



# Feasibility Study of Case-Based Instructional Materials for Enhancing Critical Thinking Skills in Doctoral Programs: A Development Research Approach

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## ABSTRACT

**Objective:** Teaching materials are a vital part of teaching, especially in higher education. Although teaching materials have been used in learning, the reality is that the availability of teaching materials that support the learning process using a case study approach in the Doctoral Program in Primary Education is still very limited, especially in the course Theory and Application of Civic Education in Primary Schools, which requires a case study approach as a stimulus for learning. This study also addresses the challenge of doctoral students' critical thinking skills through learning using the developed teaching materials. **Method:** This study uses a research and development (R&D) approach with the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model, which specifically focuses on the development and validation of the feasibility of case study-based teaching materials. **Results:** The developed case study-based teaching materials showed very feasible results from various expert judgments. Validation by language experts resulted in an average score of 80%, while material experts gave a score of 90%, and media experts gave a feasibility score of 93%. **Novelty:** The case study-based teaching materials developed have a complete range of features tailored to field requirements, such as the availability of case study assignments for students that are integrated through barcode scanning to save time in the learning process. This accessibility makes it easier for both lecturers and students to access the assignments given and complete them on time despite the busy schedules of doctoral program lecturers and students.

## INTRODUCTION

The highest level of academic education is at the doctoral level, where complex researchers are produced. Contributions that meet these criteria can be made through independent research that produces concrete results in accordance with the field and develops strong intellectual abilities (Sushchenko et al., 2023). Doctoral program students are required to have multidimensional competencies that include in-depth theoretical understanding, high methodological skills, and the capacity to produce original scientific work that makes a real contribution to scientific development.

These competencies are part of a scientific attitude that involves the comprehensive use of high-level cognitive or metacognitive abilities to develop a person's thinking skills (Jamil et al., 2023). Doctoral students are also required to be able to integrate critical, analytical, and reflective thinking into solving complex problems, as well as demonstrate independence in designing, implementing, and reporting research activities in accordance with scientific principles.

In an effort to fulfil the thinking skills of doctoral students, one of the relevant thinking skills is critical thinking. Critical thinking skills are the ability to analyze complex problems, evaluate evidence systematically, synthesize diverse perspectives, and construct well-structured arguments (Schaller et al., 2023). Critical thinking skills are very complex because they involve a structure of thinking, namely: first, the ability to

understand, clarify, and give meaning to information or situations. Second, analytical skills are defined as the ability to identify relationships, patterns, assumptions, and arguments underlying a statement. Third, evaluation skills involve assessing the quality of information, the credibility of sources, and the logic of arguments. Fourth, the ability to intervene, which is used to draw rational conclusions. Fifth, the ability to explain, which is the ability to explain reasons or thought processes. Sixth, metacognitive ability, which is the ability to monitor, reassess, and improve one's own thought processes (Butler, 2024; Rahmawati et al., 2025; Utami et al., 2018).

In these six structures of critical thinking skills, this thinking ability is also supported by dispositions such as open-mindedness, curiosity, objectivity, and commitment to high intellectual standards (Boran & KARAKUŞ, 2022; Butler, 2024; Fabio et al., 2025; Li et al., 2024). Thus, this structure illustrates that critical thinking skills in adults do not only focus on the ability to process information, but also include intellectual attitudes and tendencies that support responsible and evidence-based decision making. Therefore, critical thinking skills in doctoral students are one of the competency requirements that graduates must fulfil.

Based on the six structures of critical thinking skills, this study specifically facilitates analytical, evaluative, and decision-making skills through the presentation of real cases related to civic education issues in elementary schools. Students are required to analyze information, identify key facts, and relate the context of the case to relevant civic education concepts. After the analysis stage, students are directed to conduct a critical evaluation, which involves assessing arguments, weighing alternative solutions, and considering the impact of each option. This process then continues to the decision-making stage, where students must formulate solutions that are ethically and rationally accountable. Thus, analytical, evaluation, and decision-making skills can directly stimulate relevant critical thinking structures through a case study approach.

