
Development of Teaching Module Based on the Merdeka Curriculum with the Application of Character Integrated Problem Solving Model

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Abstract. Starting in 2022, the merdeka curriculum can be implemented by educational units even though they are not Driving Schools. One of the learning tools needed to implement the independent curriculum is teaching modules. The lack of sources of information and examples of the application of the character integrated learning model in developing teaching modules is an urgency in this research. The aim of this research is to develop an independent curriculum teaching module by implementing an integrated problem solving model of character education in science lessons that is valid and feasible and can be well received by teachers as product users. This research uses research and development (R&D) methods, with the ADDIE (analysis, design, development, implement and evaluation) development model. The instruments used were interview guides, questionnaire sheets and observations. The population in this research is teachers at Langsa City State Middle School, the research sample was taken using a purposive sampling technique. The product produced in this research is a science learning teaching module with an integrated problem solving model of character education. The teaching module developed is valid and suitable for use in science learning, with a percentage score of 89.2% in the very valid category. Apart from that, the teacher response to the teaching module product was 89% in the very good category. Therefore, it is recommended that this integrated problem solving model of character education science teaching module be implemented in learning to determine its effectiveness and influence on student learning outcomes.

Keywords: Teaching modules, independent curriculum, integrated character problem solving model

Introduction

Character education is one of the aspects needed to balance the challenges of the 21st Century. 21st Century learning is characterized by the integration of students' literacy abilities, knowledge, skills, attitudes and mastery of technology (Mudrikah et al., 2022). Education without character is not only useless, but very dangerous. The 2013 curriculum, revised in 2017, stipulates attitude aspects (character values) as the main aspect apart from cognitive and psychomotor aspects (Sukidin et al., 2022; Susilo et al., 2022; Purwaningsih, 2022). Apart from that, the character of the nation's children is one of

several things that is being improved in the world of Indonesian education today (Fitriyah et al., 2022).

In the curriculum currently being implemented, namely the merdeka curriculum, of course there is a structure to improve the character of the nation's children through one of its programs, namely the Pancasila student profile (Iskandar et al., 2023). Character Education is a systematic, comprehensive and planned approach to teaching moral values so that students can know the concepts of right and wrong (Prayitno et al., 2022; Birhan et al., 2021). The current reality is that education in Indonesia is faced with various problems, namely an inadequate learning system and moral degradation that occurs in Indonesian society in general, one of which is among some schools which are felt to have not reached the standard of character education, especially during the pandemic. This can be seen from several incidents reported in the mass media regarding examples of students' poor character or morals being shown, in the school environment and in society. This happens in remote areas too, there are still many complaints about character education and it doesn't get enough attention from the government (Angga et al., 2022).

Learning natural sciences (science) which is in line with character education is very important in supporting learning goals, for this reason learning models and approaches are needed that support the implementation of the learning process in schools (Arman et al., 2020). Learning activities within the framework of student character development can use active learning approaches such as problem-based learning (Sugiyanto & Wema., 2020). In the process of analyzing learning problems, emphasis should be placed on character formation, not just emphasis on academic achievement, during the learning process students familiarize themselves with caring personalities, are critical of information, build polite communication between friends in groups, justify the results of the analysis honestly and bravely (Suhirman et al., 2020). Previous research states that learning using positive problem solving models can increase creativity, character and creative problem solving (Kim et al., 2019). This is in accordance with research by Ozpinar & Arslan (2023) suggesting that further research can consider other factors, including metacognitive and affective in the application of problem solving learning. Teachers play a big role in developing the character of their students. One of the big challenges is finding ways to effectively integrate character education with academic content standards (Clampa & Wolfe, 2020).

One of the efforts made to improve 21st century skills is to prepare appropriate and high-quality learning plans so that they will better support the achievement of the desired learning goals (Putri et al., 2023). Educators must develop Independent Educators must develop independent curriculum teaching modules that are integrated with character education. One of the functions of teaching modules is to reduce the burden on teachers in presenting content so that teachers can have more time to be tutors and help students in the learning process (Maulida, 2022). However, in several cases in schools, teachers have not been able to read CP well, have not been able to compile TP (learning objectives) from existing CP (learning outcomes), have not been able to compile ATP (learning objective flow) from TP, and have had difficulty developing teaching modules (Rindayati, 2022).

