Vol.14 (1), 2025, 137-148 DOI: 10.23960/jppk.14.i1. 33535
Jurnal Pendidikan dan Pembelajaran Kimia
e-ISSN: 2714-9595| p-ISSN 2302-1772
http://jurnal.fkip.unila.ac.id/index.php/JPK/index

Development of E-Module Based on Higher Order Thinking Skills on The Material Acid-Base at SMAN 6 Medan

Juwita Marine Egya, Muhammad Yusuf*

Departement of Chemistry Education, Faculty of Mathematics and Natural Sciences,
University of Medan
Jl. W. Iskandar Psr V Medan Esatate District. Deli Serdang, Indonesia

*Correspondinge-mail: juwitamarine4@gmail.com

Received: January 20th, 2025 Accepted: February 17th, 2025 Online Published: April 19th, 2025

Abstract : Development of E-Module on Higher Order Thinking Skills on The Material Acid-Base at SMAN 6 Medan. This research aims to: (1) To find out the feasibility of the Higher Order Thinking Skills-based e-module on acid-base material based on the criteria of the National Education Standards Agency. (2) To find out the high-level thinking skills of class XI 6 students of SMA Negeri 6 Medan on acid-base material which is learned using the Higher Order Thinking Skills-based e-module. (3) To find out the practicality of the Higher Order Thinking Skills-based e-module on acid-base material. (4) To find out the students' responses to the use of the Higher Order Thinking Skills e-module on acid-base material. There are 4 stages in this research, namely the definition stage (define) analyzing things that need to be done, namely initial-final analysis, curriculum analysis, and formulation of learning objectives. The design stage (design) is designing a HOTS-based E-Module product on acid-base material. The development stage (development) this development stage aims to produce a final product after going through a validation and revision process. Furthermore, the dissemination stage is carried out to promote the development product so that it can be accepted by users, both individuals and groups.. The e-module assessment instrument is in the form of a validation instrument from material experts and media experts, a practicality questionnaire by teachers and student responses in the form of a Likert scale. The results of the study showed that (1) media validation met the criteria of "very valid" with an average of 96.35% while material validation met the criteria of "very valid" with an average of 81.42%; (2) Practicality by teachers met the criteria of "very practical" with an average of 92.95%; (3) Student responses obtained the criteria of "very good" with an average of 89.93%; (4) Students' high-level thinking skills are categorized as "good".

Keywords: E-Module, Higher Order Thinking Skill, Acid-Base.

Abstrak : Pengembangan E-Modul Berbasis Higher Order Thinking Skills (HOTS) Pada Materi Asam Basa di SMAN 6 Medan. *Penelitian ini bertujuan untuk: (1) Mengetahui kelayakan e-modul berbasis Higher Order Thinking Skills pada materi asam basa berdasarkan kriteria Badan Standar Nasional Pendidikan. (2) Mengetahui kemampuan berpikir tingkat tinggi siswa kelas XI 6 SMA Negeri 6 Medan pada materi asam basa basa yang dibelajarkan dengan menggunakan e-modul berbasis Higher Order Thinking Skills. (3) Mengetahui kepraktisan e-modul berbasis Higher Order Thinking Skills pada materi asam basa. (4) Mengetahui respon siswa terhadap penggunaan e-modul Higher Order Thinking Skills pada materi asam basa. Ada 4 tahapan dalam penelitian ini yaitu tahap pendefinisian (define) menganalisi hal-hal yang perlu dilakukan, yaitu analisis awal-akhir, analisis kurikulum, dan perumusan tujuan pembelajaran. Tahap perancangan (design) yaitu merancang produk E-Modul berbasis HOTS pada materi asam basa. Tahap pengembangan (development) tahap*

pengembangan ini bertujuan untuk menghasilkan produk akhir setelah melalui proses validasi dan revisi. Selanjutnya tahap penyebaran (disseminate) dilakukan untuk mempromosikan produk pengembangan agar bisa diterima pengguna baik individu maupun kelompok. Instrumen penilaian e-modul berupa instrumen validasi dari ahli materi dan ahli media, angket kepraktisan oleh guru serta respon siswa berupa skala likert. Hasil penelitian menunjukkan bahwa (1) validasi media memenuhi kriteria "sangat valid" dengan perolehan rata-rata 96,35% sedangkan validasi materi memenuhi kriteria "sangat valid" dengan perolehan rata-rata 81,42%; (2) Kepraktisan oleh guru memenuhi kriteria "sangat praktis" dengan rata-rata 92,95%; (3) Respon siswa memperoleh kriteria "sangat baik" dengan rata-rata 89,93%; (4) Kemampuan berfikir tingkat tinggi siswa terkategori "baik".

