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Development of Accounting Teaching Materials Based on Project-Based Learning Integrated with Blended Learning to Enhance 4C Skills in the Society 5.0 Era

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ABSTRACT

This study aimed to develop accounting teaching materials based on Project-Based Learning (PjBL) integrated with Blended Learning to enhance students' 4C skills in the Society 5.0 era. This study employed a Research and Development (R&D) approach using the ADDIE model, which comprises five stages: analysis, design, development, implementation, and evaluation. The developed teaching materials were tested on 30 students in a limited-scale trial and 100 students in a large-scale trial. Data were collected through observations, interviews, questionnaires, expert validation sheets, achievement tests, and a 4C skills assessment rubric. Product validity was analyzed using Aiken's V coefficient, yielding an overall validity coefficient of 0.95, indicating a very high level of validity. The teaching materials met the established feasibility criteria based on assessments by four experts, including experts in accounting content, language, instructional media, and accounting education. Practicality analysis based on user responses yielded a percentage of 95.83%, categorized as highly practical. The effectiveness test demonstrated that the developed teaching materials were effective in improving students' 4C skills. The mean learning outcomes of the experimental group increased from 68.47 in the pretest to 86.73 in the posttest, whereas the control group increased from 67.93 to 76.27. The findings indicate that the developed accounting teaching materials meet the criteria of high validity and very high practicality and are effective in supporting accounting instruction and enhancing students' 4C skills in the context of Society 5.0.

Keywords: Accounting Teaching Materials, Project-Based Learning, Blended Learning, 4C Skills, Society 5.0.

I. Introduction

In an increasingly complex and digitally driven global era, *Society 5.0* has emerged as a concept of a future-oriented society that promotes the integration of technology into all aspects of human life, including education and teaching (Xinyi, 2025). Technological advancements have facilitated proactive, accessible, and comprehensive learning environments, highlighting the need for an integrated learning paradigm that incorporates Higher-Order Thinking Skills (HOTS), 4C skills, and technology (Miaz, 2020). To prepare for this era, educators need to develop and design instructional materials that equip students with essential 4C skills, namely critical thinking and problem-solving, communication, collaboration, and creativity and innovation (Rayinda, 2019). These demands have become increasingly relevant in the context of *Society 5.0*, a human-centered societal framework that integrates digital technologies and cyberspace with the physical

environment to address complex social challenges and enhance human well-being (Cabinet Office, Government of Japan, 2021). In the field of education, this transformation requires a fundamental shift from predominantly teacher-centered learning toward more active, collaborative, contextual, adaptive, and technology-enhanced learning environments (Ministry of Education, Culture, Sports, Science and Technology [MEXT], 2023). Such a shift requires students to develop not only subject-specific knowledge but also the ability to identify and analyze problems, process and evaluate information, collaborate effectively, generate innovative ideas, and communicate solutions clearly. Accordingly, the development of 4C skills, namely critical thinking, creativity, collaboration, and communication, has become increasingly important in preparing students to engage effectively with complex learning environments and the rapidly changing demands of the contemporary world of work (Partnership for 21st Century Learning [P21], 2019).

One approach to addressing the challenges of education and teaching in the *Society 5.0* era is to develop instructional materials based on *Project-Based Learning* (PjBL) integrated with the *Blended Learning* model. *Project-Based Learning* is a learning approach in which students acquire knowledge and skills through direct experience by engaging in projects or authentic tasks that culminate in the production of a tangible product (Pan et al., 2020). Meanwhile, *Blended Learning* refers to an instructional approach that combines face-to-face classroom instruction with online learning supported by digital technologies to enhance learning flexibility, student engagement, and overall learning outcomes (Adem et al., 2020). The 4C skills are highly relevant to accounting education because accounting education is not solely concerned with developing students' mastery of accounting knowledge and technical procedures but also with equipping them with essential intellectual and interpersonal skills. Students are expected to analyze and evaluate information, engage in critical thinking, solve problems, and apply accounting knowledge in practical and authentic contexts (Rossouw & Steenkamp, 2025; Sinnewe, 2023). In addition, communication and collaboration are important components of accounting education because students need to explain information clearly, work effectively in teams, and communicate the results of their analyses to relevant stakeholders (Pollock et al., 2023). Therefore, accounting education should be designed not only to enhance students' understanding of accounting concepts and procedures but also to provide meaningful learning experiences that foster critical thinking, creativity, collaboration, and communication skills while enabling students to apply accounting knowledge to real-world situations.

In accounting education, the implementation of Project-Based Learning (PjBL) can be facilitated through projects that closely reflect authentic accounting practices, such as preparing the accounting cycle, developing financial statements for businesses or small and medium-sized enterprises (SMEs), analyzing transactions, preparing basic budgets, and evaluating financial performance. A project-based approach enables students to integrate conceptual knowledge with practical and authentic learning experiences through activities such as project planning, data collection, information analysis, development of accounting outputs, and presentation of project results (Suryanti et al., 2023; Wu et al., 2025). Through these activities, students not only gain experience in applying accounting concepts and procedures but also have opportunities to develop critical thinking, collaboration, communication, and problem-solving skills. Pasion et al. (2024) demonstrated that a project-based learning approach can support the development of critical thinking, teamwork, and communication skills among students. Thus, PjBL provides a learning environment in which students can apply accounting knowledge to authentic tasks while simultaneously developing the competencies required for effective learning and professional practice.

In addition to Project-Based Learning (PjBL), advances in educational technology have accelerated the adoption of Blended Learning, an instructional approach that integrates face-to-face instruction with technology-enhanced and online learning environments. In higher education, blended learning provides opportunities to design more flexible, interactive, and authentic learning experiences by combining in-person instruction with digitally mediated learning activities (Imran et al., 2023; Istenič, 2024). Through this approach, students can access learning resources, participate in discussions, complete assignments, engage in collaborative activities, develop projects, and receive timely feedback across complementary learning environments (De Bruijn-Smolders & Prinsen, 2024). Consequently, blended learning can extend learning opportunities beyond the conventional constraints of classroom time and space while providing students with greater flexibility to manage and regulate their learning processes (Chen & Jumaat, 2023; Imran et al., 2023). This flexibility makes blended learning particularly relevant for supporting project-based learning

because digital environments can facilitate communication, collaboration, resource sharing, project development, and feedback throughout the learning process.