The development of teaching and learning modules to strengthen character education is one of the research themes in accordance with the master research plan (RIP) 2022-2030 at Samudra University, namely the focus of research in the development of integrated and innovative learning. Apart from that, continuing the 2021 superior basic research (PDU) research on developing a character-integrated problem solving learning model, this research applies the model that has been developed into a teaching module, with the hope that teachers can use it in the science learning process and strengthen students' character.

The aim of this research is to develop a science learning teaching module product with an integrated problem solving model for character education that is valid and suitable for use in science learning, as well as knowing teachers' responses to the science learning teaching module product using the integrated problem solving model for character education. Thus, it is hoped that this research will have a positive impact on education, especially in Aceh, in facing the challenges of developing character education through the science field.

Methods

This research was carried out at SMP Negeri 1 Langsa, SMP Negeri 7 Langsa, and SMP Negeri 11 Langsa. The research population was all science teachers at Langsa State Middle School which was the research location. The sampling technique used purposive sampling with the consideration that the samples were science teachers who were actively teaching at the research location in 2023. The number of samples was 6 science teachers. Apart from teachers, this research also involved intrusion experts to obtain data on the validity and feasibility of the teaching modules being developed

This research is a type of research and development. Research and development methods are research methods used to produce certain products and test the effectiveness of these products (Ramot & Bialik., 2022). In other words, research and development is a research method used to produce certain products and test the effectiveness of these products. In this case, the product developed is a science teaching module with an integrated character problem solving model. The development model used is the ADDIE development model. The ADDIE research and development model consists of 5 main stages, namely analyze, design, develop, implement, and evaluate (Gagne et al., 2005; Morrison;2010; Rayanto & Sugianti, 2020). However, researchers reached the Develop stage due to limited time in product creation and validation (Miskiyyah & Buchori, 2023).

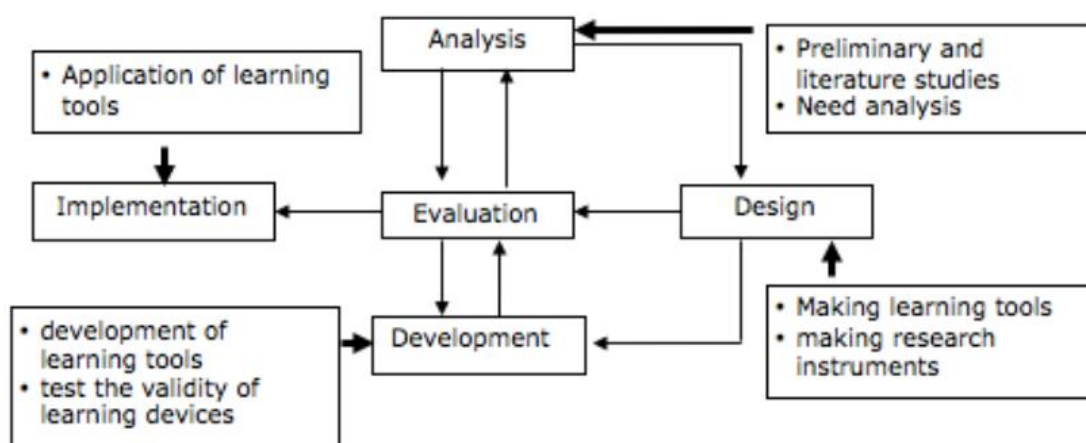


Figure 1. The stages of ADDIE development model (Gagne et al., 2005)

In order to collect primary data, data collection is carried out directly by researchers, namely: (1) observation is direct observation of the school being studied to strengthen the results of the interview; (2) interviews, namely holding questions and answers with the teacher; (3) validation and feasibility questionnaire and response questionnaire. Data

collection uses research instruments that have been validated and tested for reliability (Sati et al., 2023). Data analysis techniques resulting from observations and interviews were carried out descriptively. Meanwhile, the questionnaire data was analyzed by calculating the percentage of answers using the following formula (Nurlian, 2023):

$$(\%) \text{Validity} = \left(\frac{\text{the score obtained}}{\text{maximum score}} \right) \times 100\% \quad (1)$$

The results of the value calculations are interpreted according to Table 1.

