Development of Learning Training Countermeasures Fire for Security Guard at Universitas Negeri Jakarta

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ABSTRACT

Jafar Amiruddin, Himawan Hadi Sutrisno, Faisal Ibin Fahlan, Kurnia Lutfiani. 2025. Development of Learning Training Countermeasures Fire for Security Guard at Universitas Negeri Jakarta.

Fires can occur unexpectedly, thus community empowerment is required to reduce the condition that trigger them. The security guard is one member of the community who functions as a security unit. As a result, security personnel must understand how to deal with fires in their surrounds, including the Universitas Negeri Jakarta building. One technique to prepare security guards for fire prevention when a fire breaks out at Universitas Negeri Jakarta is to give firemen with knowledge and training. The goal of this research is to build learning materials for security guards at the Universitas Negeri Jakarta on fire procedures. Universitas Negeri Jakarta has ten security guards. This study employs a descriptive research design, a qualitative methodology, and a case study method using tha ADDIE research paradigm. The assessment of learning devices in this study was pronounced practical based on the results of expert validation, and it is said that this research has a very high level of reliability. And assess the validity using the Pearson Moment correlation technique to obtain findings greater than 0.3, indicating that this st udy is valid.

Key Words: Learning, Fire, ADDIE, Security, Guard

INTRODUCTION

Fire has become a severe concern to residents and users of high-rise structures, particularly in DKI Jakarta, Indonesia's capital. According to the Law of the Republic of Indonesia Number 28 of 2002 covering Buildings, Chapter III Article 5 paragraphs 1 and 5, states that the functions of buildings include residential, religious, business, social, and cultural functions, as well as specific functions. One of the functions of socio-cultural structures is to provide educational facilities. Building safety criteria include the building's ability to withsatand weights, as well as its ability to avoid and respond to fire and lightning risks.

Fire can strike at any time, unexpectedly and accidentally, scorching houses, plants, and other items, resulting in property loss and human fatalities. A house can be caused by a variety of factors, including an electrical short circuit, a leaking hose on the gas stove, burning garbage, cigarette butts,and candles when the lights go out [1]. Fire, while a major issue, has also emerged as one of humanity's most terrifying threats. As a result, numerous procedures and attempts to overcome the threat of fire are critical and must be implemented in order to prevent the occurrence of fire dangers. Efforts to prevent fire hazards must be included in the company's management policy and supported by all employees [2,3].

To develop higher-order thinking skills, it is important to focus on Bloom's taxonomy phases, which include remembering, comprehending, applying, analyzing, evaluating, and creating. Proposes an integrative learning approach that supports the development of critical thinking and planning. Steps: 1) Identify themes, 2) Determine learning objectives, 3) Prepare data, and 4) Determine questions. The result of past studies suggests that the creation of learning tools, both connected to the development of strategies, teaching materials, and media can drive pupils to think more critically which can boost learning activity and learning outcomes to make learning more effective, and efficient [4-7]. Good use of technology can be one way to realize varied and creative learning. Technological developments in this decade have shown a significant increase, this can have both positive and negative impacts on society at large. The application of technology in various fields of science has been widely carried out, including in the field of education. Unfortunately, its utilization is still not optimal. The use of technology is also a hallmark of the industrial revolution 4.0 which is currently the government's attention to deal with the era of globalization which

is growing faster. One of the efforts to prepare various competencies is to improve learning activities that are easier and more efficient by utilizing technology [8-11].

Development can be defined as an act, process, or method. Learning tools are a group of materials that enable educators and learners to engage in educational activities. The creation of learning tools involves a number of procedures or actions taken in accordance with current development theories. The security guards in the vicinity of Universitas Negeri Jakarta have very little knowledge about fire safety. Providing security guards with fire prevention training is one approach to increase their knowledge of fire safety. In order for security guards to comprehend, engineers create efficient training and learning resources. Beside it, it need to implement countermeasures in a morally and ethically sound manner. Using technology in the classroom is one way to address these issues, advancing education in an attempt to raise learning attainment. The goal of the project is to create educational and training materials on fire safety for Universitas Negeri Jakarta security personnel.

