INNOVATION IN ACCURATE ONLINE-BASED LEARNING MODULES USING THE ADDIE APPROACH TO IMPROVE LEARNING OUTCOMES AT STATE

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Abstract
SMK Negeri 1 Geger is a vocational high school specializing in accounting that has implemented Accurate Online in its teaching process. However, initial interviews with teachers revealed a challenge: a lack of teaching modules and adequate reference materials to support learning with Accurate Online. This study aims to describe the steps involved in developing an Accurate Online learning module for the Android purchasing feature, analyze its feasibility, and assess improvements in student learning outcomes after students use the module at SMK Negeri 1 Geger. This study is a research and development (R&D) project using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The research subjects were 11th-grade Accounting students, with a pilot test involving 10 students and a field test involving 36 students. Data were collected through observation, interviews, questionnaires, and learning outcome tests (pretest-posttest), then analyzed using the paired-sample t-test, the Wilcoxon Signed-Rank Test, and the N-Gain test. The results showed that the module was deemed highly suitable for use, with validation scores of 96.25% from subject matter experts, 90.00% from language experts, and 77.14% from design experts. Student learning outcomes improved significantly, with an average N-Gain of 0.72 (limited test) and 0.93 (field test), both in the high category. Student response to the module was also very positive, at 92.33%. Thus, the Accurate Online learning module featuring the Android version of the purchasing feature is suitable for use as teaching material in the Computerized Accounting course because it has been proven to improve learning outcomes and has received a positive response from students.

Keywords: Learning Module, Accurate Online, ADDIE Model, Learning Outcomes, Accounting Software.

INTRODUCTION

SMK Negeri 1 Geger is a vocational high school specializing in accounting that has implemented Accurate Online in its teaching process. However, initial interviews with teachers revealed a challenge: a lack of teaching modules or the absence of adequate reference materials to support learning with Accurate Online. In fact, the rapid advancement of digital technology has brought significant changes to education, including the accounting learning

process at Vocational High Schools (SMK). The educational approach used at SMK focuses primarily on developing not only theoretical knowledge but also practical skills, so that graduates are prepared to enter the workforce (Suhaedin et al., 2024)[1]. Advances in digital technology have had a major positive impact on people's lives, making many things easier, faster, and more convenient (Hakim & Yulia, 2024)[2].

In reality, however, the accounting learning process has not yet fully leveraged digital technology. The lecture method is considered a conventional method because it is very simple and easy to prepare, and it is quite flexible, requiring no special preparation (Jafar, 2021)[3]. This poses a unique challenge in the digital age, particularly in accounting education, which relies heavily on information technology to prepare financial statements quickly, precisely, and accurately (Ritonga & Syabrus, 2025)[4].

In the Accounting program at vocational high schools, proficiency in software and computer applications is essential for students in the learning process. In the process of learning Accurate Online at vocational high schools, there are several challenges, such as the difficulty in obtaining the necessary hardware and software, a lack of teacher training, and student dissatisfaction with the changes in teaching methods used in the Accurate Online application (Yeni et al., 2025)[5]. These challenges can affect the effectiveness of the learning process, preventing learning objectives from being fully achieved. Therefore, teaching materials are needed to help students learn Accurate Online more independently, systematically, and in line with the learning needs of vocational high schools.

Based on these issues, an Accurate Online-based learning module focused on purchasing features for the Android version is needed—one that is systematically organized and includes features tailored to students' learning styles and preferences. This module was developed to support accounting learning in schools by making it more effective, interactive, and easier for students to understand. Thus, developing a learning module using Accurate Online is expected to serve as an innovative solution in the learning process, increase student participation, and support the achievement of accounting competencies among vocational high school students.