Integrating the Blended Learning model into the development of accounting instructional materials based on Project-Based Learning (PjBL) enables students to engage in digital learning in accordance with the demands of the *Society 5.0* era and the objectives of the Merdeka Curriculum. This combination provides opportunities for students to engage in authentic projects, solve real-world problems through digital forums, plan projects, and submit assignments using a Learning Management System (LMS) forum or breakout rooms. Students can also present their projects in digital or video formats (Kottara, 2025). Learning within the Merdeka Curriculum requires continuous innovation to encourage students to generate creative ideas by utilizing digital technologies (Fadilah, 2024). Face-to-face instruction supported by technology can further foster an innovative learning environment that facilitates the achievement of optimal learning outcomes (Wichadee, 2017). The accounting instructional materials currently available and used by teachers in vocational high schools (SMKs) remain largely standardized and conventional. Therefore, these materials need to be further developed and enriched through the integration of Project-Based Learning (PjBL) and Blended Learning to ensure that learning remains relevant to contemporary developments and aligned with the objectives of the Merdeka Curriculum. The integration of Blended Learning into PjBL-based instructional materials is particularly important because teacher-centered learning and limited emphasis on 4C skills have constrained the optimal development of students' potential. Furthermore, the rapid advancement of technology and the demands of the *Society 5.0* era require educational systems to become more adaptive and responsive to students' learning needs (Agnevia, 2025). Learning activities based on Project-Based Learning and supported by technological integration have been shown to significantly enhance students' 4C skills in completing project-based tasks (Zhao, 2022).

Accounting instructional materials developed based on Project-Based Learning (PjBL) can enhance students' 4C skills and contribute to improved learning outcomes (Ayu, 2024). PjBL-based instructional materials can also strengthen students' critical thinking abilities and increase their engagement in the learning process (Hidayati, 2024). Furthermore, PjBL-based instructional materials that have been developed and implemented have demonstrated effectiveness in improving students' critical thinking skills (Fadilah, 2024). Blended Learning has been found to be more effective than conventional face-to-face classroom instruction or fully online learning when implemented independently (Dinda, 2022). The Blended Learning model offers substantial benefits because it promotes innovative and active learning, supports more personalized and student-centered learning experiences, and increases student engagement and interest, ultimately contributing to improved academic achievement (Yong, 2025). This study was conducted by developing a set of Project-Based Learning (PjBL) learning indicators, comprising project identification and selection, project design, project planning, project scheduling, project monitoring, project completion, and evaluation of project outcomes (Duke, 2021). These PjBL learning indicators were subsequently integrated with the Blended Learning model and incorporated into a prototype of accounting instructional materials using a Research and Development (R&D) approach based on the ADDIE development model. The development process consisted of several stages, including needs analysis, product design and planning, product development, product try-out, and evaluation. These stages were undertaken to ensure that the resulting instructional materials were feasible and effective in enhancing students' 4C skills in the *Society 5.0* era. The integration of technology into the learning process is associated with improved students' understanding of learning materials and greater interest and engagement in learning activities (Fadilah, 2025).

This study focuses on the development of accounting instructional materials based on Project-Based Learning (PjBL) by integrating the Blended Learning model to examine their characteristics, practicality, expert-based feasibility, and effectiveness in improving students' 4C skills. The main strength and novelty of this study lie in the integration of the Blended Learning model as an integral component of PjBL-based accounting instructional materials. This integration is expected to enhance the effectiveness of the learning process by utilizing digital media as a catalyst to support students throughout the problem-solving, project planning, implementation, and presentation processes. The development of the instructional materials is expected to contribute to the enhancement of students' 4C skills. Previous studies have primarily focused on only one dimension of 4C skills, particularly critical thinking. In contrast, the present research and development study assesses all four dimensions of 4C skills, namely critical thinking, creativity, communication, and collaboration, in the product effectiveness trial. This comprehensive assessment

constitutes a key distinguishing feature and contribution of the present study compared with previous research.

II. Research Method

This study employed a mixed-methods approach using a Research and Development (R&D) methodology based on the ADDIE model. The study aimed to develop accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model. A mixed-methods approach was adopted because it enables the integration of qualitative and quantitative approaches throughout the instructional material development process. The development procedure consisted of five stages: (1) Analyze, (2) Design, (3) Develop, (4) Implement, and (5) Evaluate. The ADDIE model was selected because it provides a systematic procedure for analyzing needs, designing the product, developing the instructional materials, implementing the product, and evaluating its quality and effectiveness. The population of this study comprised all students enrolled in senior and vocational high schools in Bima City. The population was selected because these students had received accounting instruction in accordance with the applicable curriculum and represented the characteristics of the intended users of the instructional materials to be developed. The research sample consisted of Grade 11 students at SMKN 1 Bima City, with 30 students involved in the limited-scale product trial and 100 students participating in the large-scale product trial.

A one-to-one prototype evaluation was conducted with three accounting teachers from different schools: one teacher from SMKN 1 Bima City, one teacher from SMAN 1 Bima City, and one teacher from MAN 1 Bima City. The one-to-one evaluation was conducted to identify the readability of the instructional materials, clarity of language, appropriateness of the user instructions, and ease of understanding from the users' perspective. Feedback obtained from the three teachers was used as a basis for refining the instructional material prototype before proceeding to the field trial stage.

The research procedure consisted of five stages: (1) Analyze, (2) Design, (3) Develop, (4) Implement, and (5) Evaluate.

- a. Stage 1: Analyze. The Analyze stage was conducted to identify the requirements for developing the instructional materials. This stage included an analysis of students' learning needs, teachers' and lecturers' instructional needs, students' characteristics, curriculum requirements, accounting content, available learning resources, current learning conditions, technology requirements, and students' 4C skills.
- b. Stage 2: Design. The Design stage involved developing the instructional framework and content, including the structure of the instructional materials, learning objectives, learning outcomes, accounting content, PjBL syntax, Blended Learning activities, 4C skill activities, project-based tasks, student worksheets, assessment instruments, assessment rubrics, and digital learning media.
- c. Stage 3: Develop. At the Develop stage, the instructional materials were subjected to expert validation and feasibility assessment. The validation process involved four groups of evaluators: accounting content experts, media experts, language experts, and accounting teachers. The feedback and recommendations provided by the validators were used to revise and refine the instructional materials prior to implementation.
- d. Stage 4: Implement. At the Implement stage, the revised instructional materials were tested with students following the improvements suggested by the validators. The product trial was conducted in two phases. First, a limited-scale trial was conducted with a small group of students to assess readability, ease of use, attractiveness, clarity of instructions, ease of completing the projects, and potential challenges associated with the use of digital media. Second, a large scale field trial was conducted with a larger group of students to determine the practicality and effectiveness of the instructional materials.

- e. Stage 5: Evaluate. The Evaluate stage was conducted to determine the overall feasibility, practicality, and effectiveness of the instructional materials, as well as the extent to which students' 4C skills improved. This stage also involved identifying product limitations and determining the need for final revisions to ensure that the developed instructional materials met the intended learning objectives and quality standards.