Table 1. Percentage Criteria

No	Interval	Validity Category	Response Categories
1.	$0 \leq X \leq 20$	Very invalid	Very Not Good
2.	$21 < X \leq 40$	invalid	Not good
3.	$41 < X \leq 60$	quite valid	pretty good
4.	$61 < X \leq 80$	valid	good
5.	$81 < X \leq 100$	Very valid	Very good

(Source: Mutiara & Hardjono, 2023)

Results and Discussion

Based on the research objectives and development of a natural science learning teaching module with an integrated problem solving model of character education, a valid and feasible teaching module was developed using the ADDIE model. The results of each activity stage according to the ADDIE model are as follows.

Analysis Results

The initial stage in the ADDIE development model is analysis. Requirements analysis is part of module design (Farihah et Al., 2021). The analysis carried out includes analysis of learning, materials and learning media used in schools (Lerian et Al., 2022). Analysis was carried out to determine the difference between expectations in learning and facts in the field (Asmar & Suryadarma, 2021). Analysis was carried out through observation and interviews were carried out to explore the information needed to develop teaching modules according to school needs and readiness. The items and aspects observed and interviewed refer to the steps for developing teaching modules in the independent curriculum described by Maulida (2022). The results of observations at the research location obtained the following information.

Table 2. Observation result

Observation Aspect	School 1	School 2	School 3
1) The school has adequate infrastructure to support the implementation of the independent curriculum, such as: library, computer room, lab room and sports field.	√	√	√
2) Schools have documents implementing the independent curriculum, such as: Permendikbud, independent curriculum learning tools, independent curriculum assessments and report cards	√	√	√
3) The school applies an independent curriculum	√	√	√
4) The school has Pancasila student profile documents, such as: Pancasila student profile pocket book/guidebook, Pancasila student profile project proposal/report	√	√	√
5) The school has documentation on the implementation of strengthening the Pancasila student profile	√	√	√
6) The school has ATP documents	√	√	√
7) Teachers at schools actively participate in MGMP/KKG forums	√	√	√
8) Teachers at schools actively participate in seminars related to the development of independent curriculum learning tools	X	x	x
9) Schools and teachers have teaching module documents	√	√	√
10) Schools and teachers use teaching modules in classroom learning	√	√	√
11) Schools and teachers have curriculum learning evaluation documents, such as: question and non-question instruments, assessment processes, reporting, and remedial or enrichment follow-up	√	√	√

Based on Table 2, it is known that the three research location schools have sufficient infrastructure and experience in implementing the merdeka curriculum. In fact, schools and teachers have used teaching modules in classroom learning. However, from the results of the interview it is known that the teaching modules used so far by teachers are not teaching modules developed personally by the teacher but rather adapted from various


