J. Pijar MIPA, Vol. 18 No. 2, March 2023: 170-175 ISSN 1907-1744 (Cetak)
DOI: 10.29303/jpm.v18i2.4635 ISSN 2460-1500 (Online)

VALIDITY OF POWERPOINT-ISPRING LEARNING MEDIA ON CARBOHYDRATE MATERIALS IN HIGH SCHOOL

Mila Lestari and Guspatni*
Chemistry Education Study Program, Faculty of Mathematics and Natural Sciences, Universitas Negeri Padang, West Sumatra, Indonesia
*Email: patni@fmipa.unp.ac.id

Received: October 31, 2022. Accepted: November 21, 2022. Published: March 30, 2023

Abstract: Carbohydrate material is a theoretical chemical that connects every concept to make it seem abstract. It resulted in students needing help understanding the material. Learning media can help students understand the material, which can display animations, pictures, and videos. One learning media that can display this is the PowerPoint-iSpring learning media. This study aimed to determine the validity value of PowerPoint-iSpring learning media on carbohydrates for class XII high school students. This research is educational design research using the Plomp model. The subjects of this study were three chemistry lecturers at the Chemistry Education Study Program, Faculty of Mathematics and Natural Sciences, Padang State University and two high school chemistry teachers, and class XII students at SMAN 7 Padang. The instruments used were teacher interview sheets, student questionnaires, and validity test questionnaires. The type of data is primary data which was analyzed using Aiken's V formula. The results of this study obtained a content validity test of 0.85, construct validity of 0.81, and media validity of 0.81. In conclusion, the learning media developed could be categorized as valid.

Keywords: *Carbohydrates, Learning Media, PowerPoint-iSpring, Plomp Model, Validity*

INTRODUCTION

Chemistry is part of the natural sciences that studies the composition and structure of chemical substances and their relationship to the properties of these substances [1]. Chemistry also studies problem-solving, facts, special terminology, and material that is abstract and complex to be understood by students [2]. For some students, chemistry is a boring subject that seems complicated because studying material is conceptual and theoretical [3]. One of the materials in chemistry that is abstract and theoretical is the matter of macromolecules. Macromolecule material is theoretical material that connects every concept so that it seems abstract [4]. One of the sub-materials of macromolecules is carbohydrate material.

Carbohydrates or saccharides in Greek, namely saccharin, means sugar is essential to all living organisms [5]. Based on the results of interviews between researchers and teachers and giving questionnaires to students conducted at SMAN 7 Padang. We obtained information on learning carbohydrates. Students were only asked to memorize and share assignments, resulting in low student interest in the learning process. In addition, teachers still use conventional or lecture methods when teaching. This method made students need to be more active in the learning process. According to research conducted by Inayah [6], learning using the lecture method is considered boring, so students are less active during the learning process. Therefore, learning media is needed to increase the activity of students.

Learning media can convey messages or learning information through teaching materials to achieve learning objectives [7]. If viewed from the needs of students for learning media, students need learning media that contains lots of material explanations, examples of various questions, animations, videos, and interactive quizzes. All of that is packaged in an attractive design [8]. With these things, it is hoped that students will be able to understand chemical material, especially carbohydrate material. One of the learning media that has recently helped teachers in the learning process is interactive multimedia technology available on computer devices [8].

PowerPoint is one type of media used as a learning medium by utilizing information and communication technology [9]. Microsoft PowerPoint is software that has provided facilities to assist in preparing effective, easy, and professional presentations, with Microsoft PowerPoint presentations becoming more attractive [10]. Using PowerPoint as a learning medium can increase students' activity and learning outcomes [11].

