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Development of Learning Media using iSpring Presenter Based HOTS-Literacy on Acid-Based Materials

Anisa Nursalsabillah Nasution^{1*} and Iis Siti Jahro²

^{1,2}Chemistry Education, Universitas Negeri Medan, Medan

*Email: anisasalsanasution@gmail.com

Abstract: Education is becoming increasingly essential in the 21st century to ensure that students have learning and innovation skills, the ability to use information technology and media, and the ability to work and survive using life skills. HOTS-literacy is one of the life abilities that students must now possess. This research aims to: (1) identify learning media used in the learning process; (2) design a prototype that will be developed to produce a learning media based on HOTS-literacy; (3) determine whether the developed learning media meets the criteria; and (4) determine student reactions to the media. This investigation employs a 4D model methodology. Based on five validators, it was determined that 86.6% of the media had a very high Percent Interpretation and a "Eligible" level of eligibility, while 95.71 % of student responses were rated as "very interesting." This demonstrates that the developed HOTS-Literacy-based learning media using iSpring on acid-base material is very appealing to students and can be used as a supplement for learning chemistry.

Keywords: Learning media; HOTS-Literacy; Acid and Base

INTRODUCTION

The purpose of education is to assist students actively develop their potential, abilities, and talents through various learning activities. Education is the process of altering the behavior of students so that they can become adults who are able to exist independently and as contributing members of society in their natural environment. Education is becoming more essential in the 21st century to ensure that students have learning and innovation skills, the ability to use information technology and the media, and the ability to work and survive using life

skills. Students are now required to have HOTS-literacy as one of their life abilities.

Literacy skills are not limited to reading and writing, but also include the cognitive abilities that enable students to become literate in all areas of education, including science (Thahir et al., 2021). Every three years, the OECD (Organization for Economic Cooperation and Development) administers the Program for International Student Assessment (PISA), which includes a study of scientific literacy. Based on the findings of the PISA study conducted between 2000 and 2018, Indonesia falls into the category of countries with a relatively low level of scientific literacy. This can be

evidence that pupils are still unable to apply scientific knowledge in the real world. The low level of scientific literacy among students can be attributed to a number of factors, including learning activities that are not yet oriented towards scientific literacy, learning methodologies used, and learning curriculum and facilities (learning media) that have not developed scientific literacy (Sutrisna et al., 2021).

To enhance the quality of education, character-building and the development of higher order reasoning skills (HOTS) must be incorporated into the learning process. Bloom's cognitive taxonomy places Higher Order Thinking Skills (HOTS) at the highest level. The objective of learning based on Bloom's cognitive taxonomy is to develop students' ways of thinking so they can employ their knowledge and skills in new contexts. In the meantime, several studies have demonstrated that the HOTS or higher order thinking skills of Indonesian students remain relatively low. Similarly, research conducted by Kurniawati (2020) in Jember reveals that students' high-level reasoning skills are still inadequate, with 86.0% in the low category, 12.66% in the medium category, and only 1.2% in the high category (Maslakhatunni'mah & Dimas, 2022).

Acquiring knowledge is the act of learning. The current learning process still employs the conventional method, namely the teacher-centered approach, which occasionally causes students to become fatigued during the actual learning process, causing them to lose interest in the subject matter. The use of media in the learning process is necessary to attract students' attention and make learning activities more effective and engaging. Using the appropriate learning media can increase interaction in the learning process so that students are not fatigued while learning (Hasan et al., 2021). In order for learning to progress, be active, interactive, and of high quality, the implementation of technology to make learning media mandatory in the modern era is required. Without learning media, it will be

difficult for students to pay attention and become more engaged in the learning process.