Previous research shows various forms, methods, and outcomes associated with using learning modules. According to Fitria & Rohayati (2024)[6], this context-based e-book is particularly well-suited for teaching computer-based accounting courses, specifically using the Accurate Accounting V5 software application for 11th-grade students in the Institutional

[1] Suahedin, "Manajemen Kepemimpinan dalam Meningkatkan Kualitas Pendidikan Sekolah Menengah Kejuruan (SMK), *Journal of Education Research*, 5(1), 170-179, 2024.
[2] Hakim, "Dampak teknologi digital terhadap pendidikan saat ini", *Jurnal Pendidikan Sosial Dan Humaniora*, 3(1), 220-229, 2024.
[3] Jafar, "Penerapan Metode Pembelajaran Konvesional Terhadap Hasil Belajar Fisika Peserta Didik", *Al Asma: Journal of Islamic Education*, 3(2), 190-199, 2021
[4] Ritonga, "Faktor Penentu Keberhasilan Belajar Komputer Akuntansi", 8(8), 8926-8930, 2025.
[5] Yeni, "Analisis Penerimaan Teknologi dengan Metode UTAUT pada Siswa SMK dalam menggunakan Accurate Online", *JJIP (Jurnal Ilmiah Ilmu Pendidikan)*, 8(2), 1201-1210, 2025.
[6] Fitria, "Pengembangan E-Book Berbasis Kontekstual pada Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Kelas XI Akuntansi dan Keuangan Lembaga", *JJIP- Jurnal Ilmiah Ilmu Pendidikan*, 7(8), 8606-8614, 2024.

Accounting and Finance program. According to Sulastri & Andryani (2023)[7] the combined validity in this study was 90%, which is considered highly acceptable. According to Putra & Susilowibowo (2021)[8] the Android-based Accurate Accounting application received a "Highly Acceptable" rating, with an average language acceptability percentage of 94.5%. According to A. K. Putri & Hakim (2025)[9] overall, the E-Module developed in this study has a validity level of 88%, which falls into the "Highly Valid" category. According to Anggraini & Susanti (2025)[10] their study resulted in a product evaluation by experts that deemed it highly suitable for use.

The researcher's innovation is an Android version of the Accurate Online learning module created using the Heyzine Flipbook app, including comprehensive feature explanations, easy-to-understand instructional videos, and assessment questions to measure students' proficiency. The researcher conducted this module development study for the Android version, focusing on the purchasing feature in trading companies. This purchasing feature is designed to facilitate the purchase of merchandise through both cash and credit transactions. Furthermore, the purchasing feature requires students to understand debit and credit accounts, making it essential for developing students' attention to detail and their grasp of accounting concepts.

This study employs the ADDIE research model. The advantages of the ADDIE model include its simplicity and systematic structure (Zuhro et al., 2022)[11]. This study uses a problem-based learning model that incorporates hands-on practice. This learning method utilizes real-life situations and problems; these situations serve as the foundation for improving students' problem-solving skills and abilities (Rahma & Kurniawati, 2024)[12].

The innovation introduced by the researcher is the creation of an Android version of the Accurate Online learning module using the Heyzine Flipbook app, featuring comprehensive feature explanations, easy-to-understand instructional videos, and assessment questions to measure students' proficiency. The researchers conducted this module development study for the Android version, focusing on the purchasing feature in a trading company. The purchasing feature is designed to facilitate the purchase of merchandise through both cash and credit transactions. Additionally, this feature requires students to understand debit and credit accounts, making it essential for developing their attention to detail and grasp of accounting concepts.

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[7] Sulastri, "MACC: Inovasi Media Pembelajaran Accurate Online Berbasis Android", *Jurnal Pendidikan Ekonomi (JUPE)*, 11(1),39-49, 2023.

[8] Putra, "E-Modul Berbasis Android Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Siswa Kelas XI", *Penelitian dan Pengembangan Pendidikan*, 5(2),250-256, 2021.

[9] Putri, A.K, "Pengembangan E-Modul Interaktif Berbasis Heyzine Flipbook Yang Terintegrasi Dengan Accurate Education Guna Meningkatkan Hasil Belajar Praktikum Komputer Akuntansi Siswa Smk", *Jurnal Pendidikan Akuntansi Indonesia*,23(1), 57-76,2025.