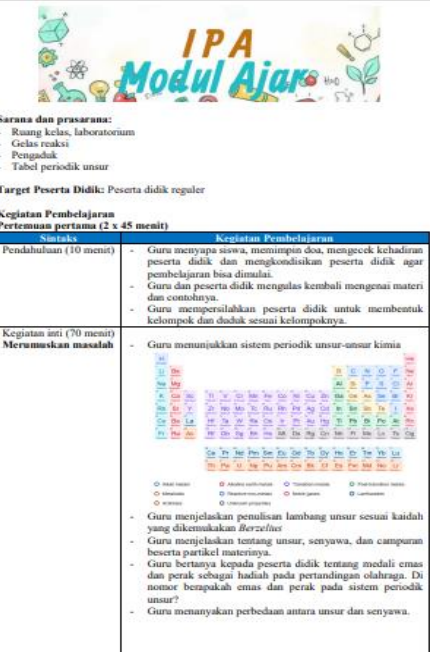



sources, one of which is through the merdeka mengajar platform. Based on the results of interviews regarding aspects of teacher knowledge readiness, it is known that teachers already know the definition and benefits of teaching modules. Teachers have created teaching modules and implemented them. However, the teachers in the research sample had never attended training in creating teaching modules and had never implemented an integrated problem solving model of character education. Teaching materials will be realized by displaying illustrations of everyday life (Wuryani et al., 2018). Teachers receive information about teaching modules from Langsa City MGMP activities. The material that teachers get from MGMP activities is still at the stage of developing learning objectives (TP) from learning outcomes (CP). The teaching modules that teachers need mentioned in the interview are measurement material, acids and bases, elements, mixtures and compounds, vibrations and waves, and temperature and heat.

Design Results

The design stage is a systematic process that begins with compiling a flowchart and storyboard as a basis and description of the form, content and appearance in developing the teaching module. Objectives, assessment tools, exercises, content, and media selection are aligned during design (Bates, 2019). In this stage, supporting content is collected for the development of teaching modules through three steps, namely, collecting references, compiling a map of teaching module development needs and preparing a comprehensive teaching module design. The step of collecting references is carried out by collecting sources in the form of images and writing that are suitable for use in making teaching modules. Other sources used include books and journals as well as a complete guide to preparing teaching modules for the Merdeka curriculum published by the ministry of education and culture. Equipment such as a computer is prepared for the process of typing teaching modules, display design is carried out using microsoft word 2010. The activities in this module pay attention to aspects that can improve teachers' skills on how to use teaching resources, direct students to focus and participate in learning activities (Farihah et al., 2021).


The step of compiling a needs map is done by making a mind map about the material that will be included in the teaching module and the syntax of the learning model used, namely the integrated problem solving model of character education. This is in accordance with research by Tze Kiong et al, (2021) which states that learning to deal with problem solving at the school level will enable them to solve problems independently with skills developed at school and can be applied in the integrated design of subjects and projects. In line with Diani's (2015) research which produces an integrated module of character values which is very suitable in the learning process because it can support the achievement of basic competencies, indicators, meet quality standard criteria and can help in the character formation process. The steps for compiling a teaching module design are carried out by following the steps for creating a teaching module according to Maulida (2022). The design of the science learning teaching module design with an integrated problem solving model of character education can be seen in Table 3.