PowerPoint media can accommodate all student learning styles, starting from students who have visual, auditory, and even kinesthetic learning styles [9]. Therefore, PowerPoint media is needed to trigger the three learning styles to increase students' understanding [12]. In addition, the animation features available on PowerPoint, such as hyperlinks, triggers, and other custom animation effects, can be interactive. Students can use Powerpoint to make learning media more attractive

by combining the ispring program. ispring has several features that can be used in making presentations, quizzes, and videos that can be combined in learning media [13]. The results of Ispring media are in the form of flash, which contains several things, such as pictures, animations, audio and video, presentations, and other things that require the readiness of means of interaction for their use [14]. Learning using this media can help students more easily understand the material and make learning more interesting to improve learning outcomes [15].

One the benefits of Ispring, apart from being able to help improve student learning outcomes and interest, ispring can also overcome the weaknesses found in PowerPoint, such as audio/video files inserted in PowerPoint learning media. It can run optimally, whereas if files from audio/video presentations are different, the storage folder will experience problems that make audio or video unable to run, then you have to do a reset [16].

RESEARCH METHODS

The type of research used is educational design research with the Plomp development model. The plump development process consists of 3 stages: preliminary research, prototyping, and assessment [17].

The research was conducted at FMIPA UNP and SMA Negeri 7 Padang in the 2022/2023 academic year. The research subjects were three chemistry lecturers at FMIPA UNP, two chemistry teachers at Padang 7 Public High School, and class XII students at Padang 7 Public High School. The object of research is the PowerPoint-iSpring learning media for class XII high school carbohydrates. Data collection instruments used were teacher interview sheets, student questionnaires, and validity test questionnaires. Questionnaire sheets for validation consist of content validation, construct validation, and media validation questionnaires. The data obtained from the validation results by the validator is then processed using Aiken's V index.

$$V = \frac{\sum s}{n(c-1)}$$

Information :

V = Rater agreement index on item validity
S = The score assigned to each later minus the lowest score in the category used ($s = r\text{-}1_0$)
n = Lots of raters
c = Many categories are selected rater

RESULTS AND DISCUSSION

Preliminary Research

1. Needs and context analysis

The needs analysis stage is the stage that aims to find out the basics of problems related to learning chemistry on carbohydrates. These problems were conducted by interviews with teachers of SMAN 7 Padang and questionnaires given to students. Based on the results of interviews conducted with teachers and giving questionnaires to students, the results of a needs analysis were obtained, namely, the low interest of students in the process of learning carbohydrates. It was because, at school, students were only asked to memorize and were given assignments. The learning media used could have been more interesting and more interactive, thus causing low student learning motivation. Following research conducted by Hemayanti [18] and Inayah [6], students' low interest and motivation in learning chemistry are influenced by how the teacher conveys learning material. Context analysis at this stage was carried out on Basic Competency (KD) for carbohydrate material to obtain a decrease in Competency Achievement Indicators (GPA). The basic competence for carbohydrate material is KD 3.11. Analyze the structure, nomenclature, properties, and classification of macromolecules. This basic competence is reduced to 5 indicators of achievement of competence, namely explaining the meaning of carbohydrates, analyzing the structure and nomenclature of carbohydrates, analyzing the properties of carbohydrates, analyzing the classification of carbohydrates, and explaining the carbohydrate test.

2. Study of Literature

A literature study was conducted to determine the results, impact, and application of PowerPoint-iSpring in learning. A literature study is carried out by looking for sources and references that have a relationship and connection with the research to be carried out. Based on a literature study conducted on research results from previous researchers, it can be proven that PowerPoint-iSpring learning media is valid, practical, and effective as learning media used in schools. Previous study shows that the PowerPoint-iSpring learning media was valid with attentional function results obtained at 0.9, affective function and cognitive function at 0.87 and 0.86, and compensatory function at 0.87 [19]. The application of Microsoft PowerPoint-iSpring Pro media can improve student achievement on chemical bonds, with a percentage of 20.21% [20]. The developed media is feasible regarding material and media to be used in learning [21]. In another research, the generated website-based learning media obtained an average score of 81.6 out of a

maximum score of 100, with an ideal percentage of 81.6% [22]. Based on the ideal percentage range, this website-based chemistry learning media with the subject matter of carbohydrates has a good quality category. It can be a source of independent learning for high school-level students.