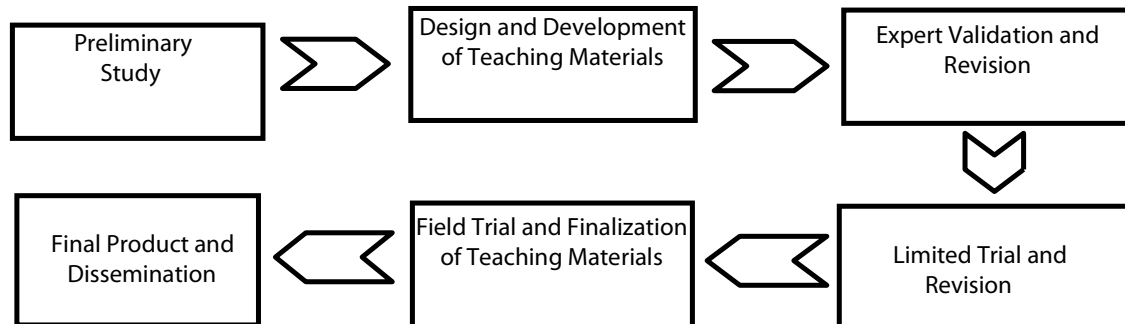


Figure 1. Development Design of Accounting Teaching Materials Based on Project-Based Learning Integrated with Blended Learning to Improve 4C Skills in the Society 5.0 Era

This study employed several data collection instruments tailored to each stage of the Research and Development (R&D) process. A student needs-analysis questionnaire and a teacher interview guide were used to identify the need for developing accounting instructional materials based on Project-Based Learning (PjBL) integrated with Blended Learning. An expert validation sheet was used to assess the validity and content feasibility of the developed product as a whole. The validity of the instructional materials was evaluated based on assessments from four validators comprising an accounting content expert, an instructional media expert, a language expert, and an accounting teacher. A one-to-one evaluation questionnaire was employed to identify initial shortcomings, content errors, and technical difficulties in the instructional materials through direct feedback from accounting teachers. Teacher and student practicality questionnaires were administered to examine users' responses regarding the ease of use, comprehensibility, and readability of the developed instructional materials. A 4C skills rubric was used to measure students' 4C skills. In addition, a cognitive achievement test was administered to assess students' cognitive abilities following the implementation of the accounting instructional materials based on Project-Based Learning integrated with Blended Learning.

The effectiveness test was conducted to determine the extent to which the developed instructional materials could improve students' 4C skills, namely Critical Thinking, Creativity, Collaboration, and Communication. A quasi-experimental design using a Pretest Posttest Control Group Design was employed. The experimental group received accounting instruction using instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model, whereas the control group received instruction using conventional instructional materials. The two groups were compared in terms of their 4C skills and learning outcomes to determine the effectiveness of the developed instructional materials.

Table 1. Effectiveness Test Design Using the Pretest–Posttest Control Group Design

Class	Pretest	Treatment	Posttest
Experimental	O ₁	X	O ₂
Control	O ₃	-	O ₄

Notes:

- O₁ = pretest of the 4C skills of the experimental group
- O₂ = posttest of the 4C skills of the experimental group
- O₃ = pretest of the 4C skills of the control group
- O₄ = posttest of the 4C skills of the control group
- X = learning using accounting teaching materials based on PjBL integrated with Blended Learning
- = learning using conventional teaching materials

Data were analyzed using both quantitative and qualitative approaches (mixed methods), depending on the type of data obtained at each stage of the development process. Qualitative data, including expert suggestions and comments, needs-analysis findings, and student and teacher responses, were analyzed descriptively to assess the feasibility and practicality of the developed product. Quantitative data in the form of expert validation scores were analyzed using Aiken's V coefficient to determine the level of product validity. The Aiken's V coefficient ranges from 0 to 1, with values approaching 1 indicating a higher level of content validity (Aiken, 1985). In this study, an item was considered to demonstrate adequate content validity when its Aiken's V value was ≥ 0.80 . Items that did not meet this criterion were revised based on expert recommendations before proceeding to the field trial stage.

The effectiveness of the instructional materials was evaluated using a quasi-experimental Pretest-Posttest Control Group Design. Students' pretest and posttest scores were analyzed using independent-samples t-tests and analysis of variance (ANOVA) to examine significant differences between the experimental and control groups. The analysis was conducted to determine the extent to which accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model were effective in enhancing students' 4C skills in the Society 5.0 era. The instructional materials were considered effective if students demonstrated an improvement in their 4C skills following the implementation of the materials, as indicated by an increase in pretest-posttest scores reaching at least a moderate category, accompanied by a statistically significant difference in the magnitude of improvement between the experimental and control groups.

III. Results and Discussion

Expert validation was conducted as part of the development of accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model. The validation aimed to determine whether the developed instructional materials were feasible for implementation in the learning process. The assessment involved four groups of validators: an accounting content expert, an instructional media expert, a language expert, and an accounting teacher. The results of the expert validation are presented in Table 2.

Table 2. Results of the Feasibility Assessment of PjBL-Based Accounting Instructional Materials

Validators	Assessment Aspect	No of Item	Mean Validators Score	Aiken's V	Category
Content Expert	Feasibility and Accuracy of Accounting Content	5	3,80	0,93	Highly Valid
	Depth and Breadth of Content	6	3,83	0,94	Highly Valid
	Content Organization and Structure	4	4,00	1,00	Highly Valid
	Exercises and Evaluation	5	3,80	0,93	Highly Valid
Media Expert	Design and Visual Presentation	6	3,83	0,94	Highly Valid
	Alignment with Learning Requirements	7	3,86	0,95	Highly Valid
	Technology and Society 5.0	4	4,00	1,00	Highly Valid
	Media Quality	3	3,85	0,95	Highly Valid
Language Expert	Language Appropriateness	6	3,83	0,94	Highly Valid
	Language Clarity Characteristics	7	3,86	0,95	Highly Valid
	Language Accuracy	4	3,75	0,92	Highly Valid
	Language Use in Learning	4	4,00	1,00	Highly Valid
Accounting Teacher	Alignment with Accounting Instruction	6	3,83	0,94	Highly Valid
	Alignment with Students' Characteristics	5	3,80	0,93	Highly Valid

	Instructional Material Presentation	3	4,00	1,00	Highly Valid
	Implementation of Project-Based Learning	7	3,86	0,95	Highly Valid
	Integration of Blended Learning	3	3,67	0,89	Highly Valid
	4C Skills	4	4,00	1,00	Highly Valid
	Relevance to Society 5.0	4	3,75	0,92	Highly Valid

The interpretation criteria used to determine the feasibility of the instructional materials are presented as follows:

Table 3. Interpretation Criteria for Expert Validation

Percentage	Category
81-100%	Highly Valid
61-80%	Valid
41-60%	Moderately Valid
21-40%	Less Valid
0-20%	Not Valid

3.1. Results of the Accounting Content Expert Validation

The accounting content expert validation was conducted to assess the substantive feasibility of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model, which were developed to enhance students' 4C skills in the Society 5.0 era. The validation was performed by one accounting content expert using an instrument consisting of 20 statement items grouped into four assessment aspects: (1) the feasibility and accuracy of accounting content, (2) the depth and breadth of the learning materials, (3) the organization and structure of the content, and (4) exercises and evaluation. The assessment employed a four-point scale: 4 = Highly Appropriate (HA), 3 = Appropriate (A), 2 = Less Appropriate (LA), and 1 = Highly Inappropriate (HI).

