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Integration of Islamic Values in A Weblog-Based Periodic System of Elements Material

Elvi Yenti[1*], Marini Nazliati[2], Yenni Kurniawati[3], Fitri Refelita[4], Kuncoro Hadi[5], Deprizon[6]

[1,2,3,4,5]*Department of Chemistry Education, Universitas Islam Negeri Sultan Syarif Kasim Riau*
[6] *Pendidikan Guru Madrasah Ibtidaiyah, Universitas Muhammadiyah Riau*
*correspondence author: elviyenti@uin-suska.ac.id

ABSTRACT

This digital era has a major effect on the world of education, especially in the use of digital learning media and to be able to achieve an education system that unites science and Islamic values, innovations are needed that can make the two sciences harmonize. According to this latest research, digital-based learning media is the most researched technology in chemistry education. This research aimed at producing a Weblog-based learning media design and finding out the appropriateness level and student response to the media. It was Research and Development (R&D) with a 4-D development model. The research finding was Weblog learning media on Islamic Values integrated with the Periodic System of the Elements lesson. The validity level showed that a) the percentage by media expert validators was 87.5% with a very valid criterion, the percentage by material expert validators was 97.5% with a very valid criterion,the percentage by integration expert validators was 81.25% with very valid criterion, b) the percentage of Chemistry subject teacher assessment response through practicality test was 95% with efficient criterion,the percentage of the response of the tenth-grade student of MIA to the media was 87.33% with very good criterion.

Keywords: *Learning Media, Weblog, Islamic Values Integration, Periodic System of the Elements.*

INTRODUCTION

The advancement of the digital era has made all systems digitally connected. It cannot be denied that the development of science and technology had a huge impact on the world of education today. Therefore, the world of education is required to be able to adapt to technological developments, as well as improve the quality of Indonesian education, especially in the utilization of information and communication technology in the process of teaching and learning activities. (Hikmah, 2016).

Recent research states that digital-based learning media is the most researched among the technologies used in chemistry education (Aswirna et al., 2023). In addition, educational institutions now rely heavily on digital media to educate students due to the development and changes in education science today (Ali et al., 2023). The utilization of media in learning functions as a generator of new interests and desires from students can create motivation and stimulation in learning so that it can have a positive effect on students' psychology. Learning media is a physical tool that is able to contain a message and stimulate students to learn, for example, such as books, films, tapes, and frame films (Husein, 2021). It can be seen that examples of the results of advances in science and technology in the teaching and learning process that occurs in the classroom are more active and interesting as an effort to improve the quality of education.

As the next generation of our nation, we must pay attention to the educational models and patterns used in learning so that they have a vision and mission for Indonesia (Nunu, 2014). Educational models and patterns used in the learning process require a tool that can convey the intent and purpose of educators to students so that the vision and mission of education can be

carried out as much as possible. Tools that can convey the goals and objectives of learning are called media. Media is also mentioned in the Qur'an letter An-Nahl (44) which reads:

وَأَنزَلْنَآ إِلَيْكَ ٱلذِّكْرَ لِتُبَيِّنَ لِلنَّاسِ مَا نُزِّلَ إِلَيْهِمْ وَلَعَلَّهُمْ يَتَفَكَّرُونَ

Means: "We revealed to you the message [i.e., the Quran] that you may make clear to the people what was sent down to them and that they might give thought".

The above verse explains that the Qur'an acts as a medium to convey what has been revealed by Allah to mankind. It aims to make people think about what Allah has revealed to them. To achieve an education system that can unite the science of the world (science) and the science of the hereafter (Islam), innovations are needed that can make the two sciences harmonize. One of the innovations that can be done is to design learning media that can facilitate the delivery of knowledge and innovation in learning so that it is not boring.

In addition to this meaning, national education has a goal contained in the 2003 Law number 20 article 3 which reads "National education has a function as developing abilities and shaping the character and civilization of the nation to educate the nation's life, aims to develop the potential of students to become human beings who are faithful and devoted to God Almighty, have noble morals, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens" (Suprianingsih et al., 2022).