Kata kunci: *E-Modul, Higher Order Thinking Skill, Asam Basa*.

▪ INTRODUCTION

The Independent Curriculum emphasizes the use of information and communication technology (ICT) in learning to improve the quality of teaching, student interest, and teacher capacity in dealing with technological developments (Khairatunnisa, 2022; Afrizon, 2017). In addition, this curriculum prioritizes a student-centered learning approach, where students are encouraged to learn independently without relying entirely on teachers. To support this, teachers need to provide appropriate teaching materials, such as modules or e-modules.

In chemistry learning, higher order thinking skills (HOTS) are an important element to improve students' understanding of complex concepts. However, the results of PISA 2018 showed low scientific literacy skills of Indonesian students, which was caused by the lack of teaching materials oriented towards developing critical thinking skills. In addition, based on the results of interviews and observations at SMAN 6 Medan, it was found that chemistry learning materials, especially acids and bases, were often considered abstract and boring by students. This is exacerbated by the minimal use of HOTS-based teaching materials, such as e-modules, which are designed to train students to think critically and creatively.

One effective way to address this gap is through the use of HOTS-oriented teaching materials, such as electronic modules (e-modules) that combine interactive features such as animation, video, and audio elements (Widiana & Rosy, 2021). Previous studies have shown that HOTS-based e-modules are effective, practical, and valid for use in various chemistry learning topics. However, until now, there has been no development of HOTS-based e-modules for acid-base material at SMAN 6 Medan. Therefore, this study aims to develop HOTS-based e-modules on acid-base material that are valid, practical, and effective, so that they can improve students' critical thinking skills and their interest in chemistry learning.

Previous studies have shown the practicality and effectiveness of HOTS-based e-modules in various chemistry topics, such as buffer solutions (Armita, 2024), reaction rates (Elti et al., 2024), and linear motion kinetics (Puspitasari et al., 2020). This study is expected to make a significant contribution to the development of HOTS-based teaching materials in chemistry learning. In addition, this study aims to offer practical solutions for teachers in training students to think at a higher level in accordance with the demands of the Merdeka Curriculum.

▪ METHOD

This research was conducted at SMAN 6 Medan, Jl. Ansari No. 34, Sei Rengas I, Medan Kota, Medan City, North Sumatra, Indonesia, 20214. The research was conducted in February 2025. The sampling technique used in this study was Purposive Sampling. The sample used in this study was class XI 6, totaling 30 people.

This research uses a development model or in English it is called Research and Development (R&D). Development research is a research method used to produce certain products, and test the effectiveness of these products (Hidayat et al., 2021). The media development procedure in this study uses a 4D development model consisting of 4 stages, namely Define, Design, Development, and Disseminate. (Rahima & Kamludin, 2023).

In this study, two types of data were used, namely primary data and secondary data. Primary data is data obtained from the first source, either individual or group, such as the results of interviews, questionnaires, and tests that are usually conducted by researchers. The primary data are validation scores from lecturers, questionnaire response scores from teachers and student questionnaire response scores. While secondary data is primary data that is further processed and presented by both primary data collectors and other parties, for example in the form of tables or diagrams.

The research instruments used were test instruments and non-test instruments. The test instrument was in the form of multiple-choice questions, while the non-test instrument included an interview sheet and a questionnaire consisting of a validation questionnaire (points on the module validation sheet came from the BSNP teaching material assessment), a practicality questionnaire by teachers and a student response questionnaire. The analysis of the e-module validation data was qualitative in the form of suggestions or comments, while the data used in the validation was quantitative with reference to four assessment criteria (Sofwatillah et al., 2024).

