

Conference Paper

Interpreting the Needs of Students and Lecturers for Guidebooks on Multimedia Learning Evaluation

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Abstract

This study aimed to understand the needs of students and lecturers for guidebooks on multimedia learning evaluation. This study was conducted because it had been found that some students and lecturers had difficulty in evaluating learning multimedia, and had insufficient understanding of the evaluation process, the relevance of the instruments, and the assessment indicators. This needs analysis study was conducted as the initial stage of development research. The content of the guidebook included general descriptions, evaluation plans, development of assessment instruments, product validation, and analysis of learning multimedia assessment data. The data were collected by conducting a literature review and online surveys with 35 respondents in the field of educational technology from around Yogyakarta, Central Java and surrounding areas. The data were analyzed descriptively and quantitatively. The findings indicated that 77.1% strongly needed guidebooks and as many as 40% experienced difficulties in carrying out learning multimedia evaluation as developers and/or evaluators. 80% of the respondents wanted both a printed and electronic guidebook, 14.3% only wanted an electronic book, and the rest only wanted a printed book. The results of this needs analysis can be used in the development of meaningful learning products.

Keywords: needs analysis, guidebook, multimedia evaluation, learning multimedia

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1. Introduction

Basically, learning multimedia has advantages in facilitating students in learning through various types of interactive media. Unlike the audio without images, which is usually broadcast through podcasts, the audio in multimedia is usually combined with images or texts. Thus, the message design for the two mentioned cases is different from each other. The combination of images and sounds in multimedia cannot be equated with those in films because films do not provide interactivity to the audience. Meanwhile, in learning multimedia, it is possible for users to give responses when interacting using multimedia (texts, images, audio, and audio-visual).

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Learning multimedia has the use of conveying and managing complex messages or concepts in a simpler way [1, 2]. In addition to mastery of concepts, the critical thinking skills of students who utilize learning multimedia will increase relatively [3]. Since its inception, multimedia has enabled students to work individually or in groups to construct knowledge in various ways and various intelligences [4, 5].

The strategic position of learning multimedia implies a strict development procedure, according to its characteristics. This development procedure can be in the form of understanding user characteristics, making instructional designs, creating multimedia scripts, developing, evaluating [1] and many other development versions. Optimally performed development procedures will produce powerful learning multimedia. The feasibility of developed multimedia must be evaluated by experts before it can be utilized massively. If it is developed by involving learning multimedia experts based on both development software and pedagogy, multimedia can improve the quality of learning [1, 6].

Evaluating multimedia can be complicated that it needs to explore various aspects of assessment such as the validity of the assessment instrument [4], the quality of user experience [7], quality of flowcharts, storyboards, language structure, content, technical operation, design, and performance of the multimedia presentation [4, 8]. Multimedia presentation performance is related to how users manage cognitive load when accessing multimedia [9]. Mayer (2009) paid attention to human cognitive load so that it does not work excessively by applying multimedia principles to the multimedia instructional design. It will be more complicated if the activity of evaluating multimedia comes to know the level of effectiveness in accordance with the purpose of creating the multimedia [10].

The various aspects of multimedia assessment allow developers and novice evaluators to make mistakes in assessing. Then, the assessment standard might be misinterpreted according to the subjectivity of the assessor. Learning multimedia developers often provide evaluation instruments which are not in line with development goals. The invalidation of the evaluation instrument is a common error, so the inobservant evaluator will measure it as it is. A haphazard measurement process will result in inadequate evaluation recommendations: the product has to be said to be feasible, even though it is not yet feasible. It is true what Lee & Owens (2004) found that “the cause of poor measurement stems from lack of knowledge or inattention, or both” [11].

Research has not been found on the mistakes of multimedia developers and validators in carrying out product evaluation in Indonesia, but this research reveals the importance of a guide for evaluating learning multimedia. The existence of guidance

can reduce the possibility of errors which invalidate the evaluation. Moreover, the process of evaluating products from the results of research and development has been intensely carried out by students and lecturers. Therefore, the college context becomes importantly strategic to be researched in order to find out the basic needs of the learning multimedia evaluation process. Community on colleges who are literate in evaluating learning products are expected to have a positive impact on the quality of learning innovations developed for the wider community as the perceptions of students and lecturers on basic teaching skills which are believed to have an impact on the graduates' competence [12].