Currently,the education process in general education institutions and Islamic education institutions still separate general and religious lessons (Anjar, 2016). Teachers only teach general knowledge when general learning takes place, and vice versa. This shows that the dichotomous view is still applied to the Indonesian education system. The unification between science and Islam is called integration. Integration is a form of interaction between world science (science) and religious science, in the concept of integration religion embeds its teachings in science and vice versa, science provides its knowledge to religion (Kuntowijoyo, 2007).

Integration is not only limited to the discussion of science but also to the discussion of Islamic sciences. This means here, explaining the creed, and akhlaq al-karimah can also and even should be integrated with science (Kadar, 2022). Value integration in the learning process contains a meaning that combines special values into another concept so that it becomes a coherent and indistinguishable unity or can be said to be a process of fusing the two parts into a unified whole (Novianti, 2013). The process and practice of education among Muslims carried out with continuity at every generational change is the meaning of education from an Islamic perspective. (Hadi, 2019).

Based on the results of interviews obtained with chemistry teachers and students, it is known that teachers, especially in chemistry subjects, integrate chemistry and Islam only when delivering material directly, and even then it is not always done, while the learning media is still sourced from books and modules. In addition, students' interest in technology is higher than if learning using books and modules that are commonly used.

Based on the problems, a solution is needed that can solve the existing problems, to create a directed learning atmosphere and not forget the main objectives of national education, namely to form students who are faithful and devoted to God Almighty. One of the innovations that can be done to solve the above problems is to create learning media in the form of weblogs that are integrated with Islamic values. Based on the description described above, the author is interested in conducting a study entitled "Design and Trial of Weblog Media as Learning Media on Periodic System of Elements Material with Integrated Islamic Values".

METHODOLOGY

This research was conducted at IT High School in the even semester of 2022/2023. The subjects in this study are those who assess the products produced, namely learning media experts, learning material experts, integration experts, chemistry subject teachers, and ten X MIA class students. The object of this research is something that will be assessed, namely Weblog learning media on Periodic System of Elements Material with Integrated Islamic Values. This type of research is Research and Development (R&D). Gay stated that R&D research is a form of an effective product development effort to be utilized in schools, and does not aim to test concepts or theories (Yenni, 2019). This research model uses the 4D development model proposed by Thiagarajan, and his colleague Melvyn in 1974 (Rochmad, 2012). This research consists of four stages namely Define, Design, Development, Disseminate (Kusuma et al., 2020).

The initial steps of this research are to collect data to be able to define and determine learning requirements through end-start analysis, learner analysis, task analysis, and concept analysis. The next step is to design the media which consists of selecting the type of media, selecting the format, and designing the initial design. Then, after the design stage, it continues to the development stage, namely the media that has been designed will be validated by media experts, material experts, and integration experts. If the media has been validated and revised, then the media will be tested on chemistry teachers to determine the level of practicality and test students' responses to the weblog that has been designed. The last step of this research is to disseminate valid weblog media that has been produced, namely by disseminating media to chemistry teachers at IT high schools.

Techniques of data collection in this study were obtained by interviews and questionnaires that will be given to validators of media experts, material experts, integration experts, chemistry teachers, and 10 students. Questionnaires are used to determine the level of validity and practicality of the media and to find out how students respond to the weblog media that has been produced. The data that has been obtained will then be processed using qualitative data analysis techniques and quantitative analysis. Qualitative data is obtained from suggestions, and input from validators, chemistry teachers, and students, and qualitative data collection must be based on how to see the process of a study, which is also the orientation of qualitative analysis. (Eka & Parmithi, 2015). While quantitative data is obtained from the scores given in the questionnaire. Quantitative data analysis is calculated to determine the percentage of validity and practicality of the media with the following formula:

$$\text{Percentage} = \frac{score\ obtained}{maximum\ score}\ x\ 100\%$$

Results in the form of percentages that have been obtained are then interpreted in qualitative form (Riduwan, 2013):

Table 1. Criteria for Validity Test Results and Practicality of Weblog Media

No	Interval	Criteria
1.	81%-100%	Very Valid/Very Practical
2.	61% - 80%	Valid/Practical
3.	41% - 60%	Quite Valid/Quite Practical
4.	21% - 40%	Less Valid/Less Practical
5.	0% - 20%	Not Valid/Not Practical

RESULT AND DISCUSSION

The design research and trial of weblog media as learning media on the material of the periodic system of elements with integrated Islamic values uses the 4D model which consists of four stages, namely:

A. *Define*

This step is to establish and define the learning requirements.

