FEASIBILITY STUDY OF THE DEVELOPMENT OF SCIENTIFIC-BASED SELF-REGULATED LEARNING MODEL ORIENTED INTERACTIVE FLASH

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Abstract: This study investigated the feasibility of the scientific-based self-regulated learning model oriented interactive flash for the Biology subject from the perspective of experts. This study used descriptive qualitative method. Interviews with structured interview guidelines were used to collect the data in this study. Three groups of experts were employed in this study, i.e. materials, media, and language experts. The material experts examined the content of the interactive flash; the media experts examined the graphic and the clarity of the SLRBS models steps in the interactive flash; and the language experts examined the language aspects displayed in the interactive flash. Interactive analysis models were used in the data analysis. The analysis consisted of data collection, data reduction, data display, and conclusions. The findings showed that seven out of the 32 feasibility indicators needed revisions. The material aspects which needed revisions were the depth and coverage of the materials and the encouragement of curiosity and asking ability. The media aspects which needed revisions were image arrangement indicator and media. The language aspect which needed revisions was the sentence accuracy indicator since there were a few incorrectly written sentences in the flash presentation. It was concluded that the developed interactive flash media was categorized as feasible but still requires some revisions.

Keywords: *media, flash, Based Scientifi- Self-Regulated Learning*

STUDI KELAYAKAN HASIL PENGEMBANGAN *FLASH* INTERAKTIF BERORIENTASI MODEL *SELF REGULATED LEARNING* BERBASIS SAINTIFIK

Abstrak: Penelitian ini bertujuan untuk mengetahui bagaimana kelayakan hasil pengembangan media *flash* interaktif Biologi berorientasi model *self-regulated learning* berbasis saintifik jika ditinjau dari sisi *expert judgment*. Penelitian ini menggunakan metode deskriptif kualitatif. Teknik pengumpulan data menggunakan wawancara. Intrumen penelitian menggunakan lembar wawancara terstruktur. *Expert* yang digunakan terdiri dari tiga kelompok, yakni *expert* materi, media, dan bahasa. *Expert* materi membahas aspek kelayakan isi *flash*, *expert* media membahas aspek kelayakan kegrafikan dan kejelasan langkah model SLRBS di dalam *flash*, dan *expert* bahasa membahas aspek kelayakan bahasa yang ditampilkan oleh media *flash*. Teknik analisis data menggunakan *analysis interactive model* yang terdiri dari *data collection*, *data reduction*, *data display*, dan *conclusions*. Hasil penelitian menggambarkan bahwa dari 32 indikator kelayakan hanya 7 indikator yang terindikasi revisi. Aspek materi yang diperbaiki adalah indikator kedalaman, keluasan materi, mendorong keingintahuan, dan mendorong kemampuan bertanya. Aspek media yang menjadi perbaikan adalah indikator penataan gambar, dan tingkat interaktif media dengan peserta didik. Aspek bahasa yang perlu direvisi adalah indikator ketepatan struktur kalimat karena ada beberapa kalimat yang salah tulis dalam penyajiannya. Simpulan penelitian ini adalah media *flash* yang dikembangkan terkatagori layak namun masih memerlukan revisi dibeberapa indikator.

Kata kunci: *media, flash, Self-Regulated Learning Berbasis Saintifik (SRLBS)*

INTRODUCTION

The feasibility study according to expert judgment is one important part of a product developed. Even this step is one part of a series of research and developmet method. The function of this test will be a measure of the quality of the product prototype and provide direction for the improvement of product improvement (Hendrayadi, 2017). Items will be discussed in this article one of which is the medium of learning

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Biology. This article will focus on qualitative descriptive study that focused on the feasibility analysis of the development of flash media-oriented model of scientific-based self-regulated learning when viewed from the side of expert judgment. Basic flash media development departs from the analysis needs and that has been done at this stage of preliminary studies in R & D research beforehand.

Needs analysis gives the fact that the benefits of the use of media and learning model has been widely proven in improving the quality of learning both in research at the level of S1, S2, and S3 (Wahyuni, & Hariyadi, 2014; Widiadnyana, Sadia, and Suastra, 2014). Even sometimes a dissertation or thesis was to develop a model of learning and create variations of the learning step for the learning process becomes more attractive (Mariati, 2012; Mulyatiningsih, 2016; Winarno, 2009). This study variations also occur in instructional media (Ali, 2009; Anwar, Sudjimat, & Suhartadi, 2012; Handhika, 2012; Haryoko 2009; Kurniawan, 2013; Mediawati, 2011; Putri, 2013; Rahmatullah, 2011; Rahmawati, Sudargo, & Paramastri, 2007). However, if the research results from both research on the improvement of learning and then stop?