Research on the needs of students and lecturers in learning multimedia evaluation guides can provide an overview of their perceptions and desires for contents which can be used as a guide. Their confusion as well as difficulties found when assessing learning multimedia products will be interpreted into the most needed guide content. The problem of our research is how to interpret the results of the needs of students and lecturers in the guidebook to assess multimedia learning. Our research results can be used as a basis for development research with the same theme. Although this field is about the evaluation of learning multimedia, this research is only based on students and lecturers of Educational Technology spread across the island of Java.

2. Related Works/Literature Review

This section briefly describes the concepts behind learning multimedia evaluation and outlines previous attempts to educate people about how to evaluate learning multimedia.

2.1. Evaluation of Learning Multimedia

A review of the learning multimedia evaluation will not be significant before comparing the definitions of evaluation multimedia learning from experts. The term multimedia has led to a lot of interpretations for each circle, but similarities between the terms can still be underlined. For Mayer [10] multimedia is defined as “a presentation of material using words as well as pictures”. Vaughan states that multimedia is a combination of text, art, sound, animation, and video which is shared to users via a computer or other electronic or digital devices [13]. Both Mayer and Vaughan agree that multimedia is the use of multiple media to present information.

Multimedia was created for business purposes, school learnings, household activities, and other general needs. The objectives of multimedia development are inseparable from the nature of technology, namely effectiveness, efficiency, and attractiveness [11]. Based on the various objectives of developing multimedia, how to measure multimedia products depends on the goals to be achieved for target users. In order for the multimedia assessment measurement tool to be suitable for the development objectives, the evaluation procedure needs to be carried out carefully.

Multimedia evaluation will usually be an integral part of a large multimedia project. The assessment stage is usually carried out at the end after analyzing needs, designing learning, developing products, testing and implementing multimedia [11]. That is in accordance with what Lee & Owens, Ivers & Barron, and Vaughan who offers evaluation at the end of the project with various measurement strategies based on rubrics [4, 11, 13].

Above all, the most important thing is how the evaluation model which will be used by the developer can be carried out according to the procedure. The evaluation procedures must be able to be communicated to the multimedia evaluation experts in order to avoid errors in providing justification.

Evaluation models suitable for learning products have been described by Johnson & Bendolph which include formative and summative evaluations (Michael Scriven's suggestion), 4-level evaluations (Kirkpatrick), and other types of evaluation [14]. Formative evaluation assesses at the level of media quality which can be reviewed from the analysis of needs, designs, and stages of multimedia development [11]. Meanwhile, summative evaluation assesses the effectiveness of multimedia learning on user subjects.

Almost all research and development products at the level of undergraduate students stop after a formative evaluation is carried out, while summative evaluation is usually carried out by master level students. Both formative and summative evaluations are of equal concern to achieve the quality of learning products. The terms formative evaluation and summative evaluation can be equated with alpha and beta testings [13, 15].

Among those proposed by experts in the field of measurement, testing and evaluation such as Borg and Gall [16], Kirkpatrick, Mayer, and others, the most important thing is that the model is based on the principle that evaluation must be linked primarily to the purpose of development and the purpose of using the evaluation results. Any sophisticated evaluation model starts with the determination of evaluation objectives, and evaluation objectives are tailored to the needs of the development.

Lee & Owens proposed that evaluation attributes in learning multimedia could include the purpose of evaluations, evaluation strategy procedures, evaluation plan procedures,

validity procedures, instrument developments, and evaluation result documentations [11]. Reddi, & Mishra emphasize the importance of understanding the principles of learning and the characteristics of students for evaluation purposes [1]. Examples of measurement instruments proposed by Ivers & Barron in detail can be used as a reference in this study [4].

