

# Measuring E-learning Effectiveness of the Standard Operating Procedure Course Using the 1st and 2nd Levels of Kirkpatrick Model

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**Abstract:** The purpose of this study was to measure the effectiveness of the E-Learning Program organized by the Education Center of the Administrative Staff of the Ministry of Religious Affairs (MORA) of the Republic of Indonesia in the Training of Standard Operational Procedures (SOP). The approach used in this research program is evaluation research, data are collected qualitatively by interviewing parties related to online learning and quantitative with online surveys. The evaluation model refers to the Four Level Model of Kirkpatrick. Researchers involve totaling 37 respondents in data collection who are on several islands in Indonesia, namely the islands of Sumatra, Java, Bali, Kalimantan, and Maluku. The researcher also interviewed 10 alumni leaders to give their opinions on the impacts obtained from their staff participated in e-learning. The conclusion of the effectiveness of the program is as follows: (1) Level reaction assesses the level of satisfaction of participants on e-learning facilities, teacher competency, administrator's services, distance learning material, technical learning, modules, audiovisual materials, schedules, and (2) Level of learning assesses learning outcomes, learning motivation, implementation, transfer of knowledge, increase in performance, and skills. Evaluation results show that the overall level has succeeded in achieving the effectiveness criteria as expected. Some recommendations are given by the researcher: Updating material in accordance with the latest rules and formats, increasing the number of audiovisual materials to be reproduced so that learning becomes more interesting, increasing socialization to add more participants, and teachers must be more active in improving interaction between teachers and students and students with students.

**Keywords:** E-Learning, Distance Education, Kirkpatrick, Program Evaluation, Standard Operational Procedure.

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## I. INTRODUCTION

One of the government agencies in Indonesia, namely the Ministry of Religious Affairs, has a work unit called the Research and Development Agency, which has the task of increasing employee competencies through education and training that can be carried out evenly. Every employee of the MORA has the right to be treated fairly and proportionally to get proper and quality education and training. But the institution has obstacles faced, namely: Indonesia's geographical position which is divided into large and small islands and is surrounded by oceans. So that the distance from the institution of the training place to where employees work is very far away; Expensive costs because they need to use air transportation or other means of transportation that require costs, while the state budget provided is limited; The limited time that employees have to attend class learning and Human Resources (HR) sent to attend classroom learning are sometimes uneven and tend not to look at the type of educational qualifications or employee duties and functions in the field of work. To overcome these constraints, the head of the institution conducts learning through electronic learning which is expected to overcome the need for education equality for all employees based on a proportional and professional philosophy of justice.

The type of training taught to employees held online is one of them is learning the preparation of Standard Operating Procedures. The purpose of the Standard Operational Procedure (SOP) training was held, namely: after participating in the SOP learning the participants were able to compile an SOP, able to explain the basic concepts of SOPs, be able to identify the SOPs that had been owned and changes needed, and be able to practice SOP formulation. The basic concept of the Standard Operating Procedure (SOP) refers to the Minister of Administrative Reform and Bureaucratic Reform. The regulation is a guideline for central government agencies and provincial / district / city regional governments to develop SOP for Government Administration. After participating in the learning, participants are expected to be able to explain the basic concepts and develop a Standard Operational Procedure (SOP). This education program has been going on for more than five years. Besides that, by looking at the amount of the allocated budget, the evaluation of program implementation needs to get attention so that the effectiveness of the education process can be known.

The hope for wider access to education is a factor that forces educational institutions to explore more opportunities to create programs that can be accessed from outside the classroom, one of which is through online learning through the internet [1]. The key to success in online classes is not only the technology used but how they are used and what information is communicated using technology [2]. Online learning is described by most groups as access to learning experiences through the use of several technologies. There are several terminologies in the use of technological devices in learning, such as the term online learning which basically online learning is e-learning. The growth of online learning has become an interesting study in educational research. Some of the things that must be considered in organizing online education include technology infrastructure, manager competence, and ability of users or participants in education and training, learning materials. Online learning activities must also be designed in such a way that learning is effective and efficient, the management of online learning must be a competent person in the field of Information and Communication Technology. The combination of active and constructive learning makes learning more meaningful. Implementation of online learning provides facilities for students to be able to learn actively and independently. According to researchers, however sophisticated technology is, it will be very useful in learning if it is used appropriately and according to needs.