MATERIALS AND METHODS

This research is focused on security guard at Universitas Negeri Jakarta. As data study material, researchers conducted data search activities through in-depth interviews and giving questionnaires to security guards. Observations have been made during the research and produced some data that can be used as data processing. This research uses the type of descriptive research with a qualitative approach that aims to obtain results regarding the understanding of security guards in tackling fire hazards at Universitas Negeri Jakarta with the case study method. The development model in this study refers to the steps with the ADDIE model which consists of five research and development steps, namely (1) analysis, (2) design, (3) development, (4) implementation, (5) evaluation. The description of the five research steps of the ADDIE model used is as follows: elucidating clearly about materials used and method carried out.

a. Analysis

The activities carried out in this stage are: (1) conducting an analysis of the competencies required of the security guard; (2) analyzing security guards about the knowledge of attitude skills possessed by security guards, as well as other related aspects; (c) conduct material analysis in accordance with the demands of the security guard's competence.

b. Design

At this stage, several design steps were carried out, as follows: (1) designing learning tools in the form of syllabus and lesson plans and (2) designing teaching materials (Handout).

c. Development

Several steps will be taken by researchers at this stage, as follows: (1) development and preparation of learning tools, (2) preparation of research instruments and (3) expert validation.

d. Implementation

At this stage, the implementation of learning tools that have been designed and approved by the validator is carried out. At this stage, the delivery of teaching materials (Handout) for fire prevention was carried out to the Jakarta State University security guard.

e. Evaluation

At this last stage, researchers have studied since analyzing the needs in the field (analyze) to the implementation stage (implementation). Evaluation at the product design stage is carried out by considering learning tools in the field and the requirements of good learning tools. Meanwhile, at the product development stage, it is done by reviewing the inputs and suggestions that have been given by the validator. Furthermore, the researchers made improvements to these suggestions until they were ready to be tested. Researchers used a feasibility test to determine the feasibility of the learning tools that had been developed.

Data collection techniques in this study using observation, questionnaires and interviews. While the data analysis technique used in this study is descriptive statistics, namely the scores obtained from the validation data of learning tools in the form of lesson plans and syllabus and validation of teaching materials (Handout), then the results of quantitative data validation are converted into qualitative data using a Likert scale, while the data from the needs analysis was converted using the Guttman scale . And to test the feasibility of learning devices in this study using the Kudder- Richardson 20 (KR-20) method to test the reliability and using the Pearson Moment correlation technique to test the validity

RESULTS AND DISCUSSION

Analysis stage

The need for this research is to provide a questionnaire sheet regarding the knowledge of security guards about fire hazard prevention. The number of security guards who became respondents in this needs analysis stage was 5 security guards. Table 1 presents need analysis results in this study.

Table 1. Data Table of Need Analysis Results

No.	Statement	Data Results	
		Number of Participant (Person)	Data Percentage (%)
1	When you identify a fire hazard, you should start by knowing the building material		
	Yes	5	100
	No	0	0
2	Factors that causes fire in the Universitas Negeri Jakarta usually comes from a short circuit of electric current		
	Yes	5	100
	No	0	0
3	When you understand the concept of the fire triangle and identify fire hazards well, fires can be avoided		
	Yes	4	80
	No	1	20
4	When there is a fire you make a report and one of them must have a chronology of the cause of the fire		
	Yes	4	80
	No	1	20
5	When the fire is over you re-check the place where the fire occurred		
	Yes	3	60
	No	2	40
6	When you put out a fire using an APAR, your body and face are in the direction of the wind		
	Yes	2	40
	No	3	60
7	When the fire is still small when there is a fire, you use a wet burlap sack to put it out		
	Yes	1	20
	No	4	80
8	With preparation and quick action to determine the type of fire you are facing, you can easily extinguish the fire according to the type of fire	3	60
	Yes	2	40

	No		
9	When there is a fire you immediately turn off the electricity		
	Yes	5	100
	No	0	0
10	APAR is an active protection system		
	Yes	3	60
	No	2	40
11	When you evacuate people via emergency stairs, walk normally but don't run		
	Yes	4	80
	No	1	20
12	When your vision is covered with smoke, run fast		
	Yes	3	60
	No	2	40
13	When you evacuate items, evacuate items such as tables and chairs		
	Yes	3	60
	No	2	40
14	Don't turn around because you will collide with the people behind you		
	Yes	1	20
	No	4	80
15	People evacuated from the fire building gathered at the mosque		
	Yes	3	60
	No	2	40
16	(021) 85904904 is the telephone number closest to the Jakarta State University		
	Yes	3	60
	No	2	40
17	When there is a fire you use Handy Talky (HT) as the fastest communication tool		
	Yes	5	100
	No	0	0
18	The organizational structure of security guards at the State University of Jakarta is included in Plt. Head of General Affairs and Personnel Bureau (BUK)		
	Yes	4	80
	No	1	20
19	You are having fire training twice a year		
	Yes	2	40
	No	3	60

