act as a basis for future work, guaranteeing that the module continues to be in line with students' requirements and interests.

e. Evaluation

Throughout the K3 module's whole development process, evaluation is a crucial step. Analyzing data from the initial teacher and student interviews is a part of the evaluation process during the analysis phase. Evaluation throughout the design phase is predicated on the outcomes of the first module design discussions with advisors 1 and 2. Three expert validators' comments is used to evaluate the development phase. Students test the K3 module as part of the implementation phase that follows. The outcomes show that the module is rated as "excellent," and no more feedback or comments from students are needed, so no changes are needed.

Conclusions

The expert media validation results obtained a score of 77.5%, falling within the valid category. The content expert validation results achieved a score of 92.5%, classifying it as highly valid. These outcomes demonstrate that the K3 module is suitable in terms of media and content and is appropriate for implementation in K3 education at schools. The average score obtained from the 25 participants' student responses was 92.4%. As a result, the respondents' assessments of the significance of applying the K3 module to K3 instruction in schools are rated as "excellent." It is anticipated from this research that State Vocational High School 5 Telkom Banda Aceh and other vocational high schools will be able to use the K3 module as a teaching tool. Future academics should create an E-lesson to further develop the K3 lesson to better suit modern learners' needs and preferences.

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