Based on the results of interviews conducted with chemistry teachers at SMA Negeri 14 Medan on September 22, 2022, it was discovered that the teacher in learning uses the lecture method with multimedia media in the form of PowerPoint, where the use of this media still applies the teacher as a center (teacher center), which does not apply HOTS- Literacy, so that students appear unable to develop their literacy freely. iSpring Suite is a highly efficient tool for creating multimedia for educational purposes. According to the findings of Himmah's (2017) research, iSpring Suite-based interactive multimedia based on the implementation of learning received an average score of 93.9 percent with very feasible criteria and a positive student response of 98.33 percent with very feasible criteria. Moreover, according to Meitantiwi (2015), the ISpring Suite's animation and interactive practice queries can aid students' comprehension.

iSpring suite is software that can be used in conjunction with Microsoft Power Point for integrated learning. This application is a tool for converting presentation files to flash format. The use of iSpring suite will generate interactive multimedia consisting of media images, text, audio, video, and animation that can increase student motivation and provide students with direct experience in learning acid-base material (Purnama & Ridwan, 2020).

In order to provide excellent and appropriate solutions, chemistry can explain phenomena in detail. Acids and bases are among the chemical substances that can explain commonplace phenomena and necessitate advanced cognitive skills. Acid-base consists of intricate concepts that can explain the equilibrium of living organisms and nature. Not only do acids and bases consist of concepts, but also calculations and logarithmic concepts, which further complicate acid-base material. In this situation, higher-order thinking skills are

required to integrate and implement acid-base material within a practical context.

LITERATURE REVIEW

Learning media is a tool that can be used to channel information about learning materials in order to stimulate the attention, interest, thoughts, and emotions of students in order to achieve learning objectives. According to Heinich, Molenda, Russel (Kristanto et al., 2016) non-projection media, projection media, aural media, motion media, computer media, multimedia computers, hypermedia, and remote media are common learning media. Each form of media possesses unique qualities and functions. The purpose of instructional media is to convey information and material to students so that they can generate learning that is simple to comprehend, more engaging, and enjoyable. The passive nature of many students during the learning process can be surmounted by selecting the appropriate instructional materials (Hasan et al., 2021).

A high-quality education empowers students with higher order thinking skills, enabling them to develop the ability to generate ideas and solve problems in the learning process. Typically, these abilities are ingrained in a specific discipline. Critical reasoning abilities are an element of higher order thinking (Mahanal et al., 2019). College graduates are teacher candidates with higher order thinking abilities, and the entire learning process must be predicated on HOTS. If each course is designed, implemented, and evaluated in accordance with HOTS, college graduates will have the expected HOTS skills. Both instructors and students must demonstrate HOTS-based reasoning. Such a paradigm shift in thinking is essential for effectively and appropriately addressing the complexity of educational problems (Herianto, 2021). Higher order thinking skills (HOTS) result in the application of knowledge, skills, and values during reasoning, reflection, problem solving, decision making, innovating, and creating new things (Yuliati & Lestari, 2018).

Scientifically literate citizens are students who comprehend scientific evidence and the relationship between science, technology, and society, and who can employ this knowledge to solve real-world problems. In Indonesia, scientific literacy is a significant issue that requires immediate attention. It was determined that scientific literacy is an endeavor to comprehend science that is used to adapt to the challenges posed by a world that is rapidly changing. Students must not only comprehend science to develop scientific literacy abilities.

The iSpring suite application is an electronic device that understands writing tools, allowing it to create various types of e-learning content. The iSpring suite 9 application has various features that can be used to create presentations, quizzes, surveys, interactions, dialogue simulations, and screen recorders directly in the power point application. iSpring suite 9 is one of the tools that integrates with Microsoft PowerPoint presentations that can be published in HTML format and utilized on Android devices with Intel XDK software.

Acids and bases are two extremely essential chemical compounds in daily life. In general, substances with a sour taste contain acids, whereas compounds with slippery properties and a bitter flavor contain bases. Chemists categorize substances like vinegar as acids and substances like wood ash as bases (Watoni, 2016).

METHODS

This study was designed with Research and Development (R&D) research using Sivasailam Thiagarajan's Four-D (4D) paradigm from the 1970s, which consists of four stages: Define, design, develop, and disseminate. This study was conducted at SMA Negeri 14 Medan, located at Jalan Pelajar Gg. Darmo, Kecamatan Medan Denai, Kota Medan, Sumatera Utara. This research examines HOTS-Literacy-based Learning Media. The acid-base material is the subject of this investigation. The learning media, which is the development material in this

study, will be validated by a material expert validator and a media expert validator, after which the responses of the teacher and a subset of the students will be gathered using a questionnaire.