Table 3. View of the initial design of the teaching module

Teaching module components	Appearance	Information												
<p>General information,</p> <p>Achievements and Learning Objectives</p>	 <p>UNSUR, SENYAWA, DAN CAMPURAN</p> <p>Penulis: Nurhafidiah, S.Pd., M.Pd., Mauliza, S.Pd., M.Pd., Ahmad Fauzi Syahputra Yani, S.Pd., M.Pd. Institusi: Universitas Samudra Tahun Penyusunan: 2023</p> <table border="1" data-bbox="486 638 885 705"> <thead> <tr> <th>FASE</th> <th>JENJANG</th> <th>KELAS</th> <th>PERKIRAAN JUMLAH SISWA</th> <th>MODA PEMBELAJARAN</th> <th>ALOKASI WAKTU</th> </tr> </thead> <tbody> <tr> <td>D</td> <td>SMP</td> <td>VIII</td> <td>36 SISWA</td> <td>Paduan Tatap Muka dan PJJ</td> <td>6 JP (6x45menit)</td> </tr> </tbody> </table> <p>Tujuan Pembelajaran: 8.1.Mendeskripsikan perbedaan unsur, senyawa dan campuran. 8.2.Menjelaskan konsep partikel atom, molekul unsur dan molekul senyawa. 8.3.Mengidentifikasi campuran homogen dan heterogen yang terdapat dalam kehidupan sehari-hari. 8.4.Menggunakan metode-metode sederhana untuk memisahkan campuran.</p> <p>Pertanyaan Pemantik: 1. Apakah kamu tahu medali emas, perak yang diberikan kepada pemenang PON? Termasuk jenis zat apa benda tersebut? 2. Apakah kamu tahu unsur penyusun air, gas oksigen, gas karbon dioksida? 3. Apakah kamu tahu bagian terkecil dari zat-zat di atas? 4. Apa perbedaan campuran gula dan air dengan campuran air dan minyak? 5. Bagaimana cara memisahkan campuran air dan garam?</p> <p>Elemen CP yang dituju: - Pemahaman sains - Keterampilan proses</p> <p>Kompetensi awal - Memahami tentang materi.</p> <p>Model Pembelajaran yang digunakan: <i>Problem Solving</i></p> <p>Profil Pelajar Pancasila: - Beriman, bertakwa kepada Tuhan Yang Maha Esa dan berahlak mulia (Olah Hati) - Bermula karia (Olah pikir) - Kreatif (Olah pikir) - Mandiri (Olahraga) - Gotong royong (Olah rasa) - Berkebhinekaan global (Olah rasa)</p>	FASE	JENJANG	KELAS	PERKIRAAN JUMLAH SISWA	MODA PEMBELAJARAN	ALOKASI WAKTU	D	SMP	VIII	36 SISWA	Paduan Tatap Muka dan PJJ	6 JP (6x45menit)	<p>The first page of the teaching module consists of information on the Teaching Module Title, Level of Education, Phases and Classes, Subjects, Learning Objectives, Sparking Questions, Targeted CP Elements, Learning Model, and Pancasila Student Profile</p>
FASE	JENJANG	KELAS	PERKIRAAN JUMLAH SISWA	MODA PEMBELAJARAN	ALOKASI WAKTU									
D	SMP	VIII	36 SISWA	Paduan Tatap Muka dan PJJ	6 JP (6x45menit)									
<p>Details of Usage Plan and</p> <p>Module List (Meeting Details)</p>	 <p>Sarana dan prasarana: - Ruang kelas, laboratorium - Gelas reaksi - Pengaduk - Tabel periodik unsur</p> <p>Target Peserta Didik: Peserta didik reguler</p> <p>Kegiatan Pembelajaran Pertemuan pertama (2 x 45 menit)</p> <table border="1" data-bbox="486 1332 917 1758"> <thead> <tr> <th>Sub-tipe</th> <th>Kegiatan Pembelajaran</th> </tr> </thead> <tbody> <tr> <td>Pendahuluan (10 menit)</td> <td> <ul style="list-style-type: none"> Guru menyapa siswa, memimpin doa, mengecek kehadiran peserta didik dan mengkondisikan peserta didik agar pembelajaran bisa dimulai. Guru dan peserta didik mengulas kembali mengenai materi dan contohnya. Guru mempersilahkan peserta didik untuk membentuk kelompok dan duduk sesuai kelompoknya. </td> </tr> <tr> <td>Kegiatan inti (70 menit) Merumuskan masalah</td> <td> <ul style="list-style-type: none"> Guru menunjukkan sistem periodik unsur-unsur kimia  <ul style="list-style-type: none"> Guru menjelaskan penulisan lambang unsur sesuai kaidah yang dikemukakan <i>Berzelius</i> Guru menjelaskan tentang unsur, senyawa, dan campuran beserta partikel materinya. Guru bertanya kepada peserta didik tentang medali emas dan perak sebagai hadiah pada pertandingan olahraga. Di nomor berapa emas dan perak pada sistem periodik unsur? Guru menanyakan perbedaan antara unsur dan senyawa. </td> </tr> </tbody> </table>	Sub-tipe	Kegiatan Pembelajaran	Pendahuluan (10 menit)	<ul style="list-style-type: none"> Guru menyapa siswa, memimpin doa, mengecek kehadiran peserta didik dan mengkondisikan peserta didik agar pembelajaran bisa dimulai. Guru dan peserta didik mengulas kembali mengenai materi dan contohnya. Guru mempersilahkan peserta didik untuk membentuk kelompok dan duduk sesuai kelompoknya. 	Kegiatan inti (70 menit) Merumuskan masalah	<ul style="list-style-type: none"> Guru menunjukkan sistem periodik unsur-unsur kimia  <ul style="list-style-type: none"> Guru menjelaskan penulisan lambang unsur sesuai kaidah yang dikemukakan <i>Berzelius</i> Guru menjelaskan tentang unsur, senyawa, dan campuran beserta partikel materinya. Guru bertanya kepada peserta didik tentang medali emas dan perak sebagai hadiah pada pertandingan olahraga. Di nomor berapa emas dan perak pada sistem periodik unsur? Guru menanyakan perbedaan antara unsur dan senyawa. 	<p>This section of the page contains information on facilities and infrastructure, learning activities along with time allocation and learning model syntax</p>						
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Details of Usage Plan and