Define Stage (Define)

The first stage in the 4-D development model is analysis. Researchers conduct needs analysis through observation during the chemistry subject learning process. The analysis carried out is an early-late analysis, student analysis, curriculum analysis, and the formulation of learning objectives that are compiled based on previous analysis. So that data is obtained as a basic material for compiling HOTS-based e-modules.

Design Stage (Design)

After the analysis stage is carried out, the next step is for the researcher to carry out the planning stage (Design) regarding the design of the e-module structure that will be developed into a HOTS-based e-module. At the stage of creating the e-module design, the researcher will utilize Microsoft Word and the Canva website as assistants in the editing process of creating the e-module.

Development Stage (Development)

The third stage in the 4-D development model is the development stage. At this stage, an e-module based on HOTS is created. Then the validation process is carried out by expert lecturers. The e-module validation sheet includes, components of content feasibility, components of presentation feasibility, language feasibility and graphic feasibility. Where the expert validator will be given a questionnaire that will assess by giving a score range of 1-4 for each component. Where the lowest score is 1, and the

highest score is 4. The questionnaire sheet for practicality by teachers and student responses to the e-module is made using a Likert scale in the form of statements by giving a check mark (√) in the score column with a score range of 1-4 for each statement.

Validation by the validator team used a percentage score derived from the rating scale. The assessment criteria are presented in Table 1.

Table 1. Instrument Criteria with rating scale

Instrument item answers	Score
Strongly Agree	4
Agree	3
Disagree	2
Strongly Disagree	1

(**Source:** Trianto, 2011)

Then the data that has been obtained is converted into qualitative values according to the criteria above. Validation score percentage formula:

$$NP = \left[\frac{R}{SM}\right] X\ 100\%$$

Information :
NP : Percentage of validation results by the validator
R : Score obtained by the validator
SM : Maximum score

So it can be categorized as validation criteria which can be seen in Table 2.

Table 2. E-Module Validation

No.	Intervals	Qualification	Eligibility Criteria
1.	81%-100%	Very Valid	Very worthy/not revised
2.	61%-80%	Valid	Worthy/not revised
3.	41%-60%	Quite Valid	Quite worthy/Needs revision
4.	21%-40%	Less Valid	Less worthy/Revised
5.	0%-20%	Not Valid	Very unworthy/Revised

(**Source :** Rahayu, 2022)

To calculate the score of the teacher's practicality questionnaire on the HOTS-based e-module developed by referring to the rating scale and the same formula as the validation sheet. The percentage value of the practicality of the e-module is then grouped based on the assessment criteria presented in table 3.

Table 3. Validation of E-Module Practicality

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

(**Source :** Hodiyanto et al.,2020)

To calculate the score of the student response questionnaire to the HOTS-based e-module developed by referring to the same assessment scale and formula as the validation sheet in Table 1. The percentage value of student responses is obtained based on the following formula.

$$P(\%) = \frac{\Sigma F}{N \, x \, I \, x \, R} \text{ x } 100\%$$

Information :
P = Percentage
I = Total number of questionnaire items
N = Highest score in the questionnaire
R = Number of validators
ΣF = Total number of validator answers

Furthermore, the percentage values of student responses are then grouped based on the assessment criteria presented in Table 4.

Tabel 4. Student response score interpretation criteria

Qualitative Assessment	Percentage (%)
Very Good	81-100
Good	61-80
Quite Good	41-60
Not Good	21-40
Very Poor	0-20

(**Source:** Akbar, 2013)

Disseminate Stage (Disseminate)

The fourth stage in the 4-D development model is dissemination. After the HOTS-based e-module is declared feasible for use in research by experts, the stage of disseminating the e-module website link to students is carried out. The goal is to find out the high-level thinking skills of students after using the e-module in learning.
The following is the formula used to calculate student achievement scores.

The final grades obtained by students are:

$$Nilai\ akhir = \frac{Jumlah\ skor\ yang\ diperoleh}{skor\ maksimum} \text{ x } 100\%$$

Then the values that have been obtained are interpreted into the category of high-level thinking abilities as presented in the Table 5.