[10] Anggraini, "Pengembangan E-Modul Berbasis Pembelajaran Berdiferensiasi Ditinjau dari Gaya Belajar Siswa pada Elemen Perpajakan Fase F", *Jurnal Studi Guru Dan Pembelajaran*, 8(2),118-1200,2025.

[11] Zuhro, "Desain Pembelajaran Pendidikan Agama Islam Dengan Model Addie", *Jurnal Studi Pendidikan Islam*, 5(2), 180-193,2022.

[12] Rahma, "Pengaruh model pembelajaran problem based learning (PBL) terhadap pemahaman konsep matematika siswa", *Jurnal Pendidikan Matematika*, 8(2), 301-308, 2024.

RESEARCH METHODS

This study is a research and development (R&D) project aimed at developing and testing the feasibility of an Accurate Online-based learning module featuring the purchasing function for the Android version, using the ADDIE model, which consists of five systematic stages: Analysis (needs analysis, content), Design (designing the module's structure and interface), Development (product implementation and expert validation), Implementation (product piloting with students), and Evaluation (final assessment of the product's feasibility and effectiveness). This model was chosen for its simplicity yet systematic nature, as well as its provision for evaluation and revision at each stage. The research was conducted at SMK Negeri 1 Geger in Madiun Regency, East Java, from April through May 2026. The study population consisted of 46 students in Accounting Classes 1, 2, and 3 of the 11th grade at SMK Negeri 1 Geger, with a sample of 10 students (randomly selected from Accounting Classes 1 and 2) for the limited pilot test phase and 36 students from Accounting Class 3 for the field test phase, while the Accounting Computer teacher at the school was also involved as a primary data source through an initial interview to identify learning needs and issues.

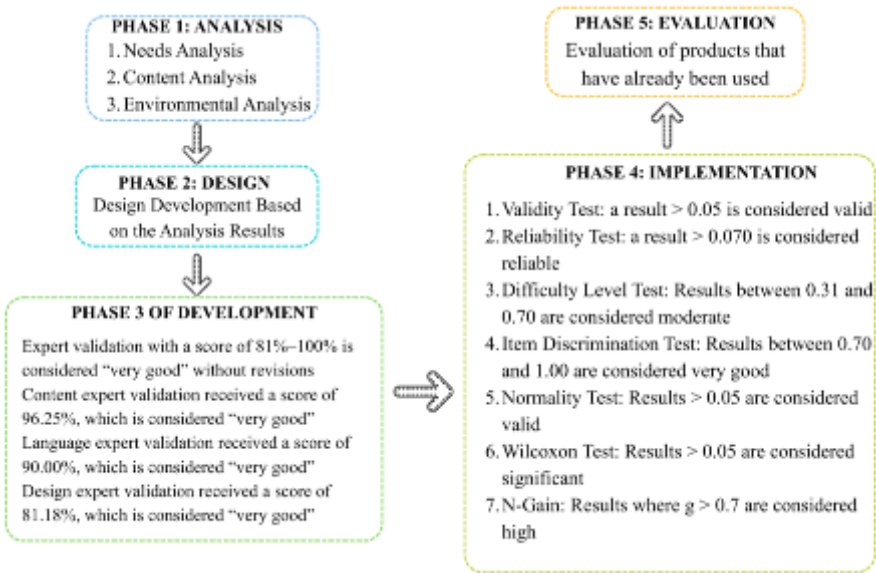


Figure 1 *ADDIE* flowchart

RESEARCH RESULTS AND DISCUSSION

Development Results

The development results of this study are an "Accurate Online" module with a purchasing feature for the Android version at SMK Negeri 1 Geger. This module was created using Heyzine Flipbook and can be accessed via an Android phone connected to the internet. To access the Android version of the module, students open the link shared by the teacher. Once students open the link in Chrome on an Android phone, the module's main page appears, allowing them to click the navigation buttons to view subsequent pages within the module.