The success of the model and media research in the field provides the use of models and media reality is still done separately. For example, research on media, this research is sometimes more oriented to the delivery of course material, so that the look/layout and animation effects caused more functions so that students better understand the material being taught. Likewise research on the application and development of the model. The research focus is on the application of the model in the form of a learning tool in the form of a syllabus, lesson plans, modules, and student worksheet (Chodijah, Fauzi, & Ratnawulan, 2012; Minarti, Susilowati & Indriyanti, 2012; Yazid, 2012). Reality of this previous research suggests that the use of media and models are still not integrated and the information needs of research on the development of model-based media is still minimally implemented.

Still in the stage of requirements analysis, field observation also suggests that teachers desperately need the Guide creation of ICT-based learning so that the ideals of ICT literacy achievement of competencies in a learning can be achieved (Suryadi, 2005, 2007; Yazdi, 2012).

ICT literacy is needed to support 21st century learning, because ICT is a foundation in bridging the technology and learning in the classroom.

Based on the three findings of a needs analysis that has been described previously, then this problem is necessary completion for more media orientation on the application of learning steps. Mainly based student-centered learning steps, one of which contained the SRLBS models. This learning model is newly developed and have obtained the certificate of Intellectual Property Rights (IPR) in 2015 (Agusta & Djukri, 2015). Some of the footage result of the development SRLBS model based media can be seen in Figure 1.

It should be noted that an important point of this article does not discuss Specific development process is done, but rather to how the quality of the feasibility of the development of media when viewed from the side of the expert judgment?. Based on the description of the results of this review is expected to be the basis for the improvement of the media in the next study.

METHOD

This study used descriptive qualitative method. Collection and instrument data in this study using a structured interview. Details of indicators of interview questions can be seen in Table 1.

Respondents used consisted of three groups, namely 1) subject matter experts, 2) media, and 3) language. Each group consists of three respondents, so the total interviewed was 9 respondents. Data were analyzed using interactive analysis models with some parts of the collection of data (data collection), the reduction of the data (data *reduction)*, Presentation of data (data display), and conclusion or verification (conclutions) (Miles & Huberman, 1994).

RESULTS AND DISCUSSION
Research Result
Feasibility Analysis of Material Aspects

Material suitability with basic competencies and Indicators: Based on interviews, the use of basic competencies and indicators are appropriate and in accordance with the teaching materials. This indication suggests that the media preparation begins with mapping the right basic competencies and indicators corresponded to the curriculum analysis. Until it can be concluded that the

Figure 1. Snapshot Flash Media Impressions

development of the media as teaching material at this stage is to qualify the feasibility of a media.

Breadth of Content: Expert argumentation against the vastness of the material is quite diverse. The first experts give their opinions, even though the breadth of the materials are in accordance with the indicators but still felt necessary to renew some respiratory system diseases name of the latest research articles that are often encountered in everyday life. Both provide expert opinions, the breadth of the material was in accordance with the demands of the material indicators and high school level, but need additional sentence with a verb operational indicator "analyze". This is because if the terms of the sentence in basic competencies then the learners had reached the four-level cognitive not explain alone (cognitive level two). Three experts argued the translation

of the material needs to look at the college of literature. This indication provides an overview of aspects of the breadth of material that needed some revisions based on the feedback that has been given. Especially for the operational verb "analyze" it is felt necessary to add language analysis considering cognitive basic competencies reach level 4.

Depth Content: Argument one and three experts said the depth of the material is good enough it is in line with the results of interviews on aspects of the breadth of the material. Slightly different from the previous two experts, two experts say they need the depth of material to the achievement of basic competencies. This is in line with the arguments on aspects of the breadth of material that has been previously described. The significance of this aspect of the interviews

Table 1. Grid Interview

Expert Content		
No.	**Criteria**	**Indicator**
I	Feasibility of Contents	Material suitability withbasic competencies and Indicators breadth of Content depth of Content Accuracy Concepts and Definitions Facts and Data Accuracy Accuracy Examples and Case The accuracy of the drawings, diagrams, and illustrations Encouraging Curiosity Ability encourage inquiry
Expert Media		
II	feasibility of graphics	Size, Type, Distance Text display Image determination Pictures Music Background options design slide Layout design Background Color harmony with Text Ease of Navigation Ease of Selecting Menu Dish Animation display
III	Clarity measures SRLBS Model	Regularity Step Learning Model SRLBS Clarity Command in Step Implementation Model SRLBS Level of Interactive Media for Learners
Linguist		
IV	feasibility Language	Accuracy of Sentence Structure effectiveness sentence the rigidity of term Understanding the message or information. Motivating Ability of Students. Compliance with the level of Emotional Development of Students The accuracy of Grammar. Accuracy of Spelling. Consistency Use of Terms Consistency The use of symbols or icons.

to illustrate the depth of the material presented is quite good but need some informations that is enrichment / enrichment. The depth of material on flash media should be directed as a student enrichment.