One relevant stimulus in efforts to improve critical thinking skills in doctoral students is through teaching based on a case study approach. The case study approach is one that is relevant to improving critical thinking skills, where the case study approach emerges as a very promising strategy for developing critical thinking, especially among doctoral students (Malik et al., 2023). The case study approach involves students in authentic and contextual problems that reflect real-world professional challenges, requiring them to apply theoretical knowledge, analyze complex situations, and make rational decisions (Williams, 2005).

The case study approach does not only provide simple solutions but also instills in students the need to think critically by applying theoretical concepts to solve practical problems (Fixen, 2024; Mahdi et al., 2020). Cases create a need to know, improve listening and cooperative learning skills, build partnerships, encourage attention and self-awareness of assumptions and conceptions, and help students monitor their own thinking. In various previous studies (Chang & Liu, 2025; Faireh, 2023; Gaspé & Hathirige Dona, 2025; Ivan Sebastian et al., 2025; Vítěčková et al., 2025), there have been many studies linking critical thinking skills with the case study approach. Case studies are linked to critical thinking skills because they have continuity between thoughts that are connected through interaction and consequences, which are crucial in decision-making in complex rule systems. Thus, case studies become a link to a person's critical thinking skills.



The case study approach can be integrated into various learning platforms, one of which is by integrating it into teaching materials. Teaching materials are broadly defined as a set of materials consisting of knowledge, skills, and attitudes that must be learned and achieved by each student to meet predetermined competency standards (Aisyah et al., 2020). Teaching materials are also used to assist lecturers in implementing an effective learning process. Thus, teaching materials can be designed specifically, namely, the content of the teaching materials is designed to achieve certain objectives, and the systematic delivery of the content of the teaching materials is tailored to the characteristics of the material and the characteristics of the students.

A collection of teaching materials that are systematically organized, represent concepts, and guide students to achieve certain competencies is the definition of teaching materials (Malahayati & Zunaidah, 2021). In line with the previous thought, teaching materials are all forms of assistance for educators or instructors in teaching and learning activities in the classroom, both written and unwritten, so teaching materials are very important to be compiled in an interesting and systematic manner to achieve learning objectives. Teaching materials are systematic, unique, and specific, and are arranged in sequence so that students can easily learn independently (Annisa & Fitria, 2021; Wahyuni & Angraini, 2021). Based on these various definitions, teaching materials are a vital part of the learning process. Teaching materials have been used at all levels of education to facilitate learning and serve to elaborate on the material being taught.

Currently, there are various types of teaching materials tailored to the needs of students in learning. The effectiveness of teaching materials used in learning has been proven to improve a person's thinking skills in learning, as empirically demonstrated at various levels of education. Alfiandra et al. (2022) show data that in improving critical thinking skills, textbooks oriented towards case studies have been developed. In line with previous research, Rizka et al. (2024) also report that there is an increase in students' critical thinking skills through the development of case study-based textbooks.

Facts in the field show that there are still limitations in the teaching materials used by lecturers in doctoral programs. These limitations are caused by the fact that the current focus of learning is centered on literature reviews based on Western theory and relies solely on textbooks, so that the application of theory with empirical data is often inappropriate or needs to be adjusted to existing conditions. This gap causes dissatisfaction among doctoral students during the learning process due to the lack of activities that facilitate critical thinking skills, which also has an impact on the results obtained. Therefore, the case study approach provides a forum for critical thinking for doctoral students through an existing system by proving Western theories and whether they are relevant to the education system in Indonesia. The case study approach allows students to be involved in applying theory to practice or facts in the field, which involves decision-making skills on specific problems, bringing up different perspectives, and the ability to analyze and synthesize data results. Thus, the accuracy of Western theories can be proven through case study-based teaching materials, thereby improving the critical thinking skills of doctoral students.

Previous research and the empirical gaps described above show that the teaching materials currently used for students still focus on the use of Western theories through available textbooks. No one has specifically developed teaching materials that provide a comprehensive case study approach, such as student learning activities through case studies and the use of digital platforms to facilitate student access to these teaching



materials. Therefore, this becomes a gap that needs to be criticized and filled in this research and development, namely by developing comprehensive case study-based teaching materials accompanied by digital technology integration.