The product development process followed the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The stages carried out are as follows:

1. **Analysis**

a. Student Needs Analysis

The initial stage of the student needs analysis process—which involved identifying students' learning needs based on questionnaire results—showed that 51.6% of students found it easier to understand the material when learning under direct guidance from a teacher, especially when first being introduced to and learning how to use the application. Additionally, 62.6% of students preferred a hands-on, practical approach to learning the Accurate Online application. Figure 2 presents the results of the analysis of the types of learning media students preferred.

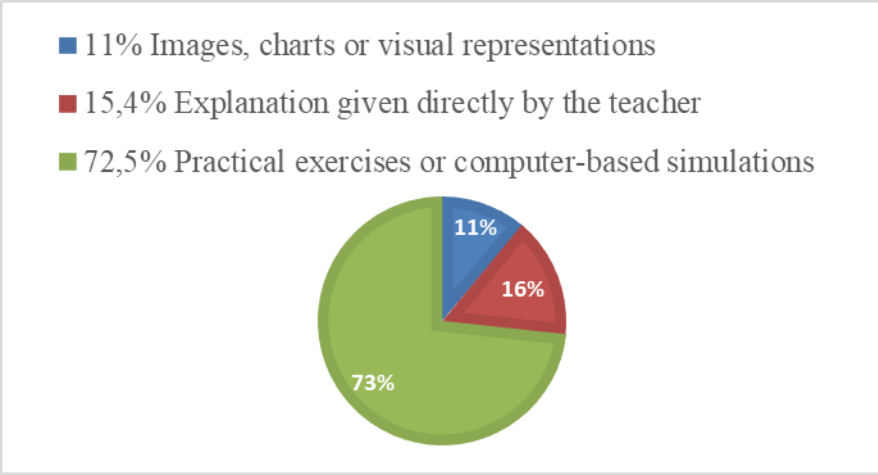


Figure 2. Student Needs

Interactive: with case studies, simulations, and engaging exercises; Practical: with examples of commonly used accounting software (such as MYOB, QuickBooks, or Accurate); Easy to understand: with clear explanations and simple language; Up-to-date: with the latest information on developments in accounting technology; Accessible online: so it can be accessed anytime and anywhere. (Informant E, Accounting 3).

Printed materials accounted for 15.4%, consistent with the findings of Septianingsih et al. (2025)[13], In today's educational landscape, it is evident that printed instructional materials still play a significant role in the teaching and learning process, even though we have now entered an era of technology-driven education. This finding indicates that students prefer learning media that are visual, interactive, and can demonstrate how to use applications directly, rather than traditional printed materials.

Interviews with accounting computer teachers revealed the challenges faced by students, specifically regarding the teaching modules used during classroom instruction.

"Students are still confused about how to enter transactions; the problems don't include a step-by-step process—they only list the transactions. Students still need guidance in performing transactions and cannot work independently

[13] Septianingsih, "Analisis Kelayakan Bahan Ajar Cetak Dan Digital Dalam Pembelajaran Di Era Teknologi Pendidikan", *Jurnal Ika: Ikatan Alumni PGSD Unars*, 16(2), 290-299, 2025.

due to the limitations of the modules being used." (Accounting Computer Teacher).

After analyzing student needs, a classroom observation was conducted on Thursday, March 12, 2026, in the Accounting Computer lab. The observation found that, of 36 students, some still needed teacher assistance, while others served as peer tutors; consequently, the learning process required more time than the allocated class period.

Based on Figure 4.1, students preferred interactive modules, textbooks, instructional videos, and computers. In terms of percentage, instructional videos rank highest among the media needed by students. Videos support a student-centered learning process, both in the classroom and at home (Hafizah, 2020)[14]. Interactive modules, meanwhile, rank second. Interactive e-modules are learning materials that contain content, methods, guidelines, and assessment procedures designed in a structured and engaging manner, with the goal of achieving the expected course competencies or subcompetencies in accordance with their level of difficulty (Imansari & Sunaryantiningsih, 2017)[15].