3. Conceptual Framework Development

Through the preliminary research data results, a conceptual framework can be developed which serves as a guideline for the next stage, namely the prototype stage. This stage is presented as the research procedure. The conceptual framework aims to guide the development of the research procedure.

Prototyping Phase

At the development stage or prototype stage, a formative evaluation is carried out at each stage to produce a quality product. The results of this prototype stage can be described as follows.

1. Prototype I

The results of this prototype I am in the form of PowerPoint-iSpring learning media on carbohydrate material equipped with several components such as media instructions, KD, GPA, and learning objectives. This learning media was designed and designed using Microsoft PowerPoint 2019 and the iSping suite nine application. This PowerPoint-iSpring learning media on carbohydrate material is equipped with several guiding questions, and feedback is given to each answer, leading the user to the real answer. The display of guiding questions can be seen in figure 1.

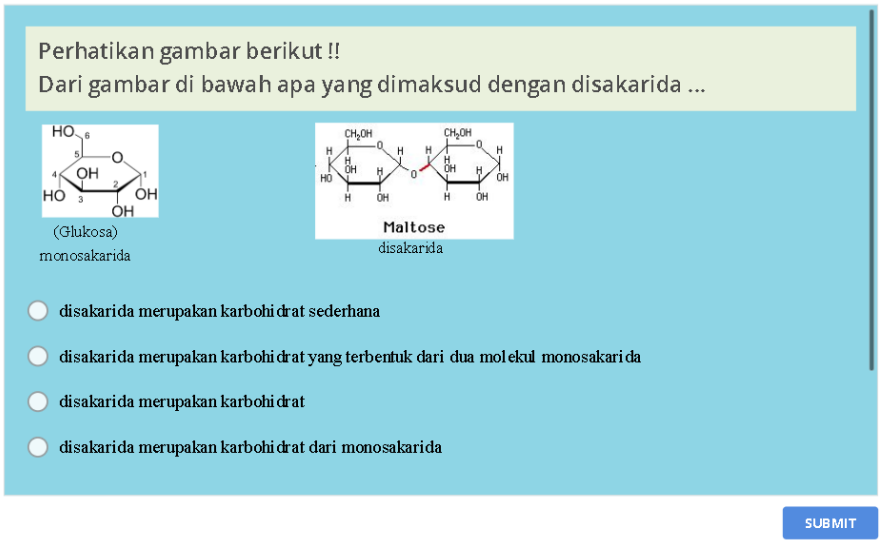

Figure 1. Display of guiding questions

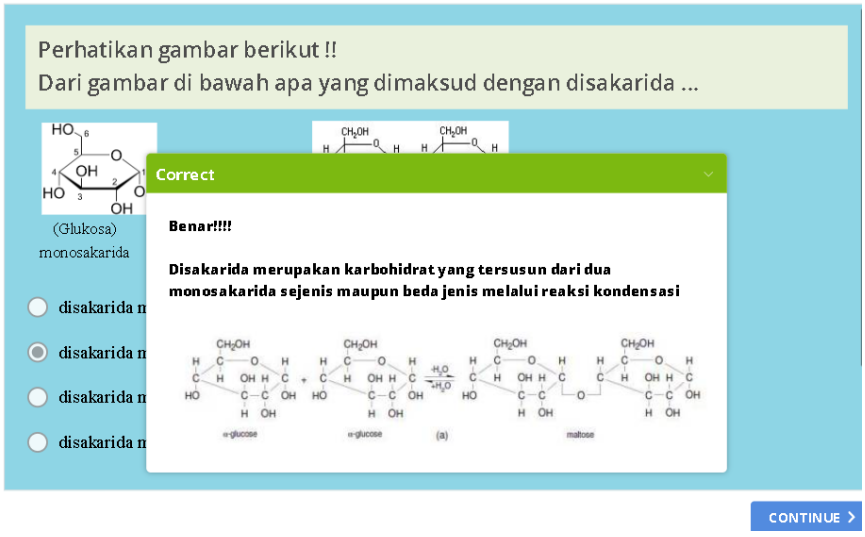

Figure 2. Display feedback from guiding questions

ISSN 1907-1744 (Cetak)
ISSN 2460-1500 (Online)

In addition to guiding questions on learning media, this PowerPoint-iSpring media is equipped with quizzes and evaluations to measure students' abilities. The results of the examination and evaluation will be displayed after the questions have been completed, which will display whether the participants passed or failed (Figure 2).