In doctoral-level lectures, teaching materials are a crucial part that needs to be developed comprehensively. This means that comprehensive teaching materials for doctoral students must contain a complete structure, starting with clear course descriptions, learning outcomes, and learning experiences to help students understand their cognitive achievement levels in learning, material descriptions based on relevant and accurate references, systematic learning activities supplemented with case studies as an approach to training critical thinking skills, and finally, the inclusion of reflective questions as a form of student response in understanding the learning that has taken place. All of these can utilize digital technology as one of the teaching material platforms that will be developed for ease of access, especially for doctoral students, based on flexibility in its use. Thus, the case study approach teaching materials to be developed in this study have various comprehensive features and rely on the integration of digital technology through barcode scanning, which is suitable for doctoral students.

This research addresses existing empirical challenges and gaps and becomes an intersecting research gap by developing and validating case study-based teaching materials. This research and development were conducted using a comprehensive ADDIE (analysis, design, development, implementation, evaluation) development model (Branch, 2009). The research and development process went through a rigorous process of validation by various experts and repeated evaluations to ensure the feasibility of the product prior to implementation. This research also addresses empirical needs by developing teaching materials that are an important and easily accessible learning resource that facilitates the fulfillment of doctoral program student competencies, thereby bridging the gap between theoretical knowledge and practical application.

## RESEARCH METHOD

This study uses a research and development (R&D) method with a research approach using the ADDIE model, which has five stages, namely analysis, design, development, implementation, and evaluation (Branch, 2009). These stages are carried out systematically, but the evaluation stage can be carried out at each stage considering that the evaluation stage is an important part of a research and development process. The ADDIE model was chosen based on its systematic stages, which assist researchers in developing products. This model also allows for formative evaluation at each stage so that the developed product becomes more valid and effective.

This research and development were conducted in stages over different periods of time. Currently, research and development are in the analysis, design, and development stages to ensure the accuracy of the product being developed before field testing is carried out so that the data obtained at this time has met the product feasibility validation stage, so this article attaches data based on product feasibility testing. Therefore, this becomes a limitation of this study because the implementation and evaluation (effectiveness) stages have not been carried out.

Three expert judgments, each competent in their respective fields according to the requirements of the product being developed, were used in the feasibility test, namely material experts, media experts, and language experts. Data analysis used two approaches, namely qualitative and quantitative. Qualitative analysis was needed to

describe the scores obtained from which conclusions could then be drawn, while quantitative analysis was the scoring that produced more objective and measurable findings (Sugiyono, 2019).

The data collection technique uses a Likert scale to validate the products from the experts. The instruments used to validate the products have previously passed the instrument feasibility validated by instrument experts. The instruments used to assess the feasibility of teaching materials take a case study approach developed using a 4-point categorization formula, as detailed in the following table.

**Table 1.** Assessment Criteria by Expert Judgment

Category	Score
Very suitable	4
Suitable	3
Fairly suitable	2
Not suitable	1

The scores obtained were then interpreted based on predetermined assessment criteria, with categories of highly feasible, feasible, reasonably feasible, and not feasible. This data analysis approach was chosen because the Likert scale allows for a more in-depth evaluation of expert assessments, which is very important for assessing the quality and feasibility of case study-based teaching materials that have been developed. The detailed interpretation percentages are shown in the following table.

**Table 2.** Interpretation of the Rating Scale

Category	Percentage %
Very suitable	85% - 100%
Suitable	70% - < 85%
Fairly suitable	55% - < 70%
Not suitable	< 55%

Based on the table above, the analysis was conducted using several steps, namely 1) summing the scores given by the experts, 2) converting the total scores into predetermined categories, 3) interpreting the results into qualitative data. Thus, the data obtained has a reliable accuracy value and becomes the strength of the case study-based teaching materials developed.