Module List (Meeting Details)




Pengujian hipotesis	- Peserta didik secara kelompok mengolah data dan memverifikasi hasil diskusi dengan data-data atau teori pada buku sumber.
Olah Hati	- Guru bertanya pendapat peserta didik manfaat pemecahan masalah bagi kehidupan pribadi dan masyarakat.
Penutup (10menit) Merumuskan rekomendasi pemecahan masalah lainnya	- Menyampaikan hasil diskusi tentang perbedaan dan contoh unsur dan senyawa yang dekat dengan kehidupan. - Guru menjelaskan contoh-contoh unsur dan senyawa yang belum dibahas saat diskusi untuk memperkaya pengetahuan peserta didik. - Guru menyampaikan materi pertemuan berikutnya yaitu tentang campuran

This section of the page contains information on the 2nd meeting's learning activities along with time allocation and learning model syntax

Kegiatan Pembelajaran
Pertemuan kedua (2 x 45 menit)

Sintaks	Kegiatan Pembelajaran
Pendahuluan (10 menit)	- Guru menyapa siswa, memimpin doa, mengecek kehadiran peserta didik dan mengkondisikan peserta didik agar pembelajaran bisa dimulai. - Guru dan peserta didik mengulas kembali mengenai dua jenis zat tunggal yang telah dipelajari minggu lalu yaitu unsur dan senyawa - Guru mempersilahkan peserta didik untuk membentuk kelompok dan duduk sesuai kelompoknya.
Kegiatan inti (70 menit) Merumuskan masalah	- Guru mendemonstrasikan proses pencampuran 1) air + garam, 2) air + susu bubuk, 3) air + paku - Guru mengarahkan rasa ingin tahu peserta didik mengenai perbedaan ketiga campuran di atas (larutan, koloid, suspensi)
Olah Pikir	- Peserta didik diarahkan menyebutkan campuran yang dekat dengan kehidupan sehari-hari (darat, laut, udara) - Guru menunjukkan mana yang campuran atau bukan campuran.

Supporting Materials or Attachments (Assessment Plans, Student Worksheets, and Reflex Instruments)



Perangkat Asesmen
Asesmen Formatif

Pertemuan Pertama


No	Unsur	Nama Latin	Lambang	Logam / Nonlogam	Sifat
1	Besi				
2	Perak				
3	Carbon				
4	Oksigen				
5	Nitrogen				
6	Natrium				
7	Aluminium				
8	Hidrogen				
9					
10					

No	Senyawa	Lambang	Unsur penyusun
1	Air		
2	Karbon dioksida		
3	Karbonmonoksida		
4	Asam asetat		
5	Asam klorida		
6	Asam cuka		
7	Natrium klorida		
8	Magnesium hidroksida		
9			
10			

No	Zat	Lambang	Partikel materi (atom/ molekul unsur/ molekul senyawa)
1	Air		
2	Karbon dioksida		
3	Gas oksigen		
4	Asam asetat		
5	Gas nitrogen		
6	Asam cuka		
7	Natrium klorida		
8	Magnesium hidroksida		
9			
10			

This section of the page contains formative assessments

Supporting Materials or Attachments (Assessment Plans, Student Worksheets, and Reflex Instruments)