The research data collection instrument consisted of a validation document and a questionnaire to elicit responses from students. The validation document and questionnaire are tailored to the BSNP assessment criteria and will be distributed to chemistry lecturers and teachers. During the trial process, comments, suggestions for product revision, and observations were collected, analyzed qualitatively, and used as input for the product so that it could be revised to address product deficiencies.

After obtaining the expert validator data, it will be gathered and processed using the following formula to determine the percentage of responses for each statement:

$$\%X_{in} = \frac{\Sigma S}{S_{maks}} \times 100\%$$

with:

$\%X_{in}$ = percentage of answers to question I in the questionnaire

ΣS = Sum of the total answer scores in the i-statement

S_{max} = Maximum score applied to the i-th statement

Then, using the following formula, calculate the average percentage of each aspect according to the BSNP criteria for HOTS-Literacy-based learning media:

$$\overline{\%X_t} = \frac{\Sigma \%X_{in}}{n}$$

with:

$\overline{\%X_t}$ = Average percentage per aspect of assessment

$\Sigma \%X_{in}$ = Total percentage of answers to all statements on one aspect of the assessment

n = Number of statements on one aspect of the assessment

After obtaining the percentage, the data will be interpreted using Arikunto's interpretation according to the table below:

Table 1. Eligibility Level Criteria

Percentage (%)	Describe
100 - 80	Eligible/no need revision
79 - 60	Eligible enough/partial revision
59 - 30	Inadequate/partial revision
< 30	Not worth/total revision

Regarding the student replies Following the collection of expert validator data, the following formula will be used to determine student perceptions of media attractiveness:

$$\text{Media attractiveness} = \frac{\text{Gain Score}}{S_{\text{Max score}}} \times 100\%$$

The formula will produce results in the form of a percentage based on its calculation. In order to comprehend the calculation, it must be translated into a categorization based on the percentage level attained. The percentage range and its interpretation are shown in the table below.

Table 2. Interpretation of Student Response Data Processing of Media Interests

Percentage	Describe
80% - 100%	Very interesting
66% - 79%	Interesting
56% - 65%	Quite interesting
46% - 55%	Less interesting
< 45%	Very uninteresting

RESULT AND DISCUSSION

The application "The Acid Base" is the result of the development of HOTS-Literacy-based learning media using iSpring on acid-base material. With an application file size of 91 MB, students can access this application via their mobile devices. This study yielded products in the form of learning media created with iSpring and HOTS-Literacy-based acid-base material.

According to an interview with one of the instructors at SMA Negeri 14 Medan, the school is still using the 2013 Curriculum (K13). The teaching materials used by the teacher during the learning process are textbooks provided by the school, while the current learning media employed by the teacher are Power Point (PPT) presentations that the teacher created using book and internet resources. This learning medium does not, however, contain HOTS-Literacy elements that can train students' critical thinking skills and acclimate them to reading literacy texts. The learning process in the classroom is facilitated by the teacher method and queries and answers. During multimedia-based learning, the instructor will display YouTube learning videos. With this knowledge, the chemistry instructor noted that many students still did not completely comprehend acid-base material.

A student analysis of learning media requirements is conducted to determine what students require. According to the results of a student analysis questionnaire distributed to 28 students in class XI MIPA 7 SMA Negeri 14 Medan, 63% of students reported that acid-base material was extremely challenging to comprehend. According to 74.1% of students, teachers have not used media that incorporates HOTS-Literacy. And as many as one hundred percent of students concur that HOTS-Literacy-based learning media should be created.