## RESULTS AND DISCUSSION

### Results

This study presents comprehensive data based on research questions developed using the ADDIE model approach. The findings include needs analysis, development process, and expert validation of case study-based teaching materials.

#### 1. Case study-based teaching materials

##### a) Analysis stage

This stage aims to identify the empirical needs of doctoral students in the Basic Education Study Program, Faculty of Education, Yogyakarta State University. This activity was carried out by distributing a needs analysis questionnaire containing questions related to learning problems, the implementation of the case study approach, critical thinking skills, the shortcomings and limitations of the teaching materials that had

been used, the use of teaching materials, and the need for teaching materials that could facilitate the critical thinking skills of doctoral program students.

Based on the analysis of the needs obtained, it was found that students revealed that learning has been too focused on literature reviews based on Western theory textbooks, which in practice are less relevant to education in Indonesia, so that as doctoral students, this has become an opportunity to conduct research through case studies. However, lecturers have attempted to develop effective teaching materials for doctoral students, but some are still not relevant to the needs and characteristics of doctoral students. Thus, there is an urgent need to develop case study-based teaching materials that are relevant for doctoral students.

#### b) Design Stage

This stage involves the systematic planning of case study-based teaching material components through the following four phases.

##### 1) Preparation of an outline framework for case study-based teaching materials

In this phase, the framework is prepared based on the components of the teaching module, which include an introduction containing the background, objectives of the module, description of the module, instructions for using the module, and a description of the course. In this case, teaching materials with a case study approach are also teaching modules. Therefore, they contain several learning activities, including course learning outcomes, learning experiences, material descriptions, student worksheets or case study-based assignments, and reflection questions.

A module is teaching material that contains a series of planned learning experiences and is designed to achieve the expected competencies (Primayana, 2022). Effective learning modules are applied to learning by considering the appropriateness of the content, linguistic components, assessment components, and graphic components (Illah & Susetyarini, 2024). Literally, a teaching module is an important document that guides the learning process, containing a complex series of steps, while teaching materials contain a collection of supporting materials that are flexible in nature so that they can be integrated into teaching modules (Saputra et al., 2023).

##### 2) Selection of applications and technical frameworks

The application was selected to maximize the graphic component, therefore Canva was used as the visual design platform for teaching materials with a case study approach. Canva was chosen as the design platform due to its ease of use and the variety of graphic elements that can be used and adapted to educational content. The technical work on the case study-based teaching materials was carried out by a special team to develop them and conduct various evaluations during the development process.

##### 3) Selection of visual elements and aesthetic considerations

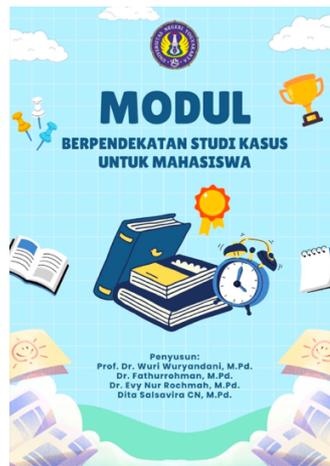
The selection of visual elements and aesthetic considerations were tailored to the target users, namely lecturers and doctoral students, so that these factors were considered in the selection of all graphic elements. The selection of images as examples was also tailored to the characteristics of doctoral students. In addition, the case study-based teaching materials also included barcode scans to facilitate student use, thus utilizing digital technology.

The cover design was created using graphic elements to avoid a monotonous visual appearance. The font was also chosen for its readability so that the message conveyed in the case study teaching materials could be communicated effectively. Bright colors were

chosen for the palette, but not excessively to balance visual appeal and readability, with blue and white as the main colors. Other decorative elements are integrated into the layout of each page to enhance visual interest without distracting from the content.

c) Development stage

The development stage aims to produce and validate the case study-based teaching materials that have been developed. This stage consists of three phases, namely content development, formative revision, and feasibility validation by experts. The content developed focuses on theory and application of elementary school civic education. Formative revision is carried out to develop content that is suitable for its users. The details are as follows.