Accuracy Concepts and Definitions: Arguments expert for the accuracy of the concept and definition is good enough, it indicates to this aspect does not need to be revised and refined with some reference.

Facts and Data Accuracy: Facts and data displayed is good and easy to understand. The accuracy of the facts and the data is also the description that the media developed already meets the principle accurate.

Accuracy Examples and Case: Examples and case granted judged by experts is already quite good and in accordance with the existing reality in the environment. It makes interesting at this stage is the provision of an example with a display that uses a 3D effect so as to provide clear information for students.

The accuracy of the drawings, diagrams, and illustrations: This aspect is in conformity with the material the respiratory system in humans. Connection with the previous explanation is supported image display with a 3D effect so that the animation of the respiratory organs become more attractive.

Encouraging Curiosity: The argument for this aspect varies experts. The first expert to explain to encourage curiosity of learners there should be the introduction which tells about various respiratory system diseases encountered in life. Unlike the previous ones, both experts explain in part the analysis of the topic should be

given a few images of human activities related to the respiratory system. In line with the experts first, third expert explained the need for the activities apersepsi with knowledge checking material form earlier in the introductory part, its function is to promote the knowledge of students on the material to be delivered. This indicates the need for revision in several parts in order to enhance flash media created.

Ability encourage inquiry: The argument for this aspect more experts to function measures the phase III study SRLBS ask. This phase has not been maximized in interactive media, such as at the time of the activity observed Learners are directed to observe a video show and then interspersed with an introductory sentence which reads "if you've seen the video footage shown then it will continue to propose activities". After the introductory sentence was subsequently emerged sentence orders to carry out the activities ask narrative "based on the video that has been delivered, make a few questions?". Interactive needed for the process to be more alive to ask.

Feasibility Analysis of Aspects of Media

Size, Type, Distance Text: Arguments experts aspects of it pretty well. Font size, font type used, and the distance of the text was appropriate and easily legible. Further revisions are carried over to the presentation aspects of the sentence which is the realm of language assessment.

Display Image: In this aspect, the expert stated arguments are good enough, it is seen from the 3D effect is given to few pictures of the respiratory organs. These results illustrate that the media has met the visible principle and interesting.

Determination Pictures: Arguments experts for the determination of the image is good enough, it is seen from a selection of images relating to the material presented respiratory system. Things need to be revised is the position of some of the posts that are to the center of the screen so that it covers some pictures.

Music Background options: According to experts music on flash media selection is good, the music is not too disturbing narratives for the delivery of material. These results indicate that the principle has been met with good interesting.

Design slide: Arguments experts aspects of it very well. Slide design with 3D effects

make show of flash media becomes more alive. Flow slide transitions are also seen more varied. It has been shown that the principle structure and poximity been fulfilled.

Layout Design: Flash layout design is good enough, and do not need repair. It has been shown that the principle structure, visible and poximity been fulfilled.

Background Color harmony with Text: Arguments experts aspects of it good, but some writing sentences that size is too small makes it a little disturbed. It has been shown that the principle contras have been met.

Ease of Navigation: Navigation is displayed on the flash media has been pretty good, and enables users to perform learning flash. It has been shown that the principle structure and poximity been fulfilled.

Ease Has Menu Dish: According to expert opinion aspects dish menu on flash media has been very good, even the appearance of a 3D menu icons are given quite interesting and easy to understand. It has been shown that the principle structure, visibile, interesting and poximity been fulfilled.

Animation display: Animation, is given not rigid and are good enough. It has been shown that the principle structure, visible, interesting and poximity been fulfilled.

Regularity Step Learning Model SRLBS: Commands given in the implementation of the learning step SRLBS models are good enough. Flow step SRLBS been seen since the model of analysis of the topic, until the modification. Step observe, ask, plan, gather information, associates, and communicate has been described quite well. But needs improvement on the side to make it more interactive phrasing to learners.

Level of Interactive Media for Learners; In the delivery of better basic competencies and indicators without speaking, but when the slide show will display letters followed by the sound effects such as typing, that impression is not too flat. Then on the apersepsi that says "do you wonder how humans breathe", such as interrupted by a slide to be displayed next, it's like hanging.