Students, after working on quizzes and evaluations. You can see the results or scores from quizzes and evaluations in Figure 3. You can see the following link for a complete media display:https://drive.google.com/file/d/1KXIXXODEAYbBPU53aWgBsjY5RMnBoyq-/view?usp=share_link. The media that is opened on the link above is in the form of HTML.

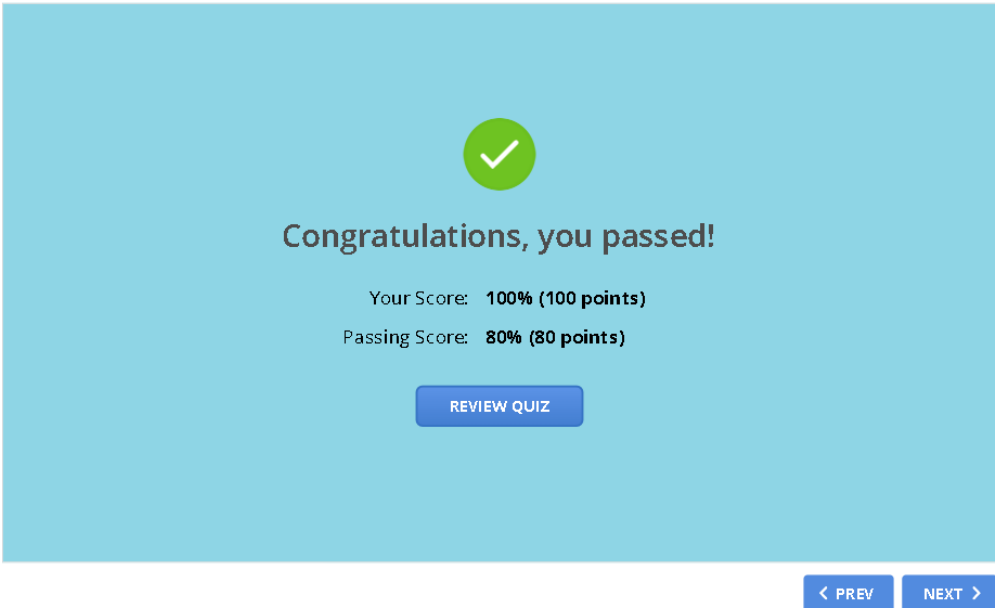

Figure 3. Display of the results of passing the quiz and evaluation

2. Prototype II

In prototype II, this was produced through a formative evaluation in the form of self-evaluation by using a checklist system on prototype I, which was produced to check the completeness of the components of the

PowerPoint-iSpring learning media. The self-evaluation results will be revised, and prototype II will be produced through the revised results.

3. Prototype III.

At this stage, a formative evaluation was carried out as an expert review and one-to-one prototype assessment II. The results obtained from each evaluation can be described as follows.

a. Expert review

Expert review is an activity carried out to determine the validity value of the resulting PowerPoint-iSpring media. Three chemistry lecturers carried out this expert review at FMIPA UNP, and two chemistry teachers at SMA N7 Padang. At this stage, expert appraisers or validators provide input, suggestions, and assessments of the products developed so that the resulting products are valid. The instrument used in this study was a validated questionnaire grouped into content, construct, and media validity. The data obtained from the validation questionnaire will be analyzed using Aiken's V formula. The results of the validity test can be seen in Table 1.