2.2. Educating Academics to Evaluate Learning Multimedia

How to educate and improve performance can be pursued through a program or learning product [17]. Previous efforts on how to teach knowledge and skills to assess learning multimedia have been made. Experts in the field of multimedia assessment disseminate thoughts and research results into books and scientific articles such as those collected in the Handbook of Research on Educational Communications and Technology [18]; Assessment in Game-Based Learning [19]; and much more. These written sources have been widely studied and referenced in the college environment by instructors in media and learning technology. Apart from written documents, there are other publication efforts through seminars attended by academics, for example those routinely conducted by professional organizations.

In Indonesia, there has not been any research on the effectiveness of these publications on the knowledge or skills of academics in evaluating learning multimedia. Even if there is, then it will take the form of unpublished socialization activities. Therefore, the importance of this research position is to publish written sources as a guide to assess learning multimedia that begins with needs analysis research.

Furthermore, this section contains a study of the strategic position of the book which is packaged into guidebooks. Guidebooks need to be assessed for their effectiveness in influencing the level of understanding of readers. In addition, the books also need to be studied in terms of packaging format and message design so that they are guaranteed to guide readers as the target audience. Thus, the guidebooks can be given to anyone, but how previous researchers thought about guidebooks for adults is important because the target of this research includes students and lecturers.

The purpose of guidebook creation is to make it easier for readers to carry out certain tasks according to the difficulty level of the task. Research related to guidebooks with the aim of making it easier for users has been carried out such as research by Arufendra, Hasmalena, Syafdaningsih [20] which produced guidebooks with 90% considered very practical to use. The ease and practicality in learning can be achieved because learning products are designed with attention to the characteristics of learning participants [21].

Guidebooks should be designed to be of good quality. Therefore, the elements of the book which are classified into good quality can be specified. Dewayani through the Curriculum and Book Center suggested that in selecting books as a guide, it is necessary to consider the development of the target readers' rational and psychological powers, in order to be effective in fostering reading interest and increasing their insight [22]. Dewayani further explained that the quality of books is also influenced by the book cover, the beginning part of the book, the contents, and the end of the book [22].

The guidebook for these research objectives should provide guidance on methods, media, and learning assessments in order to increase the capacity of educational, social and professional sciences in the academic community. In order for the guidebook to have accountable content, the author needs to include the reference source in the reference list on the final page of the book. The manual is also written in good grammar and presentation style so that it is easy to understand. How the book is packaged also needs to be adjusted to target users from the results of needs analysis [23].

3. Material & Methodology

This research method is descriptive quantitative with insight into the need for academics to guide books in managing learning multimedia. This research is an initial stage which produces recommendations for the next stage of research in the form of products.

Data on perceptions, initial abilities, background experiences, possible main tasks which must be mastered, and how the attributes of guidance required by research subjects have been collected through online surveys. 35 academics in the field of Educational Technology have been surveyed consisting of 71.4% students and 28.6% lecturers in Yogyakarta, Central Java and East Java for two months. The data is then tabulated quantitatively and analyzed by means of front-end analysis and learner analysis [24]. Front-end analysis is study the fundamental problems faced by research subjects in order to prepare guides book. Front end analysis specifically consists of performance analysis, needs analysis, job analysis, practical experience about a person's learning difficulties, and several new concepts needed in learning. Learner analysis is the preliminary stage of instructional development in which the characteristics of the target students which are relevant to the design of materials are identified.

In addition to considering input from research subjects, the main tasks which must be mastered by them were figured out from literature studies. Through tracing past publications and reviewing reference books on multimedia evaluation, the data related to the most important, urgent or needed concepts for research problemsn were obtained.

Then, the data were analyzed from the task analysis and concept analysis perspective [24]. In the end, operational learning objectives (specifying instructional objectives) can be set.

The proposed questions were confirmed by instrument experts about the validity of the content, but a reliability test was not carried out as the questions were largely accommodating to the needs even though there were also questions about confirmation of the subject's initial perceptions and abilities.

4. Results and Discussion

4.1. Results

The subjects of this research have experienced various multimedia evaluation activities. The experience includes taking role as both developers and validators. The subjects range from being never, once in a month, and regular in experiencing the multimedia evaluation activities. Figure 1 shows a variety of experiences which tends to be evenly distributed.