**Figure 1.** Cover of teaching materials using a case study approach

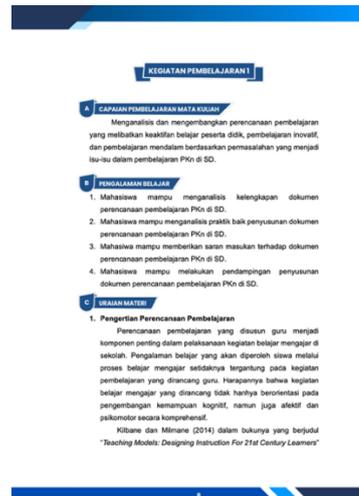
The cover bears the title “Case Study Approach Module for Students.” A bright color scheme combining blue and white was chosen to create an attractive atmosphere. The Intuisi logo (Yogyakarta State University) was used to reinforce credibility and academic authority. Thus, this main cover serves to inform users of the product title, the product development team, and the originating institution. This is done to make it easier for users to obtain further information.

DAFTAR ISI	
HALAMAN COVER.....	i
KATA PENGANTAR.....	ii
DAFTAR ISI.....	iv
<b>PENDAHULUAN</b>	
A. Latar Belakang.....	1
B. Tujuan Penyusunan Modul.....	3
C. Deskripsi Modul.....	5
D. Petunjuk Penggunaan Modul.....	6
E. Deskripsi Mata Kuliah.....	7
<b>KEGIATAN PEMBELAJARAN 1</b>	
A. Capaian Pembelajaran Mata Kuliah.....	8
B. Pengalaman Belajar.....	8
C. Urutan Materi.....	8
D. Lembar Kerja Mahasiswa/Penggunaan Berbasis Kasus.....	16
E. Pertanyaan Refleksi.....	20
<b>KEGIATAN PEMBELAJARAN 2</b>	
A. Capaian Pembelajaran Mata Kuliah.....	21
B. Pengalaman Belajar.....	21
C. Urutan materi.....	21
D. Lembar kerja mahasiswa/Penggunaan Studi Kasus.....	27
E. Pertanyaan Refleksi.....	38
<b>KEGIATAN PEMBELAJARAN 3</b>	
A. Capaian Pembelajaran Mata Kuliah.....	41
B. Pengalaman Belajar.....	41
C. Urutan Materi.....	41
D. Lembar kerja mahasiswa/Penggunaan berbasis kasus.....	51
E. Pertanyaan Refleksi.....	53

**Figure 2.** Table of Contents page in teaching materials using a case study approach

The table of contents page displays a list of the contents included in the module, namely the foreword, table of contents, introduction, learning activities, and bibliography. The introduction provides background information, the objectives of the module, a description of the module, instructions for using the module, and a description

of the course, which aims to inform readers of the theoretical and practical foundations for using the developed module.



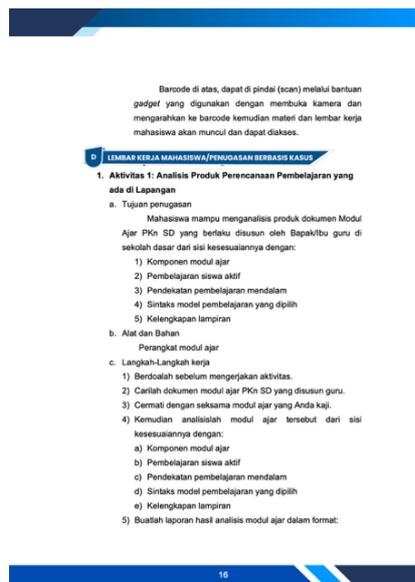
**Figure 3.** Learning Activities Page in Teaching Materials using a Case Study Approach

The learning activities page displays a series of complex components of activities to be carried out by students, namely course learning outcomes (CPMK), learning experiences, material descriptions, supplemented with barcode scans, case study-based student worksheets, and reflection questions. These components serve to inform students of the competencies expected to be achieved when using the developed module for the learning process. They also serve to organize activities in a systematic manner, thereby helping students understand the expected outcomes and mentally prepare themselves for upcoming learning content. Typography and layout design are applied by adjusting to user characteristics and establishing the formal educational context required for academic learning.