Incorporating HOTS-Literacy into the process of creating this educational resource. The steps for preparing learning media begin with designing the icon of the learning media application and adjusting the fundamental competencies based on the 2013 curriculum in accordance with the class XI syllabus so that the learning goals to be attained are clearly stated. This instructional media has a resolution of 10 by 7.5 pixels. Depending on the sort of font, the size and spacing of the font vary by 1.5 points. On the first page of the application, a menu to launch the application will be displayed. After clicking on the "Let's start" section, a "Menu" will appear containing several options that, when

selected, will load the desired page. Each page contains a yellow "Back" button that, when selected, returns the user to the "Menu" page. In the material portion for each sub-material's content, there are explanations, sample questions, learning videos, and literacy texts that can enhance students' comprehension of the sub-material.

In the development stage of this learning media, it is provided in the form of quiz questions that students can use to refine their knowledge of the learning media's content. The cognitive domains C3, C4, and C5 are supplemented by literacy-related questions.

Material Validation

The material expert validator evaluated the content feasibility, the display feasibility, and the HOTS-Literacy aspects. The following is the outcome of an evaluation of HOTS-Literacy-based learning media created with iSpring and acid-base content in accordance with the eligibility requirements of the BNSP.

Table 3. Material Validation Assessment Results

Assesment aspects	Validator (%)			Mean
	I	II	III	
Content	90	80	86	85%
Presentation	93	80	88	87%
HOTS-Literacy	91	77	83	84%
Average (%)				85.33%
Percent interpretation				Very high
Eligibility level criteria				Eligible

Based on the material validation assessment of HOTS-Literacy-based learning media created with iSpring on acid-base material, the results show an average of 85.33 percent. This indicates that the average score for the content in HOTS-Literacy-based learning media using iSpring on acid-base material based on chapter III on data analysis is "Very high" with a feasibility level of "Eligible."

The evaluation of learning media is conducted using a separate assessment form

that includes criteria that must be present in learning media. Based on validator I, an average score of 4.5 with a maximum score of 5 and a percentage of 90% was obtained for the eligibility of the content, an average score of 4.625 with a maximum score of 93% was obtained for the eligibility of the presentation, and an average score of 4.57 with a maximum score of 5 and a gain percentage of 91% was obtained. So that the average score of the validator I, which was 4.56 with a percentage of 91.33 percent, was obtained. Based on the eligibility requirements specified in the "Eligible" category.

Based on validator II, an average score of 4 with a maximum score of 5 and an eligibility percentage of 80% is obtained for the content, an average score of 4 with a maximum score of 80% for the presentation, and an average score of 3.86 with a maximum score of 5 and a gain percentage of 77%. So that the average score for the validator II is 3.95 with a proportion of 79%. Based on the eligibility requirements specified in the "Eligible enough" category.

Based on validator III, an average score of 4.3 with a maximum score of 5 and a percentage of 86% was obtained for the eligibility of the content, an average score of 4.375 with a maximum score of 87% was obtained for the eligibility of the presentation, and an average score of 4.14 with a maximum score of 5 and a percentage of 83% was obtained for the gain. Thus, the average score for validator III was 4.27, with a percentage of 85.33 percent. Based on the eligibility requirements specified in the "Eligible" category.

According to table 3, the material validator's comprehensive evaluation of HOTS-Literacy-based learning media created with iSpring and acid-base material yielded an Eligible criterion percentage of 85.33 percent. This indicates that the content of the learning media is of high quality and can be used as a supplement for learning acid-base material.

Media Validation

The aspects that will be evaluated by the media expert validator are graphical and

linguistic. In accordance with the eligibility requirements of the BNSP, the following is the outcome of an evaluation of HOTS-Literacy-based learning media created with iSpring and acid-base material.

Table 4. Material Validation Assessment Results

Assesment aspects	Validator (%)		Mean
	IV	V	
Graphical	91	89	90%
Language	97	94	87%
Average (%)			95.71%
Percent interpretation			Very high
Eligibility level criteria			Eligible

The results of the material validation assessment of HOTS-Literacy-based learning media created with iSpring on acid-base material show an average percentage of 95.71 percent based on the table presented above. This indicates that the feasibility of the media in HOTS-Literacy-based learning media using iSpring on acid-base material, based on chapter III on data analysis, is "Very high" with a feasibility level of "Eligible."