20	Avoid loading the socket so that an electric short circuit does not occur, this is one of the SOP for fire prevention at the State University of Jakarta		
	Yes	5	100
	No	0	0
21	When it's extinguished and evacuating victims and goods, you manage traffic well so it's not crowded		
	Yes	5	100
	No	0	0
22	When it goes out, you check the electricity again and this is one that must be reported		
	Yes	5	100
	No	0	0
23	You are able to provide first aid to victims in need, this is one way to avoid the worst that will happen		
	Yes	4	80
	No	1	20
24	The Assembly Point at Jakarta State University is only enough for 20 people		
	Yes	3	60
	No	2	40
25	You carry out 24-hour patrols to secure items from theft		
	Yes	5	100
	No	0	0

From the results of observations and filling out questionnaires in the needs analysis at Table 1, it can be seen that the knowledge and understanding of participants about dealing with fire hazards can be concluded that the average security guard does not know how to deal with fire hazards. From the results of these conclusions, researchers took steps to create learning tools and teaching materials about fire prevention using Handouts.

Design stage

The design stage is carried out after knowing about the needs analysis in this study, the results obtained from the needs analysis will be used as a reference in the development of learning tools and teaching materials. The design stage is carried out in stages, namely selecting materials according to the characteristics of the security guard and firefighter I, making syllabus and lesson plans (RPP), and making designs for making teaching materials in the form of handouts. Table 2 shows existing things and things to do in this study.

Table 2. Existing things and things to do

No.	Existing thing	Thinks to do
1	Determine firefighting materials	Determine material that can be used as a reference in accordance with the design of learning devices and teaching materials

2	Designing learning tools in the form of syllabus and lesson plans (RPP).	Designing learning tools in the form of syllabus and lesson plans (RPP) which is the basis for designing learning tools.
3	Make plans for making teaching materials.	The teaching materials that will be designed are in the form of handouts.

The result from Table 2, the stage of developing teaching materials in the form of handouts in this study is to design handouts containing firefighting materials. At the development stage, it is divided into two major processes, namely the production process and the expert validation process. Production process is in Table 3.

Table 3. Production Process

No.	Production Process	Result
1	Premaking process	The production process begins with preparing the supporting needs needed in the process of making Handouts. Some of the necessities needed are a laptop, Microsoft word 2019 and teaching materials for fire prevention.
2	Making process	The process of making the Handout teaching materials in this study used Microsoft Word 2019. At this stage the researcher began to design the content of the material needed in the Handout. Researchers can determine the type, size, and font of this display to design the contents of the Handout material.
3	Post-making process	The last production process is the post-production process for Handout teaching materials. In this process, the Handout is printed. Handout is checked, both from the condition of the paper, writing and pictures.

Validation stage

Validation Experts indicator to test the feasibility of learning tools were tested by 2 validators, namely 1 expert on the content of the syllabus which was validated by a manager of the Fire Education and Training Satpel at the Ciracas Fire Education and Training Center, East Jakarta, Mr. Marwanto., SKM, MA, getting a result of 85% and stated worthy. And 1 expert on learning tools and teaching materials (Handout) which was validated by a Mechanical Engineering Education lecturer Mr. Imam Mahir, the syllabus got 88% results, RPP APAR got 86% results, RPP Hydrant got 82% results, RPP Building Fire Safety Management got results 84%% and RPP Medical First Responder got 82% results, and all of them were declared eligible. Table 4 shows syllabus content expert validation results.

Table 4. Syllabus Content Expert Validation Results

No.	Assessment Aspect	Syllabus Content Expert Validation Results	
		Descriptor	Score
1	Contents	Assessing the interrelationships between Competency standards (SK) and Basic Competencies (KD) in education and training lessons	4

2		Identify materials that support the achievement of KD	4
3		Learning activities are designed and developed based on SK, KD, potential of training participants	4
4		Formulate indicators of competency achievement	4
5	Language	Use of language in accordance with good and correct Indonesian rules	4
6		The language used is short, clear, and does not cause double understanding	4
7	Time	Appropriate allocation used	5
8		The selection of time allocation is based on the demands of basic competencies	5
	Total		34

The implementation phase in this study went through several steps in Table 4, namely one to one trials and small group trials. The one to one trial and small group trial in this study were conducted at the State University of Jakarta, which is located in the Rawamangun area, East Jakarta. Both trials were conducted in December 2020. The one-to-one trial was conducted on one security guard who was randomly selected. A small group trial was conducted on 9 security guards at the Universitas Negeri Jakarta.