Based on the observations, one student had difficulty understanding the material being taught by the teacher. The Accounting Information Systems class proceeded with the teacher first explaining the material, after which the students practiced using the Accurate Online application. During the lesson, some students appeared to pay close attention to the teacher's explanation, but others still needed additional guidance and assistance to follow the material. This suggests that not all students understand the material to the same degree.

The observations also showed that some students still had difficulty using the Accurate Online application, so they frequently asked the teacher for help during practice sessions. In addition, the learning resources available were still limited, so the teacher had to explain the material repeatedly to the students.

b. Analysis of the Computerized Accounting Curriculum

In this analysis, SMK Negeri 1 Geger—specifically the computerized accounting course—has been using Accurate Online since 2021. Interviews with the computerized accounting teacher found that 11th-grade students study computerized accounting as it relates to trading companies. Students still feel confused and do not yet fully understand the transaction process in Accurate Online, particularly the purchasing features and the differences between goods receipt, goods shipment, purchase orders, and purchase invoices.

Several perspectives from 11th-grade Accounting students indicate that they still find it difficult to learn the purchasing features in the Accurate Online application. This difficulty arises because the workflow consists of several steps that must be performed one by one, requiring students to understand the transaction flow precisely. This aligns with the students' statements, as follows.

"In my opinion, the purchasing feature is the most confusing because the process is long and must be done in order. If you enter the data incorrectly at

[14] Hafizah,"Pengunaan Dan Pengembangan Video Dalam Pembelajaran Fisika", *Jurnal Pendidikan Fisika*, 8(2), 225-240, 2020.

[15] Imansari," Pengaruh Penggunaan E-Modul Interaktif Terhadap Hasil Belajar Mahasiswa pada Materi Kesehatan dan Keselamatan Kerja", *VOLT: Jurnal Ilmiah Pendidikan Tehnik Elektro*, 2(1), 11, 2017.

the beginning, the next steps will also be wrong." (Informant I, representative of XI AKL 1)

"In my opinion, the sales feature is the easiest because the workflow is simpler. The most difficult, in my opinion, is the purchasing feature because there are many processes that must be carried out in sequence, and you can't make any mistakes." (Informant N, representative of XI AKL 2)

"I grasped the sales features more quickly. With the purchasing features, I often forget the order of the menu options, so I have to ask the teacher again or look at the examples provided." (Informant G, representative of XI AKL 3)

Based on the three student perspectives in the needs analysis, it can be concluded that students have difficulty learning computerized accounting, specifically the purchasing feature. Students explained that the purchasing feature is difficult because it involves more steps than the sales feature.

Based on the lesson plans and the expected student competencies identified in the needs analysis, the interview results with teachers were reviewed in light of the computerized accounting curriculum.

Based on an analysis of learning activities, interviews, media needs analysis, and content analysis, it can be concluded that for accounting computer education, the media to be developed will be an Android-based flipbook module focused on the purchasing feature, supplemented with videos as learning aids—whether used for self-study at home or during classroom instruction at school. To foster conceptual understanding related to entrepreneurship and creativity, the module design incorporates real-world transaction entries. Therefore, the company used is PT Ahmera Label, which operates in the pants retail sector. This company was chosen because students are more familiar with clothing in their daily lives. This contextual relevance helps students connect their existing experiences with new concepts related to the purchasing process in Accurate Online. Consequently, learning becomes more meaningful because students not only learn how to use the application but also understand how it is applied in real-world business activities. This approach emphasizes the connection between the subject matter and students' everyday experiences, making the learning process more relevant and less likely to feel complicated or unclear. According to Hasanah et al. (2020)[16], several studies indicate that when students perceive lessons as relevant to their lives, their intrinsic motivation to learn increases.

2. Product Design

The design was tailored to the results of the student needs analysis and the learning material analysis. The needs analysis found that students had difficulty learning the purchasing feature in the Accurate Online app because the process consists of several steps that must be performed sequentially and carefully. This led students to make frequent early mistakes, which affected subsequent transactions. To address this need, the researcher designed an Accurate Online instructional module for the purchasing feature on the Android version.