The validation results indicated that the feasibility and accuracy of the accounting content aspect obtained an Aiken's V coefficient of 0.93, categorized as highly valid. The depth and breadth of the learning materials aspect obtained an Aiken's V value of 0.94, also categorized as highly valid. The organization and structure of the content aspect achieved the highest Aiken's V value of 1.00, indicating a highly valid category. Meanwhile, the exercises and evaluation aspect obtained an Aiken's V value of 0.93 and was categorized as highly valid. Overall, the instructional materials obtained a mean score of 3.85 out of a maximum score of 4.00, with an overall Aiken's V coefficient of 0.95. These findings indicate that the developed instructional materials meet a highly valid standard in terms of the substantive quality of the accounting content.

These findings indicate that the developed learning materials are aligned with the intended learning outcomes, demonstrate conceptual and procedural accuracy in accounting, and provide appropriate depth and breadth of content. The organization and presentation of the materials have also been structured in a coherent and logical sequence that supports the stages of Project-Based Learning. In addition, the exercises and assessment activities are designed to measure competency attainment and foster the development of Critical Thinking, Creativity, Collaboration, and Communication skills. Based on the assessment provided by the accounting content expert, the accounting instructional materials based on Project-Based Learning integrated with the Blended Learning model were categorized as highly valid and considered suitable for subsequent field testing, subject to revisions based on the validator's suggestions and recommendations.

3.2. Results of the Media Expert Validation

Media expert validation was conducted to assess the feasibility of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model in terms of design, visual presentation, alignment with learning requirements, technology utilization, and media quality. The validation was conducted by one media expert using an instrument consisting of 20 statement items

rated on a four-point scale: 4 = Excellent (E), 3 = Good (G), 2 = Fair (F), and 1 = Poor (P). The validation data were analyzed using Aiken's V coefficient. The analysis results showed that the design and visual presentation aspect obtained an Aiken's V coefficient of 0.94, categorized as highly valid. This finding indicates that the cover design, layout, typography, color use, illustrations, and page organization met the established criteria for instructional media feasibility. The visual presentation of the instructional materials was considered attractive and capable of supporting the systematic presentation of accounting content. The alignment with learning requirements aspect obtained an Aiken's V coefficient of 0.95 and was categorized as highly valid. This result indicates that the instructional materials are aligned with the intended learning objectives and students' characteristics and support the implementation of both Project-Based Learning and Blended Learning. The materials also provide opportunities for students to develop Critical Thinking, Creativity, Collaboration, and Communication skills.

The technology and Society 5.0 aspect obtained an Aiken's V coefficient of 1.00, representing the highest value and falling within the highly valid category. This finding indicates that the use of digital technologies in the instructional materials is aligned with the demands of contemporary learning. The integration of digital learning resources was considered capable of supporting flexible learning while providing learning experiences that are relevant to the characteristics and demands of education in the Society 5.0 era. The media quality aspect obtained an Aiken's V coefficient of 0.89 and was categorized as highly valid. This result indicates that the overall visual quality, clarity of presentation, readability, and technical aspects of the media met the established feasibility criteria. Nevertheless, further refinement of the technical aspects remains necessary to ensure that the media can be optimally utilized across different devices and learning environments. Overall, the media expert validation of the 20 assessment items yielded a mean score of 3.85 out of a maximum score of 4.00, with an overall Aiken's V coefficient of 0.95. This value falls within the highly valid category. Therefore, the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model were considered highly valid in terms of media quality and suitable for subsequent field testing following revisions based on the validator's recommendations. The media expert validation results demonstrate that the instructional materials not only possess an appropriate visual presentation but also incorporate technological and digital learning elements that support the development of students' 4C skills. These findings further reinforce the characteristics of the developed materials as a learning medium that is relevant to the demands of accounting education in the Society 5.0 era.

3.3. Results of the Language Expert Validation

Language expert validation was conducted to assess the appropriateness of language use in the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model, which were developed to enhance students' 4C skills in the Society 5.0 era. The validation was conducted by one language expert using an instrument consisting of 20 statement items covering four aspects: language appropriateness, language clarity, language accuracy, and language use in learning. The assessment employed a four-point scale: 4 = Excellent (E), 3 = Good (G), 2 = Fair (F), and 1 = Poor (P). The analysis using Aiken's V coefficient showed that the language appropriateness aspect obtained an Aiken's V value of 0.94 and was categorized as highly valid. This finding indicates that the language used in the instructional materials is appropriate for the students' characteristics, learning objectives, accounting learning context, and the characteristics of both Project-Based Learning and Blended Learning. The language clarity aspect obtained an Aiken's V coefficient of 0.95 and was categorized as highly valid. This result indicates that the sentences, activity instructions, paragraphs, and terminology used throughout the instructional materials are generally clear, comprehensible, and communicative. The clarity of the language also facilitates students' participation in each stage of the learning activities and project implementation.

The language accuracy aspect obtained an Aiken's V coefficient of 0.92 and was categorized as highly valid. This finding indicates that the use of grammar, accounting terminology, spelling, punctuation, and sentence structure met the established feasibility criteria. Nevertheless, consistency in the use of several terms and abbreviations should receive further attention during the revision process. The language use in learning aspect obtained an Aiken's V coefficient of 1.00 and was categorized as highly valid. This finding indicates that the language used in the instructional materials effectively supports the learning process, motivates students, encourages their engagement in project-based activities, and facilitates communication and collaboration.

Overall, the language expert validation of the 20 assessment items yielded a mean score of 3.85 out of a maximum score of 4.00, with an Aiken's V coefficient of 0.95. This value falls within the highly valid category. Accordingly, the linguistic aspects of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model were considered highly valid and suitable for use in the subsequent trial stage following revisions based on the validator's recommendations. The validation results demonstrate that the instructional materials employ language that is appropriate, clear, accurate, and communicative, while effectively supporting learning activities. Effective language use is an important factor in helping students understand accounting concepts, follow project instructions, work collaboratively, and communicate their learning outcomes. Therefore, the linguistic quality of the instructional materials strengthens their feasibility for use in accounting instruction oriented toward the development of students' 4C skills in the Society 5.0 era.

3.4. Results of the Accounting Teacher Validation

Accounting teacher validation was conducted to assess the feasibility of the instructional materials from the perspective of an accounting education practitioner. The validation was carried out by one accounting teacher using an instrument consisting of 32 statement items covering seven assessment aspects: (1) alignment with accounting instruction, (2) alignment with students' characteristics, (3) instructional material presentation, (4) implementation of Project-Based Learning (PjBL), (5) 4C skills, (6) relevance to Society 5.0, and (7) integration of Blended Learning. The assessment employed a four-point scale: 4 = Highly Appropriate (HA), 3 = Appropriate (A), 2 = Less Appropriate (LA), and 1 = Highly Inappropriate (HI). The assessment data were analyzed using Aiken's V coefficient. The analysis results showed that the alignment with accounting instruction aspect obtained an Aiken's V coefficient of 0.94 and was categorized as highly valid. This finding indicates that the developed materials are aligned with the intended learning outcomes, accounting competencies, accounting concepts and principles, and the requirements of accounting instruction. The alignment with students' characteristics aspect obtained an Aiken's V coefficient of 0.93 and was categorized as highly valid. The instructional materials were considered to have taken into account students' levels of ability and prior learning experiences while providing activities that encourage active engagement and independent learning.