1. One to one trial

The one-to-one trial in this study was conducted at Universitas Negeri Jakarta, which is located in the Rawamangun Muka area, East Jakarta. This research was conducted in December 2020. A one-to-one trial was conducted on one security guard who was randomly selected. Table 5 contains data from one to one trial research results. This one- to-one trial was carried out in several steps, namely as follows:

a The first step, the researcher chose one security guard, then the researcher explained in advance about the fire hazard prevention material when there was a fire to the security guard.
b The second step, the researcher began to introduce learning teaching materials that had been developed, namely Handouts to the security guard.
c The third step, the researcher gives time for the security guard to read and understand the handout that has been given by the researcher.
d The fourth step, after the security guard reads and understands the Handout, the researcher begins to discuss with the security guard regarding the Handout.
e The fifth step, after the discussion between the researcher and the security guard ended, the researcher asked the security guard to explain the core material conveyed from the teaching materials and the researcher's explanation, the researcher also asked the security guard to apply it when there was a fire.

Table 5. One To One Trial Research Results Data

No.	Assessment Aspect	Assessment	
		Able	Unable
1	Participants are able to understand the sentences and language used in the Handout	✓	
2	Participants are interested in the display used in the Handout	✓	
3	Participants are able to overcome the difficulties contained in the Handout	✓	
4	Participants are able to understand the aims and objectives presented in the Handout	✓	
5	Participants are able to develop the material obtained in the Handout teaching materials	✓	
6	Participants are able to analyze fire prevention in the event of a fire through the media used	✓	
7	Participants are able to order fire prevention according to the Handout	✓	
8	Participants are able to re-explain the material in the Handout		✓
	Total	7	1

2. Small group trial

The small group trial was conducted in the same place as the one to one trial, at the State University of Jakarta, which is located in the Rawamangun Muka area, East Jakarta. This research was conducted in December 2020. A small group trial was conducted on nine randomly selected Jakarta State University security guards. Table 4.7 contains data from small group trial research results. This small group trial was carried out with the same steps as the one to one trial, namely as follows:

a The first step, the researchers chose the nine security guards, then the researchers explained in advance about the fire hazard prevention materials when a fire occurred to the security guard.

b The second step, the researcher began to introduce learning teaching materials that had been developed, namely Handouts to the security guard

c The third step, the researcher gives time for the security guard to read and understand the handout that has been given by the researcher

d The fourth step, after the security guard reads and understands the Handout, the researcher begins to discuss with the security guard regarding the Handout.

e The fifth step, after the discussion between the researcher and the security guard ended, the researcher asked the security guard to explain the core material conveyed from the teaching materials and the researcher's explanation, the researcher also asked the security guard to apply it when there was a fire

The first stage is to make an item analysis table at this stage for the cognitive assessment of participants, a value of 1 is for participants who can fulfill the cognitive ability assessment and a value of 0 is for participants who cannot fulfill the cognitive ability assessment. Table 6 and Table 7 can explain the data on the results of the cognitive assessment of the small group trial participants in this study.

Table 6. Cognitive Assessment Results Data for Small Group Trial Participants

Participants	Research Result								Total
	1	2	3	4	5	6	7	8	Value
Dwi Sumarno	1	1	1	1	1	1	1	1	8
Frimansyah	1	1	1	1	1	0	1	1	7
Irvandi Harmazi	1	1	1	1	1	0	1	1	7
Sandra Indra	1	1	1	1	1	0	1	1	7
Julian Ferdian	1	1	0	1	0	0	0	1	4
M. Miftahul	1	0	1	1	1	0	1	1	6
Jayadi	1	1	1	1	1	1	1	1	8
Slamet Widodo	1	1	1	1	1	0	1	1	7
Zamian Ramadhan	1	0	1	0	0	0	1	1	4
Total	9	7	8	8	7	2	8	9	