This was based on the needs analysis and instructional material analysis, while taking students' learning styles into account. Shown in the image below.

[16] Hasanah, "Meningkatkan motivasi belajar siswa melalui pembelajaran inovatif di era digital", Jurnal Psikologi Pendidikan, 8(4), 200-217, 2020.

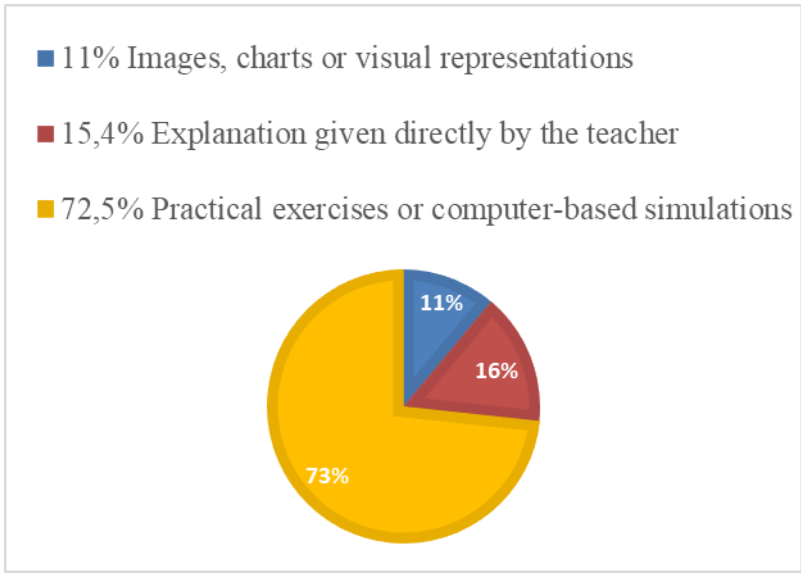


Figure 3. Characteristics of Students' Learning Styles

Based on Figure 3, 11% of students have a visual learning style and 72.5% have a kinesthetic learning style, and they require a guided learning approach to ensure that conceptual understanding and skill development proceed optimally. According to Wahyuni (2017)[17], a visual learning style is a method of learning that relies more on sight. Meanwhile, a kinesthetic learning style prioritizes physical experiences and hands-on activities in the learning process.

These results indicate that students prefer learning modules that combine visual and interactive presentations, as this helps them understand the material better. Therefore, the "Purchases" feature in the Android version of the Accurate Online module was developed by combining images, instructional videos, and summaries of the material using a sans-serif font to prevent students from becoming bored while reading the module during the learning process.

In addition to being based on the results of the student needs analysis, the module design was also developed in accordance with the Lesson Plan (RPP) for the Computerized Accounting course used at SMK Negeri 1 Geger. This module was created based on the learning outcomes, learning objectives, material on entering purchase transactions in a trading company, and the problem-based learning model outlined in the Lesson Plan. As a result, the material and activities in this module align with the school's learning process.

Table 1 Lesson Plan for Computer-Based Accounting

Learning Outcomes	Implementing modern accounting software integrated with information systems and technology, including the implementation of accounting systems for e-commerce businesses
Interdisciplinary Approach	Collaborative learning with the subjects of Manual Financial Accounting and KIK (Creativity, Innovation and Entrepreneurship)

[17] Wahyuni,"Identifikasi Gaya Belajar (Visual, Auditorial, Kinestetik)", *Jppm Jurnal Penelitian Dan Pembelajaran Matematika*", 10(2), 128-132,2017.

Learning Topics	Recording purchase transactions in a trading company
Pedagogical Practices	Problem-based learning using a ready-to-use case study on posting journal entries to the general ledger. Methods: discussion and demonstration. The 3M Approach
Learning Partnerships	Teacher of Manual Financial Accounting and KIK: Purchase transaction documents from retail businesses near the school and in the students' neighborhoods
Learning Environment	Physical Environment: Classroom
Use of Digital Technology	Learning Culture: Collaborative, exploratory

As shown in Table 1, the module was developed based on learning outcome standards, learning objectives, and material on recording purchase transactions in a merchandising company. Additionally, this module aligns with a problem-based learning approach, ensuring that the material, practical exercises, and assessments support the teaching and learning process in the classroom. The PBL model not only helps students understand the material in depth but also encourages them to learn independently because they must set their own learning goals (Aprilianti & Siswandari, 2024)[18].