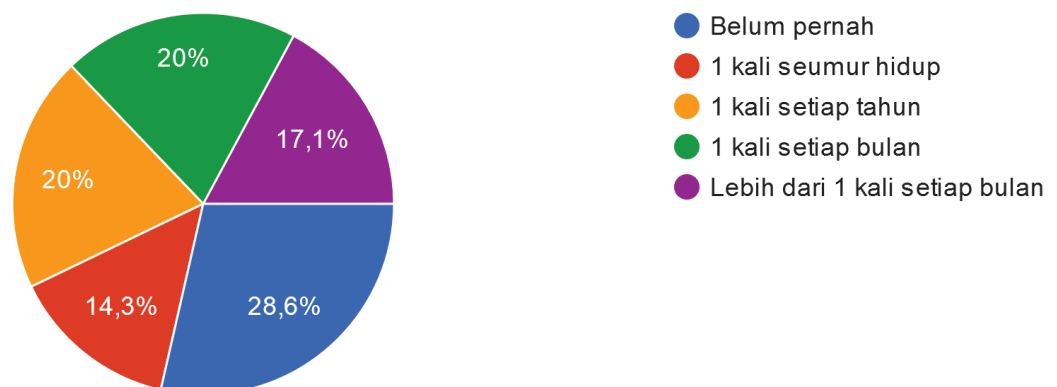


Figure 1: The intensity of the multimedia evaluation learning experience

Based on this variation of experience, the subjects admitted to still find difficulties during learning multimedia evaluation process, especially on understanding all evaluation attributes, followed by the difficulties in carrying out basic techniques, and basic understanding of learning multimedia. However, nearly a quarter of the subjects have not experienced any difficulties (See Figure 2).

The subjects consider that evaluation is very important to do for the quality of the product developed (82.9%), so it is necessary to know the interests of the subjects as students and lecturers. These interests include efforts for the smooth completion of college final assignments (40%), as well as for the sake of job success (20%). In addition,

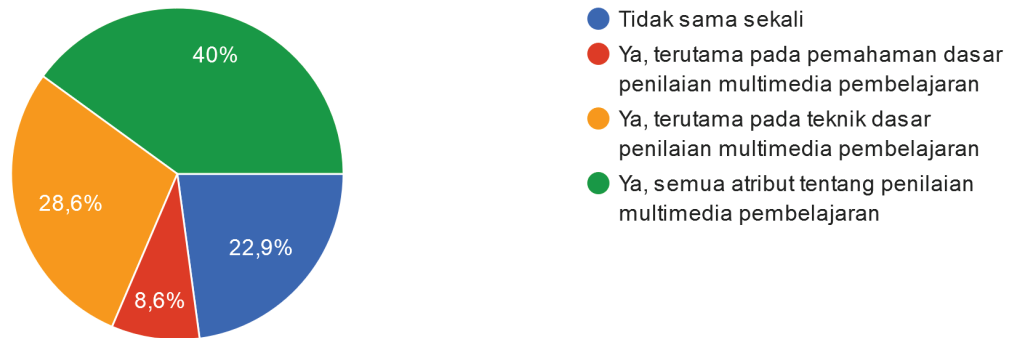


Figure 2: Difficulties encountered when evaluating

they also believed that doing multimedia production would increase their knowledge (65.7%).

Research subjects assess several themes they need to work on the most based on the greatest proportion.

TABLE 1: Themes of most interest

Order of themes	
1	multimedia evaluation strategies or methods
2	planning and design of learning multimedia evaluation
3	validity measures in the learning multimedia evaluation
4	learning multimedia instrument development
5	purposes and benefits of learning multimedia evaluation
6	collection and analysis of learning multimedia evaluation data

Most of the subjects agreed with the existence of a guide in the form of a book because 77.1% believed that there were not many learning multimedia guidebooks which were packaged operationally. On the other hand, the rest of them think they can learn from other sources such as textbooks, research results, and sources from the internet. 80% of the subjects suggested that guidebooks should be developed in both printed and electronic forms, 14.3% wanted the books to be packaged in only electronic books, and the rest preferred printed books for the guidebook packaging.