The instructional material presentation aspect obtained an Aiken's V coefficient of 1.00 and was categorized as highly valid. This result indicates that the instructional materials are presented systematically and coherently, are engaging, and are easy to use during the learning process. The implementation of Project-Based Learning (PjBL) aspect obtained an Aiken's V coefficient of 0.95 and was categorized as highly valid. The instructional materials comprehensively facilitate the stages of PjBL, beginning with problem presentation, project planning, scheduling, project implementation, monitoring, presentation, and concluding with evaluation and reflection. This structure provides students with opportunities to engage in active and contextualized learning experiences. The 4C skills aspect obtained an Aiken's V coefficient of 1.00 and was categorized as highly valid. The instructional materials provide learning activities that support the development of Critical Thinking, Creativity, Collaboration, and Communication. These four skills are fostered through problem analysis, project completion, group work, discussion, presentation, and reflection activities.

The relevance to Society 5.0 aspect obtained an Aiken's V coefficient of 0.92 and was categorized as highly valid. The instructional materials were considered to effectively utilize digital technologies and connect accounting learning with real-world problems. This integration supports students' preparedness for learning environments and workplaces that are increasingly driven by technological advancements. Meanwhile, the integration of Blended Learning aspect obtained an Aiken's V coefficient of 0.89 and was categorized as highly valid. The instructional materials support a combination of face-to-face and online learning activities and provide access to digital learning resources. Nevertheless, the guidelines explaining the relationship between online and face-to-face learning activities could be further clarified during the revision stage. Overall, the accounting teacher's validation of the 32 assessment items yielded a mean score of 3.84 out of a maximum score of 4.00, with an Aiken's V coefficient of 0.95. This value falls within the highly valid category. Therefore, the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model were considered highly valid based on the accounting teacher's assessment and could proceed to the practicality and effectiveness testing stages following revisions based on the validator's

feedback. Based on the validation conducted by the accounting teacher, the instructional materials obtained an Aiken's V coefficient of 0.95, indicating a highly valid level. The instructional materials met the criteria related to alignment with accounting instruction, students' characteristics, material presentation, implementation of PjBL, development of 4C skills, relevance to Society 5.0, and integration of Blended Learning.

3.5. One-to-One Evaluation

A one-to-one evaluation was conducted with three accounting teachers to obtain an initial assessment of the readability and comprehensibility of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model. The one-to-one evaluation instrument consisted of 22 statement items covering five aspects: ease of reading (6 items), language clarity (4 items), material presentation (5 items), readability of the Project-Based Learning components (4 items), and readability of the Blended Learning components (3 items). The assessments provided by the three teachers were used to determine the extent to which the instructional materials could be read, understood, and effectively used in accounting instruction. In addition to generating quantitative data, the one-to-one evaluation was also conducted to obtain teachers' feedback and recommendations regarding aspects of the instructional materials that required further improvement. The results of this evaluation subsequently served as the basis for revising the instructional materials before proceeding to the next stage of product testing.

Table 4. One-to-One Evaluation of the Accounting Instructional Materials

No	Assessment Aspect	No. of Items	Teacher			Total Score Obtained	Percentage	Criterion
			1	2	3			
1	Ease of Reading	6	23	22	23	68	94,44%	Very Good
2	Language Clarity	4	15	15	15	45	93,75%	Very Good
3	Material Presentation	5	19	19	19	57	95,00%	Very Good
4	Readability of PjBL	4	15	15	15	45	93,75%	Very Good
5	Readability of Blended Learning	3	11	11	12	34	94,44%	Very Good
Total		22	83	82	84	249	94,32%	Very Good

The one-to-one evaluation of the accounting instructional materials involved three accounting teachers who served as users and evaluators of the developed materials. This evaluation was conducted to obtain information regarding the readability, clarity, and presentation quality of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model. The assessment employed an instrument consisting of 22 statement items covering five aspects: ease of reading, language clarity, material presentation, readability of Project-Based Learning, and readability of Blended Learning. The instrument used a four-point rating scale: 4 = Very Good (VG), 3 = Good (G), 2 = Fair (F), and 1 = Poor (P). Based on the assessments provided by the three teachers, the instructional materials obtained a total score of 249 out of a maximum possible score of 264, resulting in an overall percentage of 94.32%. According to the predetermined interpretation criteria, this percentage falls within the Very Good category. The ease-of-reading aspect, consisting of six statement items, obtained a total score of 68 out of a maximum possible score of 72, corresponding to a percentage of 94.44%. This result falls within the Very Good category. The assessment indicates that the instructional materials have a readable visual design and layout. The selection of font type and size, placement of headings and subheadings, paragraph organization, and use of illustrations were considered to support the overall readability of the materials. The teachers indicated that the presentation of the instructional materials facilitates students' access to key information and helps them follow the learning sequence effectively.

The language clarity aspect, consisting of four statement items, obtained a total score of 45 out of a maximum possible score of 48, corresponding to a percentage of 93.75% and falling within the Very Good category. This finding indicates that the language used in the instructional materials is communicative and appropriate for the students' level of comprehension. The sentences are relatively concise and straightforward, enabling information to be conveyed clearly. Activity instructions, explanations of

accounting concepts, project guidelines, and learning tasks were considered easy for students to understand. The material presentation aspect, consisting of five statement items, obtained a total score of 57 out of a maximum possible score of 60, corresponding to a percentage of 95.00% and falling within the Very Good category. This aspect yielded the highest percentage among the assessed dimensions. The teachers indicated that the accounting materials were presented systematically and coherently and were aligned with the intended learning objectives. The content was organized progressively, beginning with fundamental concepts and advancing toward more complex learning activities, and was supplemented with examples, activities, projects, and assessments. This presentation structure facilitates teachers' efforts to guide the learning process and supports students in developing their understanding of the materials gradually.

The readability of Project-Based Learning (PjBL) aspect, consisting of four statement items, obtained a total score of 45 out of a maximum possible score of 48, corresponding to a percentage of 93.75% and falling within the Very Good category. This finding indicates that the project-based learning stages presented in the instructional materials can be readily understood. Instructions related to project planning, activity implementation, product completion, presentation, and evaluation were presented clearly. The integration of PjBL provides students with opportunities to learn through authentic experiences and address problems related to accounting content. The implementation of PjBL in the instructional materials also supports the development of 4C skills, namely critical thinking, creativity, communication, and collaboration. Students are encouraged to analyze problems, generate solutions or products, collaborate in groups, and communicate their project outcomes. Thus, the instructional materials are not solely oriented toward the mastery of accounting concepts but also toward the development of skills required in the Society 5.0 era. The readability of the Blended Learning component, consisting of three statement items, obtained a total score of 34 out of a maximum possible score of 36, corresponding to a percentage of 94.44% and falling within the Very Good category. This finding indicates that the instructional guidelines for combining face-to-face and online learning were well understood by the teachers. The organization of learning activities, access to digital instructional materials, task completion, and online learning activities were considered sufficiently clear and easy to implement. In terms of the individual teacher assessments, Teacher 1 obtained a score of 83, Teacher 2 obtained a score of 82, and Teacher 3 obtained a score of 84. These scores indicate that the three teachers provided relatively consistent assessments of the quality of the instructional materials. No substantial differences were observed among the teachers' assessments, suggesting an overall positive evaluation of the developed instructional materials.