The essence of e-learning is to increase scalability, cost-effectiveness, and enable students to collaborate and form learning communities by sharing knowledge and creating public knowledge [3]. E-learning can be defined as the use of computer and internet technology to provide a variety of solutions to enable learning and improve performance [4]. Learning that occurs mostly because of someone's desire to learn. In the 21st century, e-learning arises and is seen as a means by which students can position themselves at the center of learning [5]. Internet and web technology allows education to be accessed more widely with more users and more economical costs so that more and more web applications are developed for educational purposes. One technology that uses the internet network that is used in the learning process is e-learning. The use of e-learning by organizations that carry out remote education and training programs is expected to not only replace but it is also expected to be able to complete offline education and training services with classroom learning methods and materials through face-to-face learning with learning resources in the form of books and or using computer facilities offline. E-learning can offer effective learning methods, such as practicing with related feedback, combining collaboration activities with independent learning, personalization learning paths based on student needs and using simulations and games. E-learning refers to something that is delivered, activated, or mediated by electronic technology to achieve learning goals such as web-based learning and computer-based training. More simply it can be assumed that if you use a computer in a certain way to influence learning then it is e-learning.

Usually, students enter the course website, often this is a course management system that can be adapted to the order in the form of a Computer Management System template such as Blackboard, Moodle, etc. that contains course syllabi, course calendars, content sources, and communication tools such as message boards and utility file sharing. Based on the syllabus and calendar, these students will use available online resources, and also, perhaps, supplementary texts and other media to complete weekly assignments, which they will submit to the teacher through CMS [6]. There are two learning models in e-learning, namely: (1) asynchronous and (2) synchronous, both of which aim to provide information and are designed to build specific work-related skills [7]. One of the benefits of asynchronous learning is that it allows students to work at their own pace to a higher level. For example, a student who struggles with subject matter can take more time to solve a difficult problem or task, while a more advanced participant can complete the task faster and move forward in the next syllabus without waiting for his friend. Asynchronous communication tools including e-mail, threaded discussions, newsgroups, bulletin boards, and file attachments. Understanding synchronous learning refers to online learning that

occurs in real time via the internet. Synchronous learning methods allow interaction between teachers and students, and students with each other, similar to face-to-face interaction. For example, using synchronous communication tools, a teacher might be able to give lectures or facilitate class discussions, or share media or data online. A synchronous communication tool also allows teachers to deliver feedback directly to students in an online environment.

E-learning is often referred to as the use of network information and communication technology in the learning process. A number of other terms are also used to describe this learning model. These include online learning, virtual learning, distributed learning, networking and web-based learning. Basically, these terms refer to the educational process that utilizes information and communication technology to mediate asynchronous and synchronous learning and teaching activities [8]. To be able to utilize e-learning in improving the quality of learning, there are three things that must be realized, namely (1) learning participants and educators must have access to digital technology and the internet in class, school and institution, (2) quality material must be available, meaningful, and cultural support for participants and instructors; and (3) educators must have the knowledge and skills in using digital tools and resources to help participants achieve academic standards [9].

## II. RESEARCH METHODS

Assessing the effectiveness of learning programs such as e-learning can be done through evaluation research. Web-based learning products are unique compared to other types, so the criteria for determining their quality are of course different when compared to classroom learning [10]. The purpose of this study was to determine the effectiveness of SOP e-learning programs carried out by the MORA's Administrative Staff Education Center. Researchers applied the Kirkpatrick Evaluation model [11] and used program evaluation in two levels of Level 1 assessing reactions and Level 2 measuring learning. This model is very relevant for evaluating training programs both in class and e-learning. The reaction in this study measures how participant satisfaction with the training is obtained, while learning can be interpreted as the extent to which students change either increased knowledge, or increased skills as a result of participating in the program.