Tabel 5. High Level Thinking Skills Category

Student grades	Higher Order Thinking Ability
80 < grade ≤ 100	Very Good
60 < grade ≤ 80	Good
40 < grade ≤ 60	Quite Good
20 < grade ≤ 40	Not Good
0 < grade ≤ 20	Very Poor

(**Source:** Prasetyani, 2016)

The design flow of this research can be seen in Figure 1 below:

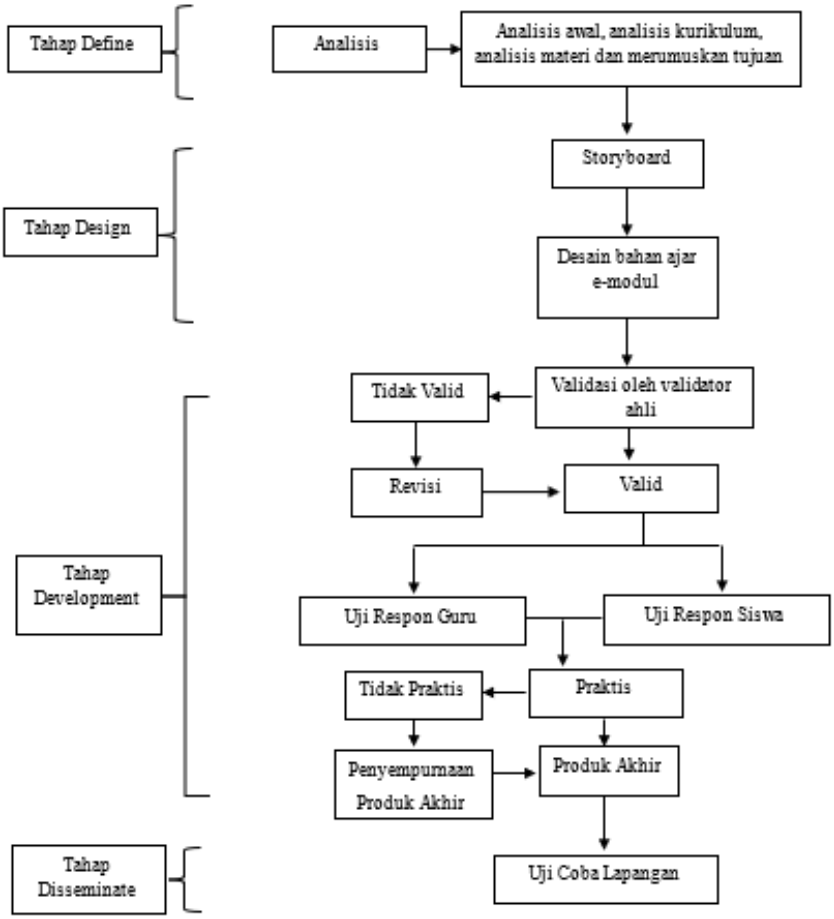

Figure 1. Research procedure flowchart

▪ RESULT AND DISCUSSION

This research was conducted in February 2025 at SMAN 6 Medan. The development of HOTS-based e-modules on acid-base material was carried out at the data collection stage by observing students during learning in chemistry subjects and interviews with grade XI chemistry teachers to analyze the needs of the teaching materials used. The data obtained will later be used as a guideline in compiling the design of the e-module to be developed. The following is a discussion of the research that has been conducted by the researcher:

Define Stage

At the define stage, it is the stage of analysis and identification of problems to obtain various information related to the product to be developed (Rahmi & Baharuddin, 2021). The purpose of this analysis step is to identify and pinpoint possible obstacles experienced by teachers and students during the learning process. Thus, it can be determined whether or not it is necessary to develop a learning program. There are three stages carried out at the analysis stage in the development of this learning e-module. The stages include: 1) initial-final analysis; 2) student analysis; 3) curriculum analysis; and 4) formulation of learning objectives.

From the results of the analysis that has been carried out, there is a problem, namely the unavailability of interactive teaching materials that can help students understand chemical concepts such as acids and bases easily. In addition, the need for HOTS practice questions which are the demands of the current independent curriculum is still minimal in its application in the school. So based on the results of the analysis, it can be used as a basis for developing e-modules.