Overall, the one-to-one evaluation conducted with three accounting teachers yielded an overall percentage of 94.32%, which falls within the Very Good category. The highest score was obtained for the material presentation aspect (95.00%), followed by ease of reading (94.44%), readability of the Blended Learning component (94.44%), and language clarity and readability of the Project-Based Learning component, each with a percentage of 93.75%. These findings indicate that the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model demonstrate a high level of quality from the perspective of accounting teachers. The instructional materials were considered easy to read, used clear language, presented the content systematically, and provided PjBL and Blended Learning stages that were readily understandable. Accordingly, the instructional materials can proceed to the subsequent product trial stage after incorporating the teachers' suggestions and feedback. Overall, the one-to-one evaluation involving three accounting teachers indicates that the developed instructional materials meet the Very Good criterion (94.32%) and are suitable for progression to the next stage of the development process.

3.6. Practicality Test

The practicality test of the instructional materials consisted of 24 statement items grouped into five assessment aspects: ease of use, feasibility of learning implementation, practicality of Project-Based Learning, practicality of Blended Learning, and efficiency and flexibility.

Table 5. Practicality Test of the Instructional Materials

No	Assessment Aspect	No. of Items	Maximum Score	Score Obtained	Percentage	Criterion
1	Ease of Use	6	24	23	95,83%	Highly Practical
2	Feasibility of Learning Implementation	5	20	19	95,00%	Highly Practical
3	Practicality of Project-Based Learning	3	12	12	100,00%	Highly Practical
4	Practicality of Blended Learning	6	24	23	95,83%	Highly Practical
5	Efficiency and Flexibility	4	16	15	93,75%	Highly Practical
Total		24	96	92	95,83%	Highly Practical

Based on the results of the practicality test of the accounting instructional materials based on Project-Based Learning (PjBL) integrated with the Blended Learning model, an overall score of 92 out of a maximum possible score of 96 was obtained, corresponding to a percentage of 95.83%. These findings indicate that the developed instructional materials meet the Highly Practical criterion for use in the learning process. In terms of ease of use, the instructional materials obtained a score of 23 out of 24, corresponding to a percentage of 95.83%, and were therefore categorized as Highly Practical. This finding indicates that the instructional materials are easy for users to use, understand, and operate during learning activities. The user guidelines, content presentation, learning activities, and assignments included in the instructional materials were considered to facilitate their use by both teachers and students.

Regarding the feasibility of learning implementation, the instructional materials obtained a score of 19 out of 20, corresponding to a percentage of 95.00%, which was categorized as Highly Practical. This result indicates that the learning activities designed within the instructional materials can be implemented effectively in accordance with the predetermined learning stages. The learning activities were also considered to assist teachers and students in engaging in the learning process systematically. The practicality of Project-Based Learning aspect obtained a score of 12 out of 12, corresponding to a percentage of 100.00%, which was the highest percentage among all assessed aspects and was categorized as Highly Practical. This finding indicates that the implementation of the Project-Based Learning model within the instructional materials is highly feasible and easy to implement. The project stages, including planning, implementation, completion, and presentation of project outcomes, could be followed effectively by the students. The practicality of the Blended Learning aspect obtained a score of 23 out of 24, corresponding to a percentage of 95.83%, and was categorized as Highly Practical. This finding indicates that the integration of face-to-face instruction and technology-mediated learning within the instructional materials can be implemented effectively. The instructional materials provide students with flexibility in accessing learning resources and engaging in learning activities both through direct classroom interaction and online learning environments. Furthermore, the efficiency and flexibility aspect obtained a score of 15 out of 16, corresponding to a percentage of 93.75%, and was categorized as Highly Practical. This finding indicates that the instructional materials can contribute to a more efficient learning process while providing flexibility in terms of learning time, location, and resources.

3.7. Effectiveness Test

Table 6. Pretest and Posttest Results of the Experimental and Control Classes

Class	N	Mean Pretest	Mean Posttest	Improvement	N-Gain	Category
Experimental	30	68,47	86,73	18,26	0,58	Moderate
Control	30	67,93	76,27	8,34	0,25	Low

Based on Table 6, it can be seen that the students' initial abilities in the experimental and control classes were relatively similar. The mean pretest score of the experimental class was 68.47, while that of the control class was 67.93. After the treatment was administered, the mean posttest score of the experimental class increased to 86.73, whereas the control class increased to 76.27. The experimental class showed an

average improvement of 18.26 points, while the control class experienced an improvement of only 8.34 points. The N-Gain calculation showed that the experimental class obtained a score of 0.58, categorized as moderate, while the control class obtained a score of 0.25, categorized as low. Therefore, the improvement in students' 4C skills in the experimental class was higher than that in the control class.

Table 7. 4C Skills Results of the Experimental and Control Classes

No	4C Skills Aspect	Experimental Pretest	Experimental Posttest	Control Pretest	Control Posttest
1	Critical Thinking	67,20	86,40	66,80	75,20
2	Creativity	68,10	87,10	67,50	76,10
3	Communication	69,00	87,00	68,70	77,00
4	Collaboration	69,60	86,40	68,70	76,80
Average		68,48	86,73	67,93	76,28

The measurement results of the four dimensions of 4C skills demonstrated an improvement in the experimental class following the implementation of the developed teaching materials. The critical thinking score increased from 67.20 to 86.40, creativity increased from 68.10 to 87.10, communication increased from 69.00 to 87.00, and collaboration increased from 69.60 to 86.40. In the control class, improvements were also observed; however, the magnitude of the increase was lower than that of the experimental class. Critical thinking increased from 66.80 to 75.20, creativity from 67.50 to 76.10, communication from 68.70 to 77.00, and collaboration from 68.70 to 76.80. These findings indicate that the Project-Based Learning (PjBL) teaching materials integrated with Blended Learning were associated with greater improvements in students' 4C skills, encompassing critical thinking, creativity, communication, and collaboration, compared with the learning approach implemented in the control class.

Table 8. Normality Test Results

Class	Data	Sig. Shapiro-Wilk	Interpretation
Experimental	Pretest	0,126	Normally Distributed
Experimental	Posttest	0,087	Normally Distributed
Control	Pretest	0,154	Normally Distributed
Control	Posttest	0,096	Normally Distributed

The results of the normality test showed that all datasets had significance values greater than 0.05. Therefore, the pretest and posttest data for both the experimental and control classes were normally distributed, indicating that the data met the assumption of normality and could subsequently be analyzed using parametric statistical tests.