Feasibility Analysis of Aspects of Language

Accuracy of Sentence Structure: According to language experts sentence structure displayed is nice, interesting and interactive with the user, but there is still mistyped and it needs to be fixed.

Effectiveness sentence: Arguments experts demonstrate this aspect has been good, straightforward in the delivery of the sentence and easily understood in the presentation. It has been demonstrated that the principle of repetition have been met.

The Rigidity of term: Media flash is felt already follow standard grammar. It has been demonstrated that the principle of repetition have been met.

The understanding of the message or information: According to experts the displayed information easy to understand because other than through the delivery, which supports the display also writing about the material conveyed. It has been shown that the principle of proximity are met.

Ability to Motivate Students: This argument is quite varied, but in general expressed flash media still motivate learners. This is because the delivery of the delivery is to the point. Some revisions can be done by trying one of an expert motivational phrases and connected by the material. Yet another expert to give an opinion the 3D effect is sufficient to represent the perceived attractiveness of the flash media for learners so as to make the students motivated.

Compliance with the level of Emotional Development of Students: According to experts pedapat flash media has been quite appropriate to developmental level of students at the high school level.

Accuracy of Grammar; Arguments experts flash media states are already using proper grammar and intonation in the delivery also supports quite well. It has been demonstrated that the principle of repetition have been met.

Accuracy of Spelling: According to experts, the narrative is in the flash media perceived Indonesian've followed the proper spelling.

Consistency Use of Terms: Arguments experts expressed the consistent use of the term has been fairly consistent. It has been demonstrated that the principle of repetition have been met.

Consistency The use of symbols or icons: This aspect is also felt by the experts were consistent. It has been demonstrated that the principle of repetition have been met.

Discussion

Based on the results of expert judgment that has been described, shows that of the 32 indicators that have questioned the feasibility of the indicators indicated only 7 revisions. The revised indicator consists of four indicators on the feasibility aspect of the content (the material depth, breadth of material, encourage curiosity, and encourage the ability to ask), two indicators on the feasibility aspect kegrafikan (arrangement of pictures and interactive level of media with learners), and 1 indicator on the feasibility aspect of language (the accuracy of sentence structure), Then for the regularity indicator measures SRLBS model learning and clarity of command in the application of the model step SRLBS there are revisions that indicate alignment step model in the flash media has been very good.

Eligibility aspect of Contents

Contents feasibility aspect is composed of 9 indicators, namely 1) Material Compliance with basic competencies and indicators; 2) The extent of the Material; 3) The depth of the material; 4) Accuracy Concepts and Definitions; 5) The accuracy of the facts and data; 6) Accuracy Examples and Case; 7) The accuracy of the drawings, diagrams and illustrations; 8) Encourage curiosity; and 9) Promoting Ability inquiry. Based on the findings of research suggests that the indicators that need to be fixed is 1) indicator of the depth of the material, 2) the breadth of material, 3) encourage curiosity, and 4) encourage the ability to ask.

According to the experts to deepen the quality of the material needs to be associated with some of the information enrichment of university research results. It is necessary, if the material presented in the media are generally the same as in the textbook, then there is nothing interesting and new information obtained by the students. In contrast, if directed to some of the material enrichment of research in universities, the depth of the material will broaden the students in the learning process (Fajrin, 2013; Rofiah, Rustana, & Nasbey, 2015). Further to aspects of the breadth of the material, tidak much different from the previous results, the *expert* also argues that developed media require additions to name a few respiratory system disease that is often encountered in daily life these days, and translation of the material from the college. This is expected to provide benefits in extending the insights and experiences of students (Arsyad, 2011). Studies of previous studies with the results

for the aspect of the depth and breadth of this material provides a common ground for the repair and strengthening of media in the next year.

Results of research to encourage curiosity aspect also shows things are not much different. Based on the study of theory, one of the effects of media use is to increase the motivation, knowledge, skills, change in attitudes, behaviors, adaptability, integration, participation and cultural interaction (Marfuatun & Budiasih, 2012; Noviar, 2016).The impact of this curiosity can be obtained when the media meets the principles interisting (Nurseto, 2011). If seen from the arguments of *expert*, Revision of curiosity aspect can be addressed in the form of checking knowledge apersepsi previous material in the introduction. These suggestions provide a similar solution for the creation or interisting principle, because checking knowledge on apersepsi section provides an overview of material relationship with the material to be studied before. Information about these relationships can be the impetus for students to increase their curiosity.