Design Stage

After conducting analysis at the definition stage, the next stage is to compile an initial draft of the e-module. The e-module draft is an initial design or concept used to develop the e-module. Things that need to be considered in compiling an e-module are the selection of the e-module format to be used. The developed e-module is designed using the Canva application starting from the cover to the background of the material content which is then transferred to Microsoft Word. Where editing and entering material content is done using the features available in Microsoft Word. Then the module is converted into PDF format and then converted into a flipbook using AnyFlip.

Development Stage

At this stage, the creation of the e-module begins. After the module preparation stage is complete, the module will be converted into PDF format then converted into a flipbook using AnyFlip and distributed in the form of a website link. Anyflip is an interactive HTML 5 flipping book platform (Khotimah et al., 2022). This application is easy to operate on laptops and mobile devices. The following is an overview of the appearance of the e-module that has been developed:

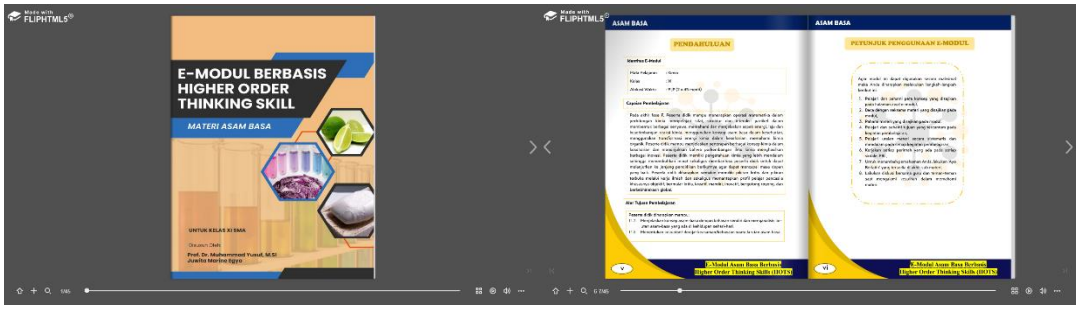

Figure 2. Cover, Introduction and Instructions for Using The E-Module

Figure 3. Concept Map and Content Page

Figure 4. PBL Syntax, Practice Questions, and Summary

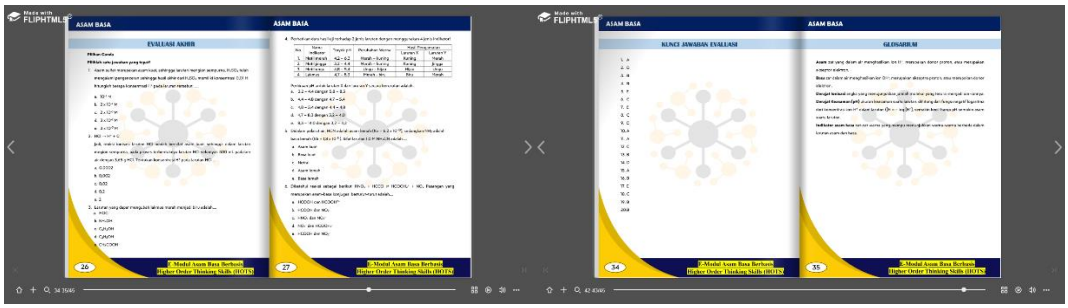

Figure 5. Final Evaluation, Answer Key and Glossary

After the e-module was developed, it was continued with the media validation process and material validation by the validator. The expert validators consisted of 2 chemistry lecturers. The calculation of the media and material validation results are listed in Table 1 and Table 2.