Table 9. Homogeneity Test Results

Tested Data	Levene Statistic	Sig.	Interpretation
Experimental and Control Pretest	0,247	0,621	Homogeneous
Experimental and Control Posttest	0,386	0,537	Homogeneous

The homogeneity test results showed that the significance value for the pretest was 0.621, while that for the posttest was 0.537. Both values were greater than 0.05, indicating that the variances of the experimental and control class data were homogeneous.

Table 10. Results of the Independent Samples t-Test

Class	N	Mean Posttest	t-value	Sig. (2-tailed)	Decision
Experimental	30	86,73	8,76	0,000	H ₀ rejected
Control	30	76,27			

Based on the results of the Independent Samples t-Test, the significance value was 0.000, which is less than 0.05. Therefore, H₀ was rejected and H₁ was accepted, indicating a statistically significant difference

in students' 4C skills between the experimental and control classes. The experimental class had a mean posttest score of 86.73, which was higher than that of the control class (76.27).

Table 11. Summary of Effectiveness Test Results

No	Indicator	Experimental Class	Control Class	Conclusion
1	Mean Pretest	68,47	67,93	Relatively similar
2	Mean Posttest	86,73	76,27	Experimental class higher
3	Improvement	18,26	8,34	Experimental class higher
4	N-Gain	0,58	0,25	Experimental class higher
5	N-Gain Category	Moderate	Low	Experimental class more effective
6	T Test	-	-	Sig. 0,000 < 0,05
7	Conclusion	Effective	Less effective	Teaching materials are effective

The effectiveness test results indicate that the Project-Based Learning (PjBL)-based accounting teaching materials integrated with Blended Learning were effective in improving students' 4C skills in the context of the Society 5.0 era. This was demonstrated by the increase in the mean learning outcomes of the experimental class from 68.47 in the pretest to 86.73 in the posttest, whereas the control class increased from 67.93 to 76.27. The N-Gain score of the experimental class was 0.58, which fell into the moderate category, while the control class obtained an N-Gain score of 0.25, categorized as low. Furthermore, the results of the Independent Samples t-Test yielded a significance value of $0.000 < 0.05$, indicating a statistically significant difference between the experimental and control classes. Therefore, the Project-Based Learning (PjBL)-based accounting teaching materials integrated with Blended Learning can be considered effective in improving students' critical thinking, creativity, communication, and collaboration skills.

3.8. Discussion

The accounting teaching materials based on Project-Based Learning (PjBL) integrated with Blended Learning, designed to measure students' 4C skills, were initially piloted at SMK Negeri 1 Kota Bima in September 2026. The characteristics of the teaching materials were adapted to the content of accounting subjects at the vocational high school level and developed according to the syntax of the Project-Based Learning model integrated with Blended Learning. The teaching materials were developed following the ADDIE development model, which comprised: (1) preliminary study, (2) planning, (3) development of a hypothetical model, (4) review of the hypothetical model, (5) revision, (6) limited trial, (7) revision based on the trial results, (8) large-scale trial, (9) final model revision, and (10) dissemination.

First, at the needs analysis stage, it was found that vocational schools did not yet have teaching materials specifically designed for accounting instruction based on the Project-Based Learning model integrated with Blended Learning to measure students' 4C skills. The limited availability of Project-Based Learning-based teaching materials for developing students' 4C skills led teachers to rely primarily on conventional teaching materials in the learning process. This condition indicated the need to develop accounting teaching materials capable of enhancing students' 4C skills in accordance with the stages of the Project-Based Learning model. Second, the next step involved developing the detailed specifications of the teaching materials, including the teaching material specifications, prototype, instrument scale, and sampling procedures for collecting data during the product trials. Third, after the teaching material prototype had been developed, its feasibility was validated by experts in subject matter, language, media, and accounting instruction. The initial draft of the teaching materials was developed based on the indicators of the Project-Based Learning model integrated with Blended Learning. This draft served as the basis for further development to produce teaching materials that met the criteria of validity, practicality, and effectiveness.

Fourth, after the teaching materials had been developed, the next step was to analyze the hypothetical model (prototyping). This analysis was conducted to ensure that the indicators of the Project-Based Learning model integrated with Blended Learning had been adequately incorporated into the teaching material draft. Fifth, following the analysis of the teaching material prototype, a review of the hypothetical model (expert judgment) was conducted using a walkthrough technique involving four experts: a subject-

matter expert, media expert, language expert, and accounting teacher. The expert validation results indicated that the teaching materials met the criterion of "usable without revision," with a total score of 80 out of the maximum possible score. The main suggestions provided by the four evaluators included: (1) avoiding the use of technical terms that could lead to multiple interpretations, and (2) improving the format and layout of the teaching materials to make them more organized and readable. Sixth, following expert validation, the teaching materials were subjected to a one-to-one trial to assess their readability using a questionnaire. At this stage, the procedure was modified by adding a one-to-one trial involving three accounting teachers. This was conducted to enable the researchers to identify aspects related to the readability and ease of use of the teaching materials based on teachers' responses before proceeding to the limited- and large-scale field trials. The readability trial indicated a readability level of 95.38%. These results served as the basis for determining the practicality of the teaching materials. Seventh, the results of the one-to-one trial were subsequently used as the basis for preparing a revised draft for the limited- and large-scale field trials. The limited-scale field trial showed that 16 items were valid out of the 24 items initially developed, with a reliability coefficient of 0.891. This reliability coefficient indicated a high level of reliability. The results of the limited-scale trial were then used as the basis for preparing the draft for the large-scale field trial. The large-scale field trial likewise yielded 16 valid instrument items, with a reliability coefficient of 0.851.

IV. Conclusion

This study successfully developed accounting teaching materials based on Project-Based Learning (PjBL) integrated with Blended Learning to enhance students' 4C skills. The findings demonstrate that the developed teaching materials were effective in improving students' 4C skills, encompassing critical thinking, creativity, communication, and collaboration. The results of the practicality assessment also indicated a high level of practicality based on users' responses, suggesting that the teaching materials were easy to use, accessible, and applicable in the learning process. Furthermore, the feasibility assessment demonstrated that the developed teaching materials met the established validity criteria. Based on the results of the development, validation, practicality, and effectiveness assessments, the product was finalized as a comprehensive set of PjBL-based accounting teaching materials integrated with Blended Learning. Thus, the developed teaching materials can serve as an alternative instructional resource for supporting the development of students' 4C skills in accounting education.