**TABLE: I Indicators of Each Level**

Level	Specification
<b>Reaction</b>	Facilities
	Teacher competency
	Service administrator
	Learning materials
	Learning Techniques
	Module
	Audio Visual Material
<b>Learning</b>	Schedule compatibility
	Learning outcomes
	Motivation to learn
	Skill implementation
	Knowledge transfer
	Increased knowledge
Improved performance	
	Skill improvement

Data was collected using questionnaires given to alumni through online surveys totaling 37 people who were e-learning program participants in 2015 and 2016, and interviews with 10 leaders directly or using the telephone. Research instruments in the form of interview guidelines and questionnaires. Before taking field data. The researcher conducted instrument validation with content validity in the form of expert judgment to two professors of evaluation experts and one expert on online education, an expert judgment provided input and suggestions. Researchers consulted experts several times so that the three agreed that the research instrument was suitable to be used to retrieve data. Questionnaire given to participants in the form of a five-point scale to rank responses to questions: Excellent = 5, Very good = 4, Good = 3, Fair = 2, Poor = 1. Answer is calculated for the mean. For example if from 37 people there are 5 people answered excellent, 10 people answered very good, 10 people answered good, 10 people answered fair, and 2 people answered poor, then the

mean was  $((5 \times 5) + (10 \times 4) + (10 \times 3) + (10 \times 2) + (2 \times 1)) / 37 = 3.16$ . To provide an answer category decision, the researcher uses quantitative data interpretation tables into qualitative.

**TABLE: II Interpretation of quantitative data into qualitative [12]**

Average score	Category
>4,2	Excellent
>3,4 – 4,2	Very good
>2,6 – 3,4	Good
>1,8 – 2,6	Fair
≤1,8	Poor

### III. RESULTS AND DISCUSSION

#### A. Reaction Level

Internet network support is very important in the successful implementation of online learning [13]. The emergence of e-learning programs must also be interesting to make participants motivated in utilizing the facilities provided [14]. The criteria for facilities that obtain an average rating in the very good category are the accessibility of this e-learning website, which means that even though participants in remote areas or in remote areas can easily access e-learning. In this study it is known that the display of the program is good.

Asynchronous learning designed for independent learning, and synchronous led by e-learning teachers, both of which aim to provide program information, and are designed to build specific job related skills [15]. Asynchronous learning facilities get ranked in very good category of response rate. Synchronous learning facilities get a pretty good response rate. Teacher competency gets a very good response rate while the administrator service gets a good category. Technical aspects of e-learning obtain an average that is in the very good category, which means that before learning, management has provided an explanation of how participants will learn through e-learning, explanations given through manuals and explanations from the teacher before starting learning.

Information tools that are presented clearly and attractively make the online learning process well organized and the ethics of the material provided are relevant, so that higher learning outcomes are obtained [16]. Participants' responses to the modules provided, seen from the systematics and update of the material content, get a good average. In this case the researcher observed the e-module document and gave an assessment that the modules provided were in accordance with the needs of online learning participants at the MORA. The audio-visual material provided in the e-learning SOP is good, the sharpness of the image and the clarity of sound have met the needs of the participants. Suitability of learning time allocation for two full months, learning schedule flexibility especially when performing asynchronous sessions get a good assessment. Likewise, the flexibility of the exam implementation schedule, which is 4 days is considered sufficient for participants, is prepared to take an online exam. The evaluation results at the reaction level are shown more clearly in the table III.

**TABLE: III Evaluation Results on Reaction Level**

Indicators	Criteria	Average	Category
<b>Facilities</b>	Accessibility of e-learning websites	3.68	Very good
	Suitability of program display	3.65	Very good
	Asynchronous learning facilities	3.51	Very good
	Synchronous learning facilities	3.30	Good
<b>Teacher competency</b>	Mastery of Material	3.59	Very good
	Online guidance	3.54	Very good
<b>Administrator's service</b>	Discipline in delivering information	3.30	Good
	Orderly fix system errors	3.38	Good
<b>Learning</b>	Suitability of subject matter with the needs	3.97	Very good

<b>materials</b>	of the work field		
<b>Learning Techniques</b>	Technical explanation of online learning	3.54	Very good
<b>Module</b>	Systematics module	3.70	Very good
	Update the description of the material in the module	3.76	Very good
<b>Audiovisual Material</b>	Availability of audiovisual media	3.27	Good
	Image sharpness in audiovisual media	3.54	Very good
	Audio clarity	3.22	Good
<b>Schedule compatibility</b>	Adequacy of learning time allocation	3.57	Very good
	Flexibility of study schedule	3.65	Very good
	Flexibility of exam time	3.57	Very good

**B. Learning Level**

The proactive attitude of the instructor in motivating participants is very important in the successful implementation of e-learning [17]. Researchers analyze learning outcomes by looking at the final student exam scores. If the average student scores above 60 then the training is considered to have reached the minimum level of success. From the results of the document analysis, it was found that in this SOP training there were only 5 people from the whole who achieved the score according to the target. This is very contradictory when compared to other criteria at the level of reactions. Many participants complained about the difficulty of the questions given, many participants left the exam schedule because they collided with the time to carry out assignments in his office, and there were no remedial or replacement tasks given so that their exam results were less than optimal. Whereas for other aspects of learning are appropriate.