The evaluation of learning media is conducted using a separate assessment form that includes criteria that must be present in learning media. On the basis of validator IV, an average score of 4.57 with a maximum score of 5 and a percentage of 91% is obtained for the graphic feasibility aspect, and an average score of 4.85 with a maximum score of 97% is obtained for the linguistic aspect. So that the IV validator's average score is 4.71 with a percentage of 94%. Based on the criteria for table eligibility included in the "Eligible" category.

On the basis of validator V, a mean score of 4.42 with a maximum score of 5 and a percentage of 89.0% is obtained for graphic feasibility, and a mean score of 4.71 with a maximum score of 94.0% is obtained for linguistic feasibility. So that the average score of validator V, 4.56 with a percentage of 91.5%, is obtained. Based on table eligibility criteria listed under "Eligible"

The media validator's comprehensive evaluation of HOTS-Literacy-based learning media created with iSpring and acid-base content yielded a percentage of 95.71 percent meeting Eligible criteria. This indicates that the media contained in the learning media is of high quality and can be used as a supplement for learning acid-base material, thereby making students more engaged in the learning process.

Students Responses

The disseminate phase consisted of distributing HOTS-Literacy-based learning media products to students using iSpring on acid-base material, which students could first download. Then, student responses to HOTS-Literacy-based learning media products created with iSpring and acid-base content will be evaluated.

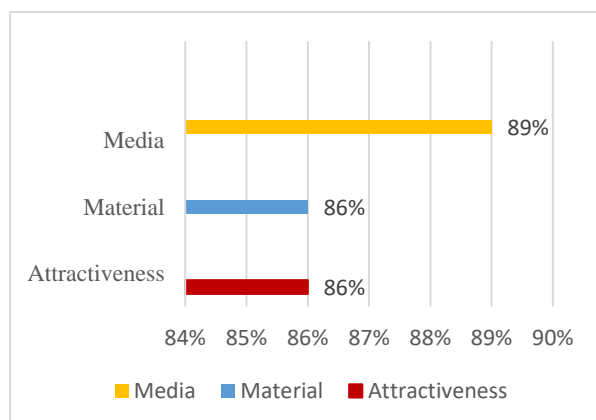


Figure 1. Student Response Diagram

The experiment was conducted in class XI MIPA 7 at SMA Negeri 14 Medan with 28 participants. Respondents will be given a questionnaire in the form of a response to the learning media that has been created. On the basis of student responses, a mean score of 4.30 out of a maximum score of 5 was determined, yielding an attractiveness score of 86%. With an average score of 4.28 out of a maximum score of 5 and a percentage of 86%, the material aspect is rated as satisfactory. 89% of the data received an average score of 4.44 out of a possible maximum score of 5. In order to acquire the results of the average score of all indicators, namely 4.34 with an overall percentage of 87%, it is necessary to obtain the results of the average score of all

indicators. Therefore, student responses indicate that the developed learning media is very appealing to students.

CONCLUSION

On the basis of the data analysis performed in this study, it is possible to conclude that 100 percent of students agree that HOTS-Literacy-based learning media utilizing iSpring on acid-base materials should be developed as a learning support. The media created using the application iSpring Suite, which is accessed via a laptop, is then designed in accordance with the BNSP's criteria for effective learning media. The stages were the selection of HOTS-Literacy-based materials and questions, as well as the selection of media formats. Based on the results of the validation conducted by 5 material and media expert validators, it was determined that HOTS-Literacy-based learning media using iSpring on acid-base material met the criteria for content feasibility, presentation feasibility, HOTS-Literacy, graphic feasibility, and happiness with an acquisition of 86.6%, a very high Percent Interpretation, and a "Eligible" level of eligibility. The criteria are "Very Interesting" with a score of 95.71 percent based on student responses to HOTS-Literacy-based learning media utilizing iSpring on acid-base material. This demonstrates that the HOTS-Literacy-based, iSpring-based learning media on acid-base material is very appealing to students, so it can be used as a supplement for learning chemistry.

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