References

- Adem, D., & Yunus, Y. (2020). Blended Learning: A Potential Approach to Promote Learning Outcomes. *International Journal of Social Sciences & Educational Studies*, 7(4), 103-108.
- Agnevia, N., Firda, A., Fitriyani, D., & Hopid, J. (2025). Kurikulum Merdeka: Based accounting learning at SMK Negeri 1 Bandung. *Journal of Curriculum Development*, 4(1), 29-46.
- Aiken, L. R. (1985). Three coefficients for analyzing the reliability and validity of ratings. *Educational and Psychological Measurement*, 45(1), 131-142. <https://doi.org/10.1177/0013164485451012>
- Ayu, P., & Asri, Susanti. (2024). Pengaruh Problem Based Learning Terhadap Kemampuan Berpikir Kritis Siswa Pada Mata Pelajaran Akuntansi di Indonesia - Studi Meta Analisis. *Jurnal Pendidikan Akuntansi*, 10(3), 249-258.
- Cabinet Office, Government of Japan. (2021). Society 5.0. Council for Science, Technology and Innovation. Society 5.0 – Government of Japan.
- Chen, Y., & Jumaat, N. F. (2023). Blended learning design of English language course in higher education: A systematic review. *International Journal of Information and Education Technology*, 13(2), 364-372. <https://doi.org/10.18178/ijiet.2023.13.2.1815>
- De Bruijn-Smolters, M., & Prinsen, F. R. (2024). Effective student engagement with blended learning: A systematic review. *Heliyon*, 10(23), e39439. <https://doi.org/10.1016/j.heliyon.2024.e39439>

- Dinda, P., Fitri, Y., Nujmatul, Laily., & Hayati, S. (2022). Blended Learning: Strategi Pembelajaran Untuk Meningkatkan Berfikir Kritis Siswa SMK Jurusan Akuntansi di Era Digital. *Jurnal Pendidikan Akuntansi*, 2(3), 74-84.
- Fadilah, S. (2024). Pengembangan Perangkat Ajar Matematika Berbasis Proyek untuk Meningkatkan Kemampuan Berpikir Kritis. *Jurnal Inovasi Pendidikan Matematika*, 7(1), 232-245.
- Fadilah, T. M., Devia, S., & Nurul, I. (2024). Optimalisasi Pembelajaran Melalui Penerapan Model E-Learning Untuk Meningkatkan Kualitas Pendidikan. *Jurnal Kajian Pendidikan dan Ekonomi*, 6(1), 120-129.
- Fadilah, T. M., Ahmad, Y., & Sukardi. (2025). Pengaruh Penerapan Teknologi Artificial Intelligence (AI) Terhadap Minat Belajar Siswa di SMA Negeri 1 Langgudu. *Jurnal Kajian Pendidikan dan Ekonomi*, 8(2), 305-315.
- Hidayati, H. (2024). Pengembangan Perangkat Pembelajaran Model Project Based Learning Untuk Menumbuhkan Kemampuan Berpikir Kritis. *Journal of Mathematics Learning Innovation*, 3(1), 45-59.
- Imran, R., Fatima, A., Salem, I. E., & Allil, K. (2023). Teaching and learning delivery modes in higher education: Looking back to move forward post-COVID-19 era. *The International Journal of Management Education*, 21(2), 100805. <https://doi.org/10.1016/j.ijme.2023.100805>
- Istenič, A. (2024). Blended learning in higher education: The integrated and distributed model and a thematic analysis. *Discover Education*, 3, 165. <https://doi.org/10.1007/s44217-024-00239-y>
- Kottara, C., Kavalieraki, D., Fragiskos, G., & Sofia, A. (2025). Sustainable Development and Blended Learning in Accounting Education. *International Journal Education Economics and Development*, 16(3), 301-310.
- Miaz, Y. (2020). Paradigma Pembelajaran Terintegrasi HOTS, 4C dan Technology: Suatu Keharusan Bagi Siswa. *Jurnal Mutiara Pendidikan Indonesia*, 5(1), 25-35.
- Ministry of Education, Culture, Sports, Science and Technology. (2023). Promoting the use of information and communication technology. Government of Japan. [MEXT – ICT and Society 5.0](#)
- My, N., Ardiansyah, M., & Sarbani, A. A. (2025). Meningkatkan Keaktifan Siswa Melalui Model Project Based Learning dengan Pendekatan TPACK. *Pinisi Journal PGSD*, 5(1), 62-68.
- Pan, G., Seow, P. S., & Koh, K. (2020). An exploration into key roles in making project-based-learning happen Insights from a case study of a university. *Journal of International Education in Business*, 14(1), 109-129.
- Partnership for 21st Century Learning. (2019). P21 framework definitions. Battelle for Kids. [P21 Framework Definitions](#)
- Pasion, R., Dias-Oliveira, E., Cunha, R. V., & Coelho, S. L. (2024). The development of critical thinking, team working, and communication skills in a business school: A project-based learning approach. *Thinking Skills and Creativity*, 54, 101680. <https://doi.org/10.1016/j.tsc.2024.101680>
- Pollock, M., Schmulian, A., & Coetzee, S. A. (2023). Do team-based written or video explanations of course content enhance accounting students' knowledge, communication, and teamwork skills? *Journal of Accounting Education*, 65, 100873. <https://doi.org/10.1016/j.jaccedu.2023.100873>
- Rayinda, P. (2019). Kecakapan Abad 21 : Kompetensi Digital Pendidik Masa Depan. *Jurnal Manajemen Pendidikan*, 14(2), 144-151.
- Rossouw, M., & Steenkamp, G. (2025). Developing the critical thinking skills of first year accounting students with an active learning intervention. *The International Journal of Management Education*, 23(1), 101086. <https://doi.org/10.1016/j.ijme.2024.101086>
- Sinnewe, E. (2023). Developing critical thinking: An examination of contemporary practices in accounting. *Accounting & Finance*, 63(1), 403-425. <https://doi.org/10.1111/acfi.13054>
- Suryanti, N., Sukarni, S., & Setiawati, W. (2023). Pengembangan model pembelajaran Project Based Learning (PjBL) dalam akuntansi keuangan. *Jurnal Pendidikan Ekonomi (JUPE)*, 11(2), 86-91. <https://doi.org/10.26740/jupe.v11n2.p86-91>
- Wichadee, S. (2017). A Development of the Blended Learning Model Using Edmodo for Maximizing Students' Oral Proficiency and Motivation. *International Journal of Emerging Technologies in Learning*, 12(02), 137-154.

- Wu, T.-T., Sari, N. A. R. M., Putri, A. P. R. Z., Chen, H.-R., & Huang, Y.-M. (2025). Fostering undergraduate accounting students' educational attainment through CT-enhanced collaborative project-based learning. *The International Journal of Management Education*, 23(3), 101195. <https://doi.org/10.1016/j.ijme.2025.101195>
- Xinyi, Z., & Yue, L. (2025). The Role and Responsibility of Artificial Intelligence in Society. *Journal Innovation Management Practices*, 1(1), 1-9.
- Yong, P., Xi, W., & Zhi, L. (2025). Adopting Blended Learning for Teaching Sport-related Cultural Heritage: Leveraging the 'internet plus' Model. *International Journal of Education and Information Technologies*, 30(15), 22275-22313.
- Zhao, Y., & Wang, L. (2022). A Case Study of Student Development Across Project Based Learning Units in Middle School Chemistry. *Journal of Science Education Research*, 4(5), 1–20.