4.2. Discussion

The reality found shows that both students and lecturers want their understanding and skills to improve in evaluating multimedia. Their expectations are linear with the interest in improving their performance as academics in the field of Educational Technology, despite the fact that almost half of them do not fully understand all things about learning multimedia evaluation. Improving one's performance can achieve self-satisfaction [25,

26] and it is necessary to design a learning that supports them [24, 27, 28] both in the form of learning processes and products.

Interpretation of the main tasks which need to be mastered by students is at the basic level and lecturers at the advanced level because the intensity of their experiences is different. The difficulties that Educational Technology students complain about are still within the outside framework along with their motivation to immediately graduate from college. Indeed, most of their final assignments are related to product development and many also are related in multimedia. This is in line with what Maslow proposed regarding the theory of multilevel human needs [26].

Both students and lecturers of Educational Technology in the Java area can be strategic learning targets, which have sufficient initial knowledge to delve into more complex evaluation procedures. From the research results, simple themes such as the purpose and benefits of evaluation are the second-least number which needs to be studied. This can be interpreted that they have understood the basic concepts. They want complex materials which can be interpreted simply so that they can be applied easily.

The expected performance criteria after students and lecturers study the learning multimedia evaluation guidebooks emphasize not only knowledge but also the performance of how the ideal evaluation procedures are conducted. Thus, performance criteria for students and lecturers must be differentiated according to their initial level of understanding. Likewise, the level of evaluation which can be reached by the two of course varies, as needed [14].

To support the main tasks that the research subjects need to have, it is necessary to analyze concepts based on needs and literature review. The concepts offered by Lee & Owens can include the evaluation purposes, evaluation strategy procedures, evaluation plan procedures, validity procedures, developing instruments, and evaluation results documentations [11]. Reddi, & Mishra proposed the importance of understanding the principles of learning and the characteristics of students for evaluation purposes [1]. The examples of measurement instruments are proposed by Ivers & Barron in detail [4]. All the concepts offered are considered very important by the research subjects. Therefore, it is necessary to formulate operational learning objectives for them.

The learning objectives in the guidebooks which need to be developed for students include 1) figuring out the basic concepts of learning products evaluation; 2) determining the purpose of learning multimedia evaluation; 3) identifying evaluation strategies; 4) designing evaluation procedures; 5) knowing the validity procedures; 6) developing learning multimedia evaluation instruments; and 7) analyzing evaluation

data. Meanwhile, the learning objectives which need to be achieved by lecturers are 1) differentiating evaluation strategies based on evaluation objectives; 2) designing learning multimedia evaluation procedures; 3) performing validity procedures; 4) assessing learning multimedia evaluation instruments; 5) analyzing evaluation data, 6) making recommendations for evaluation results. The difference in learning objectives is due to the role of students usually as developers, while lecturers as consultants and evaluators.

The research subjects' interest related to the packaging of guidebooks in the form of electronic books and printed books indicates that the digitalization of learning resources is still not optimal. They still prefer the printed version along with the electronic version.

This discussion can be used as an illustration in designing product development research, especially about guidebooks. The points being analyzed in this research are solely for the benefit of scientific advancement, especially for the field of Educational Technology. Thus, it can only be generalized under the certain terms and conditions.

5. Conclusion

Learning multimedia evaluation activities are not simple to conduct because academics still experience difficulties at both the basic and advanced levels (overview of learner characteristics). Their needs have been collected and interpreted so as to produce a description of the needs in the learning multimedia evaluation guidebooks with different learning tasks. The important concepts needed in the design of the guidebooks consist of objectives, benefits, strategies, plannings, designs, validity measures, instruments, and data analysis in the evaluation of learning multimedia. All of these concepts belong to the important attributes of the guidebooks which are then interpreted into learning objectives.

Realizing the strategic importance of the learning multimedia evaluation guidebooks, it is necessary to follow up on further development research. The results of this analysis can be used as a basis for teaching students and lecturers in other innovative ways.

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