1. *Front-End Analysis*

This stage is to conduct interviews with chemistry teachers which aim to analyze the problems found in the learning process at school. The results of the analysis found that teachers need media integrated with Islamic values, this is because the learning process has not used media integrated with Islamic values, teachers integrate Islamic values only when explaining the material, and the lack of online learning media at school, so that learning media integrated with Islamic values is needed. Based on this problem, an alternative solution was prepared by designing relevant learning tools/media by considering the objectives, needs, and limitations of relevant materials or learning theories and based on this information the researcher used as a basis for the design and testing of weblog learning media that is effective and efficient to be applied in learning chemistry in the classroom.

2. *Learner Analysis*

The learner analysis stage is carried out to identify the characteristics of learners that are relevant to the design and development of learning media. Knowing and understanding the characteristics of learners can help in designing weblog media on the material of the periodic system of elements integrated with Islamic values for suitable use in the learning process. Based on the information obtained, students prefer to learn to use electronic media consisting of images, and videos also have explanations of the material, colorful learning media and there are evaluation questions to train students' abilities. Based on the results of the description of the characteristics of students, weblog learning media can be used and help the learning process to be motivated and also active in learning. Weblogs with a combination of attractive colors, and simple, easy-to-understand language can help students understand the concept of material.

3. *Task Analysis*

The task analysis stage is to identify and organize the material to be studied. In this medium, the material presented is the Periodic System of Elements in class X SMA. There are 7 activities on the learning media designed, namely the CP & ATP menu, the Big Bang Theory menu, the element periodic system development menu, the element properties menu, the evaluation menu, the page menu, and the author's detail menu, and also an evaluation in the form of objective questions to train students' understanding.

4. *Concept Analysis*

This concept analysis stage aims to identify material that must be understood by students. Identifying material can be a reference in making weblog media systematically and following the order of presentation. Based on the results of the interview, it is known that the learning process still uses material from the 2013 Curriculum because there are many hours of learning and little material compared to the last K13, therefore in the preparation of learning materials in this weblog media also uses material from K13.

5. *Specifying Instructional Objectives*

At this stage, learning objectives are formulated based on the flow of learning objectives, namely in 10.6 and 10.7. The learning objectives on the material of the periodic system of elements are 1) students can determine the location of an

element in the periodic table of elements based on its electron configuration, 2) students can analyze and present the properties of an element based on its group and period in the periodic table of elements.

B. *Design*

The next step of this research is to design weblog media on the material of the periodic system of elements integrated with Islamic values. The purpose of this step is to create a prototype design of learning tools. The design stage is carried out after the formulation of learning objectives is determined (Kusuma et al., 2020). In this step, four stages are carried out, including:

1. ***Media Selection***

   This stage aims to choose the type of media that is suitable for the material that has been determined. Based on the defined stage, it can be concluded that the selected media is weblog media with a blogspot type.

2. ***Format Selection***

   The implementation of determining the format used must consider factors related to the media determination step. In the activity of designing the format, the researcher chose a weblog format provided by a 3rd party with a lovely theme which was then updated as needed.

3. ***Initial Design***

   The initial design is the initial design of the media made by the author and then evaluated and given input. Then, the input is used as revision material for the media which will later be validated by several experts (Noto, 2014). This initial design, the researcher has made an initial design consisting of several components, namely, the Learning Outcomes & Learning Objectives Menu, Big Bang Theory menu, element periodic System Development menu, element periodic system Arrangement menu, Element Nature menu, Element Properties menu, evaluation menu, "page" menu, author details menu.