Asesmen Sumatif

Pilihan Ganda

- Bagian terkecil dari suatu zat padat, zat cair ataupun zat gas disebut ...
 - Senyawa
 - Unsur
 - Campuran
 - Koloid
 Jawaban : b. unsur
- Simbol dari unsur kalsium adalah ...
 - Ca
 - C
 - K
 - Cl
 jawaban : a. Ca
- Oksigen merupakan salah satu zat yang sangat kita butuhkan. Simbol dari unsur oksigen yaitu ...
 - CO₂
 - O
 - H
 - N
 Jawaban : b. O
- Unsur-unsur yang memiliki sifat logam dan nonlogam yaitu ...
 - Nonlogam
 - Metaloid
 - Koloid
 - logam
 Jawaban : b. metaloid
- Berikut ini sifat yang dimiliki logam kecuali ...
 - penghantar listrik yang baik
 - zat yang kuat dan keras
 - unsur logam dapat kembali padat jika perlakuan dihentikan
 - ikatan antar atom penyusunnya lemah
 Jawaban : d. ikatan antar atom penyusunnya lemah
- Besi, aluminium, tembaga, seng berdasarkan daya hantar listrik termasuk bahan ...
 - Konduktor
 - Metaloid
 - Semikonduktor
 - isolator
 Jawaban : a. konduktor

This section of the page contains the summative assessment

Develop results

The results of the teaching module design are then developed at the development stage. The initial design of the teaching module was validated and tested for feasibility by instructional experts, namely educational expert lecturers. The results of the validation and feasibility testing process become a reference for revising the initial design of the teaching module. The validators of the teaching module are 6 education lecturers. The validation process is carried out by submitting an initial design draft of the teaching module to the validator along with a validation questionnaire. The results of the recapitulation of validator answers to the validation questionnaire can be seen in Table 4.

Table 4. Recapitulation of validation questionnaire answers

No	Validation Aspect	Question number	Validation (%)
1	Learning objectives	1-5	90
2	Assessment Plan	6-8	94
3	Igniter Question	9-10	92
4	Success Indicators	11-12	83
5	Activity Framework	13-18	92
6	Selection of Pancasila Student Profile Dimensions	19-20	92
7	Teaching Facilities / Equipment	21-23	83
8	Supporting Materials / Appendices	24-25	88
9	Teaching Module in General	26-27	83
Overall percentage			89.2

Based on table 4, the overall percentage of teaching module validation is 89.2%, referring to table 1 this percentage is in the very valid category. A comparison of the percentages for each aspect of validation can be seen in Figure 2.

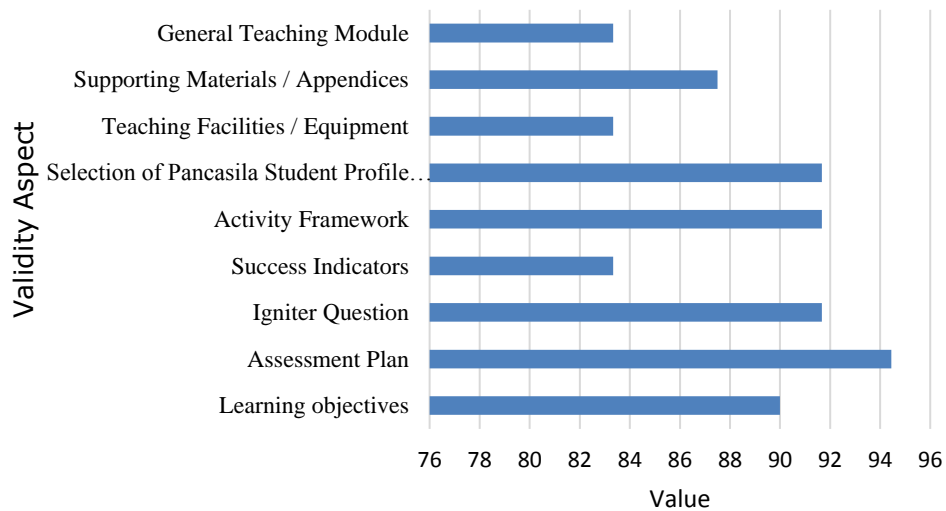


Figure 2. Comparison of percentages for each validation aspect

Based on Figure 2, the highest percentage of validation is in the assessment plan aspect, namely 94%. Meanwhile, the lowest percentage of validation was in the aspects of success indicators, teaching infrastructure/equipment, and aspects of teaching modules in general. Apart from quantitative data, through a questionnaire the researchers also explored criticism and suggestions for improvements to the teaching modules being developed. The criticisms and suggestions submitted by validators are as follows.