Table 6. Media Validation Results

No.	Assessment Aspects	Percentage	Assessment Criteria
1.	Application	100%	Very Valid
2.	Text Graphics	91.67%	Very Valid
3.	Visual	93.75%	Very Valid
4.	Navigation	100%	Very Valid
	Average	**96.35%**	**Very Valid**

Table 7. Material Validation Results

No.	Assessment Aspects	Percentage	Assessment Criteria
1.	Content Eligibility	76.25%	Valid
2.	Presentation Eligibility	86.54%	Very Valid
3.	Language Eligibility	77.5%	Valid
4.	Graphic Eligibility	85.42%	Very Valid
	Average	**81.42%**	**Very Valid**

The results of the media expert validity test obtained an average percentage of 96.35% and were included in the "Very Valid" category. Meanwhile, the material expert validity test obtained an average percentage of 81.42% and were included in the "Very Valid" category. The results obtained are in accordance with the results of research conducted by previous researchers, namely that HOTS-based e-modules are categorized as very good (Armita, 2024). During the validation process, the researcher obtained

assessments and suggestions from the validator used in the e-module revision stage. The revision aims to obtain a better e-module.

The suggestions and input obtained from the validator were to pay attention to the color of the reaction writing, correct punctuation errors, pay attention to the writing structure, add real examples of acids and bases, and sort the answer choices a, b, c, d, e from the final evaluation questions from the shortest sentence answer to the longest sentence or from the lowest numerical value to the highest numerical value.

After the e-module has been validated by experts and has been revised, the next step is to measure the practicality of the e-module based on teacher and student responses. The student responses are carried out in 2 stages, namely limited-scale student responses and broad-scale student responses. The following are presented in Table 3. the results of the practicality test by teachers, Table 4. the results of the limited-scale student response test and Table 5. the results of the broad-scale student response test.

Tabel 8. Practicality Test Results By Teachers

No.	Assessment Aspects	Respondent Assessment	Assessment Criteria
		G-1	
1.	Ease of Use	97.2%	Very Practical
2.	Learning Time Efficiency	91.67%	Very Practical
3.	Time	90%	Very Practical
	Rata-Rata	**92.95%**	**Very Practical**

The results of the practicality test by the teacher obtained an average of and included in the category of "Very Practical". After obtaining the practicality assessment data for the e-module, the student response questionnaire was then distributed to small groups of 10 students and continued to large groups of 30 students. The following presents the limited scale student response data in Figure 6 and the broad scale in Figure 7.