**Figure 4.** Material Description Page via Barcode Scan

The material description page includes a barcode for easy access by students during the learning process. This aims to integrate digital technology into the current educational context. This ease of access not only benefits students, but also lecturers, who can use it flexibly anywhere and anytime, given their busy teaching schedules.



**Figure 5.** Student Worksheet Page based on Case Studies

This case study-based student worksheet includes assignment objectives, necessary tools and materials, work steps, and reflection questions. These components serve to organize students as they engage in learning. The work steps developed have been tailored to the critical thinking abilities of doctoral students and adapted to the case study approach. Finally, there is a section of reflection questions to reflect on students' understanding of the material or case that has been analyzed/studied.

## 2. Feasibility Validation Results

### a) Subject Matter Expert Validation

Based on the results of in-depth subject matter expert validation conducted by expert judgment in accordance with the competency background, namely on material related to the subject of theoretical and applied studies of elementary school civic education for doctoral program students, as detailed in the following table.

**Tabel 3.** Results of Expert Material Validation

Nu	Aspect	Percentage (%)	Criteria
1	Content quality	90%	Very suitable
<b>Total overall score</b>		<b>90%</b>	

The product feasibility assessment by subject matter experts has one aspect with 10 indicator items consisting of the clarity of CPMK in the module, the suitability of the material for doctoral students, the correctness of the material concepts, the clarity of the material content, the consistency of the presentation of the material content, the depth of the material, the breadth of the material, the completeness of the material, the suitability of the material content for improving critical thinking skills, and the accuracy of student worksheets based on case studies. However, there were several minor revisions. Thus, based on the results of the material expert assessment and the revisions made, the product was declared highly suitable for use by doctoral students.

### b) Language Expert Validation

Based on the results of in-depth language expert validation using expert judgment in accordance with their background and competence, the following data was obtained.

**Tabel 4. Results of Language Expert Validation**

Nu	Aspect	Percentage (%)	Criteria
1	Linguistic Components	80%	<b>Suitable</b>
<b>Total overall score</b>		<b>80%</b>	

The product feasibility assessment by language experts has one aspect with 10 indicator items, consisting of accuracy in spelling, accuracy in terminology, accuracy in sentence structure, consistency in terminology, clarity of meaning, clarity of language choice, accuracy in grammar, ease of language comprehension, consistency in the use of words, terms, and punctuation, and accuracy of sentences that do not cause double meanings/ambiguity. However, there were several minor revisions. Thus, based on the results of the linguistic assessment and revisions made, the product was declared suitable for use by doctoral students

c) Media Expert Validation

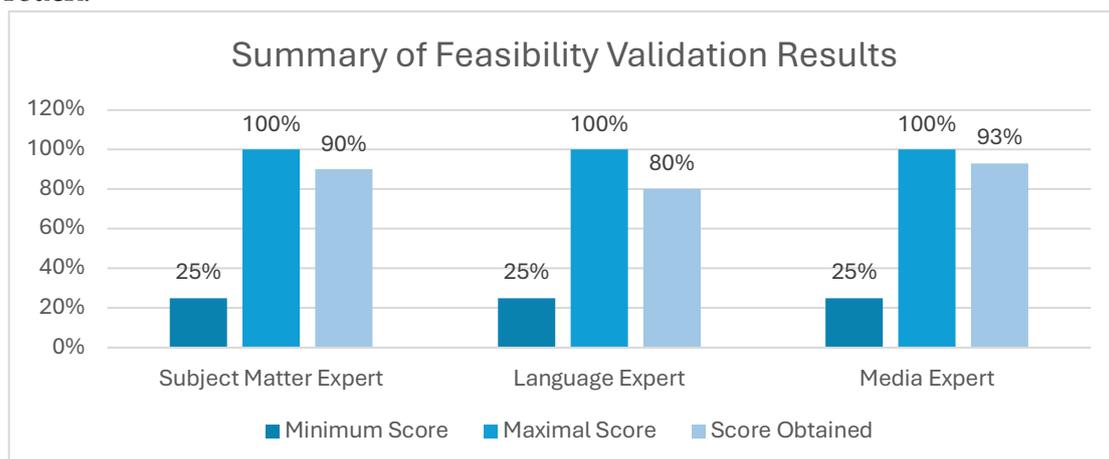
Based on the results of in-depth expert judgment validation conducted by subject matter experts with relevant expertise, the following data was obtained.