Table 5. Validator criticism and suggestions for teaching modules

No	Validator criticism and suggestions
1	Attachments need to be added
2	Learning outcomes are not included in the teaching module
3	Prank questions do not encourage meaningful understanding in students. To build meaningful understanding in students at the intermediate level, present questions that are contextual and ask questions that arouse curiosity
4	There are no indicators in the teaching module so validators cannot assess alignment with learning outcomes and objectives.
5	Measuring the achievement of indicators with designed assessments cannot be assessed by validators because there are no indicators in the teaching module
6	So that the learning steps are easy to understand, some sentence editors need to be revised to be more efficient when read.

- 7 it is necessary to remap the variety of student achievements towards learning objectives in learning evaluation instruments
- 8 In the attitude assessment instrument in the Pancasila student profile values, a clear description of the relationship between the material and the Pancasila student profile values described is required
- 9 follow-up and assessment plans have not been clearly outlined
- 10 There are no question instructions/how to work on formative and summative assessments
- 11 several points need to be added to the teaching module, such as: CP, indicators, test answers, test grids, and worksheets

Table 5 shows that the teaching module needs to be revised in accordance with validator criticism and suggestions even though the teaching module is valid based on percentage value calculations. The development process required several expert feedback and revisions (Kowitlawakul et al., 2017). Apart from the validation data, the teacher's response as a user is known from the results of the teacher's answers to the response questionnaire. The data on the results of the responses to the questionnaire can be seen in Figure 3.

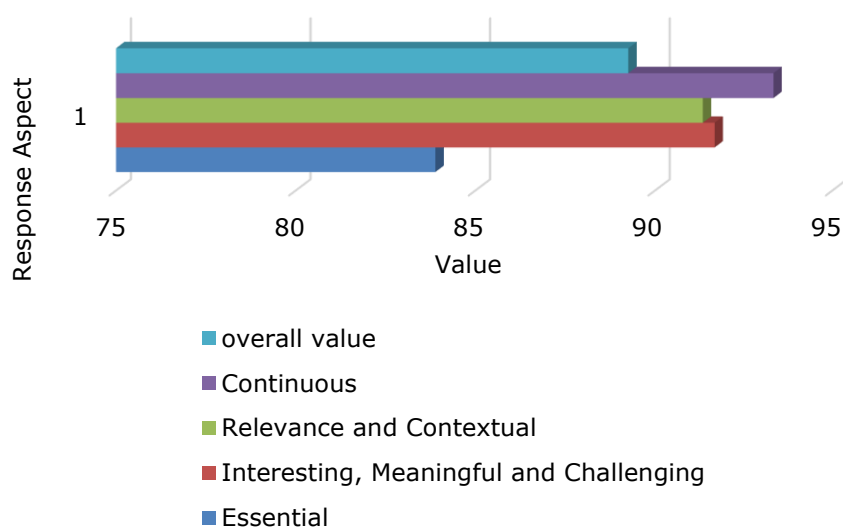


Figure 3. Data from teacher response questionnaire answers to each aspect

The overall percentage of teacher responses to the questionnaire was 89%, based on table 1, in the very good category. Good results show that the module can be used well by teachers to apply to students (Figure 3 shows that the highest percentage of teacher responses to the teaching module is on the continuity aspect. The results show that the module is sustainable with a flow of learning activities that is appropriate to the needs of educators and the learning level of students. This aspect is very important because it can influence students' learning involvement and motivation in actively participating in learning (Hedge & Hewett, 2020; Yulando et al., 2019).

Conclusion

The product produced in this research is a science learning teaching module with an integrated problem solving model of character education. The teaching modules developed are teaching modules on elements, compounds and mixtures. The teaching module developed is valid and suitable for use in science learning, with a percentage score of 89.2% in the very valid category. Apart from that, the teacher's response to the science learning teaching module product using the integrated problem solving model of character education was 89% in the very good category. Therefore, it is recommended that this integrated problem solving model of character education science teaching module be implemented in learning to determine its effectiveness and influence on student learning outcomes.

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