Table7. Complete results of small group trial

Participants	Research Results								Σx	Σx^2
	1	2	3	4	5	6	7	8		
Dwi Sumarno	1	1	1	1	1	1	1	1	8	64
Frimansyah	1	1	1	1	1	0	1	1	7	49
Irvandi Harmazi	1	1	1	1	1	0	1	1	7	49

Sandra Indra	1	1	1	1	1	0	1	1	7	49
Julian Ferdian	1	1	0	1	0	0	0	1	4	16
M. Miftahul	1	0	1	1	1	0	1	1	6	36
Jayadi	1	1	1	1	1	1	1	1	8	64
Slamet Widodo	1	1	1	1	1	0	1	1	7	49
Zamian Ramadhan	1	0	1	0	0	0	1	1	4	16
Total	9	7	8	8	7	2	8	9	58	392

p	1	0,777778	0,888889	0,888889	0,777778	0,222222	0,888889	1
q	0	0,222222	0,111111	0,111111	0,222222	0,777778	0,111111	0
p q	0	0,17284	0,098765	0,098765	0,17284	0,17284	0,098765	0

$$\sum pq = 0 + 0{,}17 + 0{,}09 + 0{,}17 + 0{,}17 + 0$$

$$\sum pq = 0{,}78$$

The next stage is to calculate the variance value from the scores obtained. To calculate the variance value, it is necessary to know the number of average values² and the average of the total scores².
Variansi (s^2) = average values (scores²) - (average of the total scores)²
= (total score²/ number of participants) – (total score/ number of participants)²
= ($39^2/9$) – ($58/9)^2$
= 43,5 – 40,9
= 2,6

After knowing the value of variance, then calculating the reliability of small group trials using the KR 20 method as follows:

$$r_{11} = \frac{k}{k-1} + \frac{s^2 - \sum pq}{s^2}$$

$$r_{11} = \frac{8}{8-1} + \frac{2{,}6^2 - 0{,}78}{2{,}6^2}$$

$$r_{11} = (1{,}14)(0{,}88)$$

$$r_{11} = 1{,}00$$

The results of small group trials using the KR 20 method resulted in a reliability test value of 1.00. This value explains that the small group trial in this study has a very high reliability value. Furthermore, the researchers conducted a validity test using the Pearson Moment correlation technique to determine the correlation between the scores of each item and the total score. Calculation of validity using the Pearson Moment correlation technique in this research is

assisted by the Microsoft Excel program. The results of the calculation of the validity of the small group test are described in Table 6 as follows.

Small group test validity test results
Table 8 shows test results of small group test.

Table 8. Small group test validity test results

Number of instrument items	Small group test validity test results	
	Correlation Coefficient	Description
1	1	Valid
2	0,542	Valid
3	0,607	Valid
4	1	Valid
5	0,918	Valid
6	0,584	Valid
7	0,607	Valid
8	1	Valid

As described in the previous Sub Section, if the correlation coefficient value is equal to or more than 0.3, then the item of the instrument can be declared valid. It can be seen from all the results of the validity test in the small group test using the correlation technique, all of the correlation coefficient values above 0.3. So it can be concluded that all items of the instrument are declared valid.

CONCLUSION

Based on all the results of research and discussion that have been described in the previous chapter, the researcher concludes from the entire process of developing learning tools in this study as follows:

1 Assessment of learning devices in the form of syllabus, lesson plans and teaching materials. Handouts in this study obtained results from the validation of experts as follows:

a According to the syllabus content expert, the learning device received a percentage of 85% and was declared eligible.
b According to the learning device expert, the syllabus learning device got a percentage of 88% and was declared eligible.
c According to learning device experts, RPP learning tools in the form of RPP APAR received a percentage of 86% and were declared eligible, RPP Hydrant received a percentage of 82% and was declared eligible, RPP Building Fire Safety Management (MKKG) received a percentage of 84% and was declared eligible, and RPP Medical First Responder received a percentage of 82% and was declared eligible.

2 Assessment of learning devices in the form of syllabus, lesson plans and teaching materials Handout in this study obtained the results of the calculation of reliability and validity as follows:

a Testing the validity of the small group trial that was tested in this study using the Pearson Moment correlation technique got the results of all items the co rrelation coefficient value was above 0.3, the highest coefficient value got a value of 1 and the lowest got a value of 0.54. This value states that all instrument items in the small group trial in this study are declared valid.

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