**Tabel 5. Results of Media Experts Validation**

Nu	Aspect	Percentage (%)	Criteria
1	Teaching Material Presentation Components	93%	<b>Very suitable</b>
<b>Total overall score</b>		<b>93%</b>	

The assessment of product feasibility by media experts has three aspects with 14 indicator items, consisting of the suitability of teaching materials with CPMK, the accuracy of material presentation, the suitability of materials with the characteristics of doctoral students, the completeness of identity, the clarity of learning objectives, the attractiveness of the material, the completeness of the components, the completeness of the student worksheet components, the clarity of the instructions for use, the appropriateness of the font used, the readability of the text, the clarity of the language, the appropriateness of the layout, and the attractiveness of the cover. However, there were several minor revisions. Thus, based on the results of the media expert assessment and the revisions made, the product was deemed very suitable for use by doctoral students.

Based on the three feasibility validation results by the experts, the following is a summary of the feasibility validation results for teaching materials using a case study approach.



**Figure 6. Summary of Feasibility Validation Results**

Based on the image above, data was obtained from the validation of the feasibility of teaching materials using a case study approach to improve critical thinking skills through three aspects of assessment by experts, namely subject matter experts, language experts, and media experts. The assessment results from subject matter experts obtained a score of 90% with a category of highly feasible, the assessment from language experts obtained a score of 80% with a category of feasible, and the assessment from media experts obtained a score of 93% with a category of highly feasible. Thus, the case study approach teaching materials developed are highly feasible for use by students in the Doctoral Program in Basic Education.

### *Discussion*

Based on the results of the feasibility test of case study-based teaching materials, it has been found that this product is very feasible to use based on the results of material feasibility. This is due to the complex structure of the case study-based teaching materials through available features such as clear objectives for the preparation of teaching materials, well-structured presentation of the material provided, concepts that are appropriate for doctoral students, and learning activities through the case study approach that are well-facilitated and appropriate for doctoral students.

The above points are illustrated through the developed product, such as learning activities through a case study approach carried out by students using the mini research concept, which requires students to conduct direct research on basic education in various regions according to their domicile and as an in-depth study comparing Western theory with the reality of education in Indonesia. This mini research is carried out systematically in accordance with the research principles used. Then, the results of these activities will produce various data and perspectives that can be examined and compared with the theories that have been studied. This has the potential to improve students' critical thinking skills.

The case study approach enhances critical thinking because students are presented with real-life situations that do not have one correct answer. This means that all answers depend on the conditions being addressed, resulting in conclusions in the form of expected solutions. When analysing cases, students must identify the main problems, connect theory with context, evaluate alternative solutions, and make evidence-based decisions. This process occurs because case studies provide authentic situations that are open-ended, requiring students to clarify information, filter assumptions, and make argumentative assessments of the available courses of action. Thus, this process triggers analytical, reflective, and evaluative thinking skills, which are the main components of critical thinking.

In mini research that has been implemented through the use of case study-based teaching materials, students are required to use critical thinking structures. In the analytical stage, they identify needs or problems, formulate problems, examine theories, and analyse data. In the evaluative stage, students evaluate data, compare findings with theories, and assess the validity and limitations of the research. In the intervention stage, students formulate recommendations, solutions, or practical implications based on their findings. Thus, mini research is not only an academic activity, but also a systematic exercise and means of shaping critical thinking patterns.