Table 1. Learning Media Validity Test Results

Validity	V	Category
Content	0,85	Valid
Construct	0,81	Valid
Media	0,81	Valid

Table 1 shows the results of the learning media validity test obtained an average content validity value of 0.85 with a valid category. The average construct and media validity value is 0.81, each with a valid category.

b. One-to-one evaluation

One-to-one evaluation is an activity to know students' responses to the prototype that has been made and revised so that a valid prototype III is obtained. The One to One evaluation results can be seen in Table 2.

Table 2. One-to-one evaluation results

Student Name	Student Response
Alya Mirdal Putri	•It looks attractive because it has colors and pictures • Instructions for use are easy to understand because there is an explanation • The material presented is understandable, and the language used is easy to understand understand • Having guiding questions is very helpful because there is a discussion of each question
Raisqa Faadilah Jatmino	• Display of learning media is very attractive and easy to understand • Instructions for using the media can be understood • The presentation of the material is very clear and easy to understand, and the language used is easy to digest and understand • The guiding questions in the learning media are very helpful because the presentation of the material is very clear and easy to understand
Sofia Mainanda Khairani	• The appearance is very good because it has its uniqueness both in terms of images and colors • Instructions for use can be understood and understood • The presentation of the material is very detailed and good, and the language used is easy to understand • Guided questions in the media are very helpful because they are accompanied by an explanation of the concept

Based on the results of a one-to-one evaluation questionnaire conducted by three students of class XII IPA SMA N 7 Padang, it was found that the learning media received a positive response from the students who were the respondents. This PowerPoint-iSpring learning media is already interesting to students, both in terms of appearance and color. Using letters and language in learning media is clear and easy to read. The material presented in the learning media is easy to understand, and the presentation of guiding questions in the learning media is very helpful for students in understanding the concept because each answer is given feedback so that students can find the right answer. Based on the research conducted by Suciana and Ellizar, learning media contains guiding questions that can guide students in finding concepts so that they can increase students' learning motivation. [23] .

CONCLUSION

The developed PowerPoint-iSpring learning media on carbohydrate material is valid. It can be seen from the assessment by the validator using the Aiken's V index the content test results were 0.85, the constructed test was 0.81, and the media test obtained 0.81. Based on these results, the PowerPoint-iSpring learning media can continue with practicality and effectiveness tests. The PowerPoint-iSpring learning media on carbohydrate material also received positive responses from students. Learning media developed for students are interesting, both in terms of appearance and color.

REFERENCES

[1] Syukri, S. (1999). Kimia Dasar, Jilid 1, ITB.
[2] Hadewia, S. (2022). Analisis Kesulitan Belajar Siswa pada Mata Pelajaran Kimia Kelas XI di MAN 2 Kota Palu. Jurnal Kolaboratif Sains, 5(10), 701-705.
[3] Rosa, N. M. (2015). Pengaruh sikap pada mata pelajaran kimia dan konsep diri terhadap prestasi belajar kimia. Formatif: Jurnal Ilmiah Pendidikan MIPA, 2(3).
[4] Saragih, D., Silaban, R., & Darmana, A. (2021, October). Pengembangan Modul Makromolekul Berbasis Proyek Dengan Pendekatan Sets (Science, Environment, Technology and Society). In PROSIDING SEMINAR KIMIA (pp. 35-41).
[5] Azhar, M. (2016). Biomolekul sel: karbohidrat, protein, dan enzim.
[6] Fendy, H. P., & Dwi, S. (2019). Implementasi mind mapping melalui project based learning untuk meningkatkan kemampuan berpikir kritis dan hasil belajar. Jurnal Pijar MIPA, 14(1), 50-54.
[7] Mandasari, D., Rahman, K., & Faishol, R. (2020). Pengembangan media pembelajaran menggunakan multimedia interaktif Lectora Inspire. Tarbiyatuna: Jurnal Pendidikan Islam, 13(1), 37-55.
[8] Fadillah, A., Bilda, W., Saleh, H., & Yenni, Y. (2021). Design of Interactive Learning Media in The Covid-19 Pandemic Time Using Ispring. Prima: Jurnal Pendidikan Matematika, 5(1), 1-10.
[9] Muthoharoh, M. (2019). Media powerpoint dalam pembelajaran. Tasyri: Jurnal Tarbiyah-Syariah-Islamiyah, 26(1), 21-32.
[10] Anwar, M. S., Choirudin, C., Ningsih, E. F., Dewi, T., & Maseleno, A. (2019). Developing an interactive mathematics multimedia