The learning independence aspect with the participant's discussion criteria with the teacher is in the sufficient category, but judging from the average score, the lowest assessment compared to the ability of independent learning participants, this means that participants prefer to learn by asynchronous learning because it is more flexible in study time, while online discussion activities, especially through chatting, are usually done during working hours so that some participants may be busy with their office work. After going through a series of learning, participants are expected to apply their skills in the workplace, on average participants feel good enough in applying their skills in the workplace. The average participant is also quite good at transferring knowledge to colleagues.

According to Matsunaga, online learning increases students' knowledge regardless of age, and ethnicity [18]. In accordance with the results of the analysis of open questions and interview with participant leaders it can be seen that participants have increased their ability to formulate activity points in the SOP and can effectively and efficiently assess the time allocation for the implementation of SOP. According to the survey participants stated that there was indeed an increase in knowledge and skills after attending e-learning SOP learning although it was not too significant. SOP preparation work is team work so in practice participants must collaborate with others who have the same task in preparing SOP. The evaluation results at the learning level are shown in table IV.

**TABLE: IV**

Indicators	Criteria	Average	Category
<b>Motivation to learn</b>	Discussion activities in online forums	2.95	Good
	The ability of independent learning participants	3.32	Good
<b>Increased knowledge</b>	Increased knowledge after participating in learning	3.86	Very good
<b>Knowledge transfer</b>	There is a transfer of knowledge to colleagues	3.11	Good
<b>Skill implementation</b>	Application of knowledge in work	3.38	Good
<b>Performance improvements</b>	Ability to complete tasks	3.76	Very good
	The ability to establish cooperation with other institutions	3.65	Very good

Open questions to identify the types of skills mastered by participants were also provided through questionnaires, comments from each participant regarding skills improvement after attending e-learning SOP, including giving statements



that participants' knowledge and skills improved better in understanding SOP workflows, understanding how to make SOP, can formulate activity points in the SOP, able to make estimates of the time allocation for the implementation of SOPs (for example: Government Property and Service Managers, Updating Web-Based Applications), and can make SOP more diverse. When given questions to participants' supervisors regarding the improvement of skills acquired after subordinates followed e-learning, the question was "How to improve their work skills?" The answer from the participants' supervisors was that their subordinates' skills were better than before e-learning.

#### IV. CONCLUSION AND RECOMENDATIONS

The success of e-learning certainly cannot always be better than face-to-face learning, so e-learning is an alternative learning program. The existence of e-learning is a solution for learning that cannot be done in the face-to-face class because of the distance and time constraints between the teacher and students. Aspects assessed at the reaction level consist of facilities, teacher competencies, administrator services, learning materials, modules, audiovisuals, and timeliness of schedules according to evaluation criteria. Aspects assessed at the level of learning that are still not in accordance with the expected target are the value of the exam results. Student learning independence, knowledge application in work, and knowledge transfer in accordance with evaluation criteria with an adequate assessment category. Other aspects such as an increase in knowledge, skills and performance are in accordance with evaluation criteria. From the results of interviews with the participants' leaders, the researchers concluded that most of the leaders who sent participants to participate in SOP training felt that there was a better improvement in the knowledge and skills of their employees than before participating in the training. They also shared their knowledge with their colleagues, so the leadership found that the SOP drafting team in the institution worked better.

Training needs to be improved through optimization of training design, provision of adequate budgets, increased management commitment, readjustment of types of training for organizational needs, and the need for motivational mechanisms for each individual. [19]. Researchers provide recommendations, including: (1) Materials and modules must always be updated to keep up with the latest developments, because regulations sometimes change and adjustments must be made; (2) More audiovisual material so that learning becomes more interesting; (3) SOP training must take more participants to improve organizational performance; (4) Teachers must be able to increase participants' motivation to be more active in online discussions, (5) Although they have participated in SOP learning with e-learning, researchers suggest that students also take face-to-face classes if possible.

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