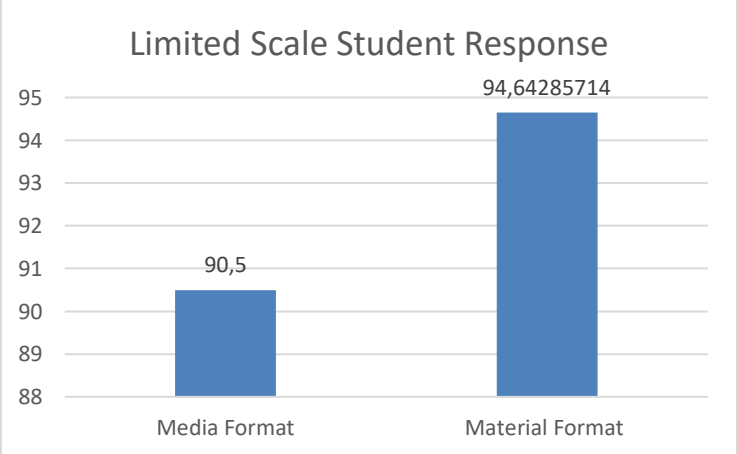

Figure 6. Limited Scale Student Response Data Diagram

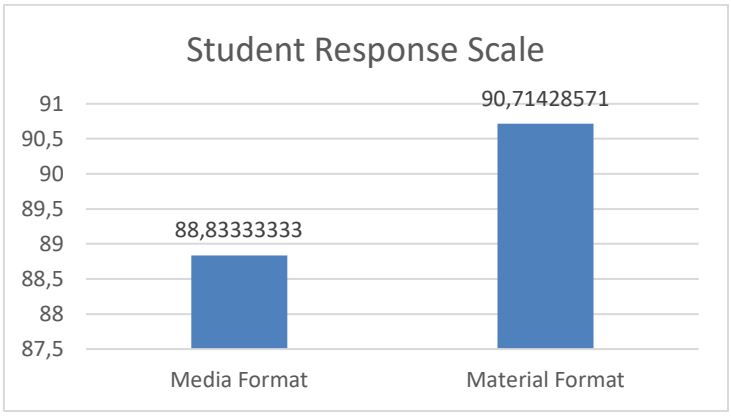

Figure 7. Large Scale Student Response Data Diagram

The data above shows that the student response test on a limited scale and a wide scale shows an assessment of the e-module with the category "Very Good" with the average percentage obtained for each scale is 92.91% and 89.93%. This shows that the developed e-module is very practical and feasible to be used in learning and is ready to be distributed to a wider scale. Based on research by Rahayu, et al. (2019), teaching materials are easy to use if student responses get practical results. The results obtained are in accordance with the results of research conducted by previous researchers, namely that HOTS-based e-modules are categorized as very practical and provide convenience and support learning (Sinaga & Purba, 2024).

Disseminate Stage

This stage is conducted a field trial using the e-module that has been developed and declared valid and feasible to use. Furthermore, the e-module is distributed to 30 students of class XI 6. In this stage, students will work on the questions in the final evaluation in the e-module which will then obtain the data of the results of the scores to measure the high-level thinking skills of class XI 6 students of SMAN 6 Medan. The following is the percentage data of students' high-level thinking skills presented in Table 6.

Figure 8. Distribution of E-Module based on Higher Order Thinking Skills on acid-base material

The results obtained regarding students' high-level thinking skills after using the developed e-module obtained an average percentage of 80.5% and were included in the "Good" category. This also proves that the developed e-module is indeed feasible and practical to use in learning and can improve students' high-level thinking skills. The

results obtained are in accordance with the results of research conducted by previous researchers, namely that students' high-level thinking skills are categorized as good after being taught using HOTS-based e-modules (Dinda, 2020).

▪ CONCLUSION

Based on the results of the research and discussion that have been discussed previously, it can be concluded that based on the criteria of the National Education Standards Agency, the results of media validation are in the "very valid" category with an average percentage of 96.35% as well as the results of material validation are in the "very valid" category with an average percentage of 81.42%. This shows that the e-module based on higher order thinking skills on acid-base material is said to be feasible in accordance with the provisions of the teaching material criteria according to the National Standards Agency.

The percentage of students' high-level thinking skills learned after using the e-module is 80.5% in the "good" category. This shows that the developed e-module is effective in helping students hone their high-level thinking skills.

The percentage of e-module practicality based on teacher assessment is 92.95% in the "very practical" category. Student responses to the application of HOTS-based e-modules on acid-base material get positive responses with the "very good" category so that it can be said that HOTS-based e-modules on acid-base material are very practical and easy to use in the learning process with an average response percentage of 92.91% on a limited scale and 89.93% on a broad scale. So that the HOTS-based e-module on acid-base material can be stated as very practical for use in learning.

▪ REFERENCES

Afrizon, R., Ratnawulan, R., & Fauzi, A. (2017). Analisis Persepsi Mahasiswa Pendidikan Fisika Terkait Pentingnya Pembelajaran Fisika Bermakna yang Menerapkan Unsur Kearifan Lokal Sumbar. *Prosiding Semirata 2017 Bidang MIPA BKS PTN Wilayah Barat*, 1(1).

Armita, S. H. 2024. *Pengembangan E-Modul Berbasis Higher Order Thinking Skills (HOTS) Pada Materi Larutan Penyangga di MAN 1 Medan*. Skripsi. Tidak Diterbitkan.

Dinda, A. 2020. Pengembangan Instrumen Tes Berbasis Higher Order Thinking Skills (HOTS) Pada Materi Hidrolisis Garam di Kelas XI MA Negeri 1 Medan. Skripsi. Tidak Diterbitkan.

Elti, B. P., Syabania, N., & Nisa, K, R. (2024). Pengembangan E-Modul Pada Materi laju Reaksi Menggunakan Model Pembelajaran Inkuiri Terbimbing Kelas XI MIPA di SMA Neeri 1 Waigete. *Jurnal Matematika dan Ilmu Pengetahuan Alam*, 2(1), 1-21. https://doi,org/10.59581/konstanta-widyakarya.v1i3.1848

Hidayah, N., Rusilowati, A., & Masturi. (2019). Analisis profil kemampuan literasi sains siswa smp/mts di kabupaten pati. Jurnal Phenomenon, 9(1), 36–47.