C. *Development*

This step is carried out as validation of the weblog media that has been produced. The results of the validation will be used to revise the learning media according to the suggestions and input from the validator, after further validation the media will be tested for practicality by the chemistry teacher and tested on 10 students to find out the students' response to the weblog media that has been produced.

1. **Learning Media Expert Validation**

   This stage of media expert validation aims to assess and determine the grammar, language, and utilization of the resulting weblog media. The validation process received suggestions and input from media expert validators, namely that the header section is given a pattern that matches the weblog theme, the images used are replaced with more colorful and attractive ones, and the font size is changed to a larger and clearer size. After all the suggestions are corrected and then revalidated, the results are presented in a table. The following table shows the results of weblog validation by learning media experts:

Table 2. Weblog Validation Results by Learning Media Experts

No	Grading Aspect	Item Numbers	Score Earned	Maximum Score	Percentage	Criteria
1.	Graphics	1, 2, 3, 4,	21	24	87,5%	Highly Valid

	Feasibility	5, 6				
2.	Language Feasibility	7, 8	7	8	87,5%	Highly Valid
3.	Media Utilization	9, 10	7	8	87,5%	Highly Valid
	Total Score					**35**
	Percentage %					**87,5%**
	Criteria					**Highly Valid**

Based on the table above, the aspects of feasibility of graphics, language feasibility, and media utilization get a percentage of 87.5% with a very valid category, so the average percentage of the whole is 87.5% with very valid criteria. It can be seen that the weblog designed on the graphical component includes clear images, type, and size of letters that can be read (clear), a regular layout, and the colors used can attract the attention of students. Depdiknas also states the same thing that the graphic components that must be considered to produce good learning media are font size and type, display design and images, and layout (Depdiknas, 2008).

2. Learning Content Expert Validation

The next step is learning material expert validation, which aims to get an assessment of the quality of the material, language components, and presentation components in the weblog media on the material of the periodic system of elements. The suggestions and input from the learning material expert validators are the relationship between the sub-materials of the nature of the elements is less relevant to the integration of Islamic values presented. The results of the learning material expert validation are presented in Table 3 below:

Table 3. Weblog Validation Results by Learning Content Experts

No	Grading Aspect	Item Numbers	Score Earned	Maximum Score	Percentage	Criteria
1.	Content Eligibility	1, 2, 3, 4, 5, 6, 7	27	28	96,42%	Highly Valid
2.	Presentation Feasibility	8, 9	8	8	100%	Highly Valid
3.	Contextual Grading	10	4	4	100%	Highly Valid
	Total Score					**40**
	Percentage %					**97,5%**
	Criteria					**Highly Valid**

Based on the table above, it can be seen that the content feasibility aspect gets a percentage of 96.42% with very valid criteria, the presentation feasibility aspect gets a percentage of 100% with very valid criteria, and the contextual assessment aspect gets a percentage of 100% with very valid criteria. So that the average result of validation by learning material experts is 97.5% with very valid criteria. Based on the results of material validation data and based on the results of the analysis, it can be seen that the weblog that has been produced is suitable for use as a source of learning material.

3. Integration Expert Validation

The next step is validation by integration experts. The suggestions and input from the integration expert validators are to add explanations to the Al-Qur'an verses related to the material, each hadith included must be accompanied by the hadith number and the name of the narrator, then in the use of fonts should use Arabic fonts. The results of validation by integration experts are presented in Table 4.:

Table 4. Weblog Validation Results by Integration Expert

No	Grading Aspect	Item Numbers	Score Earned	Maximum Score	Percentage	Criteria
1.	Appropriateness of integration	1, 2, 3, 6,	29	32	90,6%	Highly Valid
2.	Development of Islamic values	4, 8	14	16	87,5%	Highly Valid
3.	Ability to add insight	5, 7	14	16	87,5%	Highly Valid
	Total Score					**64**
	Percentage %					**89,1%**
	Criteria					**Highly Valid**

Based on Table 4 above, it can be seen that the suitability aspect of integration gets a percentage of 90.6% with very valid criteria, the aspect of developing Islamic values gets a percentage of 87.5% with very valid criteria and the aspect of the ability to add insight gets a percentage of 87.5% with very valid criteria. Therefore, the results of validation by integration experts obtained an average result of 89.1% with very valid criteria.