Critical thinking is rational and reflective thinking that focuses on what decisions to believe or do. In deciding what to believe or do, a person is aided by the use of a set of



critical abilities and dispositions (Isaacs et al., 2024). Critical thinking skills are a process that occurs over time. In this process, university lecturers must be aware of the need for transformation to adjust all teaching strategies in the student learning process, because the way of thinking can produce routines that are effective in their implementation. Thus, the product developed in this study has a very feasible function for use with doctoral students.

The case study approach is closely related to critical thinking skills, especially among doctoral students. The integrated case study approach in teaching involves the use of real-world scenarios to connect theoretical concepts with practical applications (Davis & Wilcock, 2005). This approach focuses on developing critical thinking, problem-solving, and communication skills through practical learning experiences. Lecturers select appropriate case studies, set clear learning objectives, and design engaging activities to stimulate interactivity in learning (Dewi et al., 2024). Therefore, this integration encourages student engagement, collaboration, and skill development, creating a dynamic learning environment that optimizes the overall learning experience.

Teaching materials serve as a mediating tool that operationalizes teaching strategies to develop skills (Dori & Lavi, 2023). Teaching materials are necessary in learning because they are an important resource for achieving learning objectives. In addition, teaching materials are one of the tools that can develop students' skills in interacting directly with the environment and other learning resources so that they gain learning experiences that are closer to real-life conditions (Perdanasari et al., 2021).

Based on the above statement, teaching materials are also used as a tool for interacting with other learning resources. Therefore, the results of the feasibility of the case study-based teaching materials developed have been found to be feasible from a linguistic aspect. This is because all linguistic components in the developed case study-based teaching materials have been fulfilled, namely through the accurate use of spelling, terminology, sentence structure, and consistency in the use of terminology, clear meanings, and appropriate grammar that has been adapted to the characteristics of doctoral program students. Teaching materials are used in lectures because they determine the success of students in achieving course achievement indicators, namely the ability to apply critical thinking processes and produce results (Himawan et al., 2024). Therefore, considering the characteristics of doctoral program students who are already at a high cognitive level, lectures can improve critical thinking skills (Fitriani et al., 2022).

The case study-based teaching materials developed in this study are highly suitable for use in terms of media. The developed product incorporates innovative student learning activities integrated through barcode scanning. This proves that the case study-based teaching materials developed in this study meet the needs of students based on empirical data. Given the busy schedules of doctoral students, who also have activities outside of lectures, it is very effective if these case study-based teaching materials provide a barcode scanning facility that aims to facilitate access and use, thereby also having an impact on time efficiency.

The case study-based teaching materials developed have undergone various evaluations and adjustments to meet the needs of students in the field. Things that can be applied to case study-based teaching materials include a systematic analysis of the material structure so that lecturers can filter relevant experiences and present them in a consistent format, as well as improve students' understanding of theoretical concepts through relevant real-world scenarios that are in line with the course objectives (Bolinger

et al., 2011). Thus, the learning process will be carried out effectively, considering that teaching materials are the main source of student learning outcomes, especially by integrating a case study approach that is relevant to the cognitive characteristics of doctoral program students.

## CONCLUSION

**Fundamental Finding:** The case study-based teaching materials developed in this study were deemed highly feasible based on the results of expert judgment validation and met the empirical requirements for case study content in teaching materials for doctoral programs. **Implication :** This study concludes that the case study-based teaching materials developed are deemed feasible by expert judgment, thereby supporting learning and improving critical thinking skills through analyses, evaluation, intervention, and decision-making activities. In addition, this study contributes methodologically by systematically applying the ADDIE model in this development, while also addressing students' needs for case study-based teaching materials in lectures. **Limitation :** The main limitation of this study is that the effectiveness of the product has not been tested through the implementation and final evaluation stages in the ADDIE model, so the results obtained are still limited to product validation and feasibility. Therefore, further research needs to include effectiveness testing and comprehensive evaluation. **Future Research :** This case study-based teaching material is expected to be innovated into an e-module with complete interactive features. Further research into the testing phase is also needed in accordance with the ADDIE model stages in future research to test the effectiveness of using the developed case study-based teaching material for doctoral programs.

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