Similarly to encourage curiosity aspect, the aspect of feasibility media to encourage the ability to ask the students also showed that ratings are not much different. The focus of the*expert*for the assessment of this aspect over the function displayed propose operational measures. Activity ask is one step in the model SRLBS learning. Actually, this aspect has been displayed and arranged regularly in the sequence of steps SRLBS models, but according to the *expert* declare that media developed still requires revision of the form of additional sentence introductory sentence and ask orders to carry out the activities it needs to be returned. It is important to look for in terms of a media interactive said it takes the principle of proximity and structured (Nurseto 2011; Simonas, 2006; Williams, 1994, 2015). The organizing of proximity principle focuses on the information which will be followed by the students, and structured focus on the command structure which will be followed by the student.

Feasibility of graphics aspects

Feasibility of graphics aspects composed of 10 indicators, namely 1) the size, type, text spacing, 2) image display, 3) determination of the picture, 4) pilhan background music, 5) slide design, 6) design layout, 7) compatibility background color with text, 8) ease of navigation,

9) ease of selecting the menu offerings, and 10) to see the animation. Based on the findings of research suggests that the indicators that need to be fixed is 1)indicator the arrangement of the image, and 2) the level of media interactive with learners.

According to the experts things that need to be revised in the arrangement of the image is the position of some of the posts that are to the center of the screen so that it covers some pictures. This is in line with the principle of alignment in the development of interactive media, these principles provide an explanation thatput an item (article) do not disembarang place because it would interfere with vision image object and place it in the appropriate position (Simonas, 2006; Williams, 1994, 2015). In addition to the principles of alignment, visible principle also supports the statement of the expert, this principle also explains that the position of text and images onthe media must be placed in a position that is easy to see because it will help the user to understand the information conveyed (Nurseto, 2011).

While this for interactive level aspects of the media to the students, the experts advise that the delivery of basic competencies and indicators are better off without talking, but when the slide show will display letters followed by the sound effects such as typing, that impression is not too flat. Then on the apersepsi that says "do you wonder how humans breathe", such as interrupted by a slide to be displayed next, it's like hanging. This suggestion is in line with the principle interisting stating that manufacture the media must have an element of the attractiveness for the user, it will support the user wishes to examine information submitted (Nurseto, 2011).

Feasibility aspect language

Feasibility aspects of language is composed of 10 indicators, namely 1) the accuracy of sentence structure, 2) the effectiveness of the sentence, 3) the rigidity of term, 4) understanding of the message or information, 5) the ability to motivate learners, 6) conformity with the level of emotional development of learners, 7) grammatical correctness, 8) the accuracy of spelling, 9) consistency of terminology, and 10) the consistency of the use of symbols or icons. Based on the findings of research suggests that the indicators that need to be corrected is the appropriateness of the sentence structures.

According to language experts sentence structure displayed is nice, interesting and interactive with the user, but there is still incorrectwrite and it needs to be fixed. This is necessary so that the principle of repetition are met in the development of media (Simonas, 2006; Williams, 1994, 2015). This principle also gave the explanation that the regularity of the sentence should be consistent and effective in order that the information disampiakan be interesting to read by the user. Besides repetition, accurate principles also form the basis for the improvement of this indicator. Accurate principle explains that the information must be accurate with a good arrangement of sentence structure, it is also necessary to simplify the user (Nurseto, 2011).

Based on the discussion that has been described, giving an impression that some things need to be revised according to expert judgment is in conformity with the principles that must be met in the development of the media. This principle is composed of two theories, the principle of VISUAL (Visible, Interactive, Useful, Accurate, Legitimate, Structured) and the four principles by Wiliam (Contrast, Repetition, Alignment, Proximity) (Nurseto, 2011; Williams, 1994, 2015). In addition, some previous research study also gives the same view that the revision given by expert judgment has the potential to optimize the function of the media in raisingmotivation, knowledge, skills, change in attitudes, behaviors, adaptability, integration, participation and cultural interaction (Marfuatun & Budiasih, 2012; Noviar, 2016).

CONCLUSION

Basically review of media both in terms of materials, media, and language describes the product has been worth it, but still needs some revisions in several indicators. The argument of the expert quite balanced, and even point out the similarity opinions. On the part of the material to be an improvement is an indicator of the depth, breadth of material, encourage curiosity, and encourage the ability to ask. On the part of the media to be an improvement is an indicator of the arrangement of the image, and interactive level of media with learners. In the aspect of language that needs to be revised is an indicator of the accuracy of sentence structure because there are a few sentences that one wrote in the presentation.

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