The results obtained prove that the weblog produced is following all aspects of the validity test, namely the integration suitability component, the Islamic values development component, and the ability to add an insight component.

4. Practicality of Weblog by Chemistry Teacher

After validation by experts and revisions based on validator suggestions and input, the next step is the practicality test by chemistry teachers at IT high schools to see the practicality of the media so that it can be determined whether it is suitable for use. The results of the practicality test by chemistry teachers are presented in Table 5 below:

Table 5. Weblog Practicality Test Results by Chemistry Teachers

No	Grading Aspect	Item Numbers	Score Earned	Maximum Score	Percentage	Criteria
1.	Suitability of content	1, 2, 3, 5, 6	20	20	100%	Highly Praktis
2.	Media display	8, 9, 10	10	12	83,33%	Highly Praktis
3.	Language	4,7	8	8	100%	Highly Praktis
	Total Score					**40**
	Percentage %					**95%**
	Criteria					**Highly praktis**

Based on Table 5 above, it can be seen that the material suitability aspect gets a percentage of 100% with very practical criteria, the media presentation aspect is 83.33% with very practical criteria, and the language aspect is 100% with very practical criteria. So, the average result of the practicality test is 95% with efficient criteria.

Nieveen states that if a material has fulfilled the practical aspect, it can be said that the material is of high quality. The practical aspect can be fulfilled if the media can be applied and supported by facts based on practitioner (teacher) statements. (Ayu, 2019)

5. Learners' Response to Weblog Media

The next step is to test it on 10 IT high school students. Based on the average results of the overall learner response of 87.33% with "very good" criteria. In the material content section, it gets "very good" criteria with a value of 86.25%, in the aspect of media display getting "very good" criteria with a value of 85%, then in the aspect of media operation gets a "very good" category with a value of 87.5% and finally in the aspect of student interest getting a "very good" category with a value of 91.25%. The following table shows the results of students' responses:

Table 6. Results of Learner Response

No	Grading Aspect	Item Numbers	Score Earned	Maximum Score	Percentage	Criteria
1.	Content	1, 2, 3, 4	136	160	86,25%	Excellent
2.	Media display	6,7,8,9,11	170	200	85%	Excellent
3.	Media operation	12, 13	70	80	87,5%	Excellent
4.	Learner interest	5,10,14,15	146	160	91,25	Excellent
	Total Score					**524**
	Percentage %					**87,33%**
	Criteria					Excellent

Therefore, overall the weblog on the material of the periodic system of elements integrated with Islamic values is declared practical and can be used by teachers and students because the weblog systematically and clearly can make it easier to understand the subject. In addition, the material presented in the weblog integrated with Islamic values is presented in simple language so that it is easy for students to understand. Thus, teachers can help in the learning process and also help students understand the material of the periodic system of elements.

D. *Disseminate*

After the trial stage and improvements are made, the next stage is the dissemination stage. This stage aims to disseminate weblog media on the material of the periodic system of elements integrated with Islamic values. The learning media produced at the end of the development process stage will be distributed to teachers in other schools (Rajagukguk et al., 2021). However, in this study, the dissemination stage was limited to chemistry teachers at IT High School.

CONCLUSION

Based on the research that has been done, it can be concluded that the level of validity of the weblog on the material of the periodic system of elements integrated with Islamic values designed is declared very valid based on the assessment of media experts, material experts, integration experts in sequence with a percentage of validity of 87.5%, 97.5%, 89.1%. Then, the level of practicality of the weblog on the material of the periodic system of elements integrated with Islamic values designed was declared very practical based on the assessment of chemistry teachers and students respectively with a percentage of 95% and 87.33%.

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