learning based on ispring presenter in increasing students' interest in learning mathematics. Al-Jabar: Jurnal Pendidikan Matematika, 10(1), 135-150.

[11] Susmiati, S. (2021). Penggunaan Media Power Point untuk Meningkatkan Hasil Belajar Mata Pelajaran IPS Siswa Kelas V SDN 118275 Sialang Pamoran II Kecamatan Silangkitang. Jurnal Pendidikan Dan Pembelajaran Terpadu (JPPT), 3(1), 62-72.

[12] Sunardi, A. I. (2021). Learning English through Google Meet, Google Classroom, and WhatsApp Groups for AMA Yogyakarta Students. Jurnal Education and Development, 9(3), 573-578.

[13] Mutiah, M., Siahaan, J., & Sukib, S. (2016). Efek Media Demonstrasi Kimia yang Dimodifikasi Terhadap Pemahaman Mahasiswa pada Konsep Elektrokimia. Jurnal Pijar Mipa, 11(2).

[14] Hanika, S., & Guspatni, G. (2023). Development of learning media powerpoint-iSpring integrated with prompting questions on stoichiometry topics. Jurnal Pijar Mipa, 18(1), 57-64.

[15] Nofitasari, A., Lisdiana, L., & Marianti, A. (2021). Development of my biology app learning media based on android materials of food digestion systems as student learning source at senior hight school. Journal of Innovative Science Education, 10(1), 70-78.

[16] Khotimah, K. (2019). Pemanfaatan Powerpoint Terintegrasi dengan I-springpresenter sebagai Media Pembelajaran Ict. Eksponen, 9(1), 79-85.

[17] Van Den Akker, J., Bannan, B., Kelly, A. E., Gravemeijer, K., Nieveen, N., & Plomp, T. (2013). Educational design research educational design research. Netherlands Institute for Curriculum Development: SLO, 1-206.

[18] Hemayanti, K. L., Muderawan, I. W., & Selamat, I. N. (2020). Analisis minat belajar siswa kelas Xi Mia pada mata pelajaran kimia. Jurnal Pendidikan Kimia Indonesia, 4(1), 20-25.

[19] Riska, S. A., & Guspatni, G. (2022). The effectiveness of Powerpoint-iSpring integrated multiple chemical representation learning media on acid-base materials to improve students learning outcomes for Senior High School. Jurnal Pijar Mipa, 17(5), 577-580.

[20] Nuraini, I., & Sutama, S. (2020). Pengembangan media pembelajaran berbasis power point Ispring Suite 8 di sekolah dasar. Jurnal Varidika, 31(2), 62-71.

[21] Makhrus, M., Rokhmat, J., Kosim, K., & Harjono, A. (2022). Development of learning media and online test based smartphone android in physics learning on work and energy topic. Jurnal Pijar Mipa, 17(3), 420-423.

[22] Dewi, R. K., Wardani, S., Wijayati, N., & Sumarni, W. (2019). Demand of ICT-Based Chemistry Learning Media in the Disruptive Era. International Journal of Evaluation and Research in Education, 8(2), 265-270.

[23] Guspatni, G., Murni, H. P., Azhar, M., Ellizar, E., & Nizar, U. K. (2022). Three Levels of Chemical Representation-Integrated and Structured Inquiry-Based Reaction Rate Module: Its Effect on Students' Mental Models. Journal of Turkish Science Education, 19(3).