Hidayat, F., Rahayu, C., Barat, K. B., Nizar, M., Coblong, K., & Bandung, K. (2021). Model Addie (Analysis , Design , Development , Implementation And Evaluation) Dalam Pembelajaran Pendidikan Agama Islam Addie (Analysis , Design ,

Development , Implementation And Evaluation) Model In Islamic Education Learning. 28–37.

Khairatunnisa. (2022). Implementasi Kurikulum Merdeka dalam Proses Pembelajaran Bahasa Berbasis Teknologi Informasi dan Komunikasi. *Jurnal Pendidikan*, 7(2): 94-99.

Khotimah, K., Noorhidayati, N., & Hardiansyah, H. (2022). Pengembangan Bahan Ajar Konsep Sistem

OECD. (2019a). Programme for international student assessment (pisa) result from pisa 2018 (volume 1-3). https://www.oecd.org/pisa/publications/PISA2018_CN_IDN.pdf

OECD. (2019b, December 3). Pisa 2018 results (volume 1): What students know and can do. OECD Publishing. https://www.oecdilibrary.org/education/pisa-2018-resultsvolume-i_5f07c754-en

Pratiwi, S. N., Cari. C, & Aminah, N. S. (2019). Pembelajaran ipa abad 21 dengan literasi sains siswa. *Jurnal Materi Dan Pembelajaran Fisika*, 9(1).

Puspitasari, R., Hamdani, D., & Risdianto, E. (2020). Pengembangan E-Modul Berbasis Hots Berbantuan Flipbook Marker Sebagai Bahan Ajar Alternatif Siswa Sma. *Jurnal Kumparan Fisika*, 3(3), 247–254. https://doi.org/10.33369/jkf.3.3.247-254

Rahayu, C., Eliyarti. & Festiyed. (2019). Kepraktisan Perangkat Pembelajaran Berbasis Model Generative Learning dengan Pendekatan Open-ended Problem, Jurnal Berkala Ilmiah Pendidikan Fisika, 7(3), 164-176.

Rahima, H., & Kamaludin, A. (2023). Development of Chemo-Entrepreneurship (CEP) Electrochemical Enrichment Book. Jurnal Pendidikan dan Pembelajaran Kimia, 12(1), 37-46.

Rahmi, A., & Baharuddin. (2021). Pengembangan Media Pembelajaran Multimedia Interaktif Lectora Inspire Mata Pelajaran Pekerjaan Dasar Elektromekanik. *Journal of Electrical Vocational Teacher Education*, 1(2), 114-122.

Rofiah, E., Aminah, N.S., & Sunarno, W. (2018). Pengembangan Modul Pembelajaran Ipa Berbasis High Order Thinking Skill (HOTS) untuk Meningkatkan Kemampuan Berfikir Kritis Siswa Kelas VIII SMP/MTs. *INKUIRI: Jurnal Pendidikan IPA*, 7(2), 285-296.

Sinaga, B. A., & Purba, J. (2024). Development of E-ModulesBased on Project Based Learning (PjBL) on Periodic System of Elements Material. Jurnal Pendidikan dan Pembelajaran Kimia, 13(1), 66-76.

Sofwatillah, Risnita, Syahran J., M., & Saksitha, D., A. (2024). Tehnik Analisis Data Kuantitatif Dan Kualitatif Dalam Penelitian Ilmiah. Journal Genta Mulia, 15(2), 77 91.

Widiana, F. H., & Rosy, B. (2021). Pengembangan E-Modul Berbasis Flipbook Maker pada Mata Pelajaran Teknologi Perkantoran. *Edukatif: Jurnal Ilmu Pendidikan*, 3(6), 3728-3739.

Winaryati., Munsarif., Mardiana., & Suwahono. (2021). *Cercular Model pf RD & D(Model RD&D Pendidikan dan Sosial)*. Jogjakarta: KBM INDONESIA.