3. Product Development

During this product development phase, the researcher conducted product validity tests with subject matter experts, language experts, and design experts. The modules were created in Canva and compiled in Heyzine Flipbook to produce the final versions.

1. Expert Validation

Expert validation involves three experts: a subject matter expert, a language expert, and a design expert. The validation process was conducted face-to-face at a mutually agreed-upon location. The module validators are as follows:

a) Subject Matter Expert Validation

Subject matter validation was conducted by Mr. Suhadi, S.Pd., an expert in Computerized Accounting at SMK Negeri 1 Geger. This content expert's feasibility test was conducted to assess the suitability of the product's presentation and the content of the Accurate Online "Purchasing" feature module for Android, developed based on the following aspects: 1) Content suitability, 2) Presentation suitability, 3) Linguistic components, 4) Usefulness. The results of the subject matter expert's module analysis are presented in Table 2.

Table 2. Subject Matter Expert Validation, Phase 1

Assessment Criteria Subject Matter Expert	Grading Scale			
	∑ni	∑N	Value	Description
Content Quality	26	30	86,67	Excellent
Presentation Quality	18	25	60,00	Good
Linguistic Components	14	15	93,33	Excellent
Usefulness	10	10	100,00	Excellent
Total Score	68	80		
Average			85,00	Excellent

[18] Aprilianti, "Keefektifan Model Problem Based Learning (PBL) untuk meningkatkan Kemampuan Berfikir Kritis Siswa SMK Akuntansi pada Pembelajaran Komputer Akuntansi", *Jurnal Pendidikan dan Pembelajaran Indonesia (JPPI)*, 4(3), 1255-1266, 2024.

Based on Table 2, the subject matter expert validation results show that the presentation aspect received a score of 60.00%, which falls into the "fairly good" category but still requires revision; thus, it has not yet reached the "very good" category (≥85%). These results indicate that the presentation aspect still requires improvement in accordance with the validators' suggestions, namely: 1) material on ordering goods needs to be added; 2) a "Back" button needs to be added on the next page; and 3) the title should be adjusted to match the name of the Accurate Online feature. After revising based on feedback from subject matter experts in Phase 1, the researchers evaluated Phase 2 to determine whether the revised Android version of the "Accurate Online" purchase feature module was suitable for use. The evaluation results showed improvements in all assessed aspects.

Phase 2 validation results from subject matter experts achieved a total score of 77 out of a maximum of 80, representing 96.25%. This percentage falls into the "very good" category, so the module was deemed highly suitable for use in the learning process.

Table 3. Results of the Phase 2 Subject Matter Expert Validation

Subject Matter Expert Assessment Criteria	Rating Scale			
	∑ni	∑N	Value	Description
Content Quality	30	30	100,00	Very Good
Presentation Quality	22	25	88,00	Very Good
Language Components	15	15	100,00	Very Good
Benefits	10	10	100,00	Very Good
Total Score	77	80		
Average			96,25	Very Good

Compared with the Phase 1 validation results in Table 3, all indicators improved. Specifically, presentation quality improved significantly, rising from 60.00%, which fell into the "fairly good" category in Phase 1, to 80.00%, now classified as "very good." This improvement indicates that the changes aligned with the subject matter experts' recommendations.

b) Language Expert Validation

The language expert validation was conducted by Ms. Eny Winarsih, M.Pd. This language expert assessment was carried out to evaluate the appropriateness of language use in the Android version of the Accurate Online Purchasing Features module, based on the following aspects: 1) Clarity, 2) Communicative effectiveness, 3) Suitability for student development, and 4) Conformity with language rules.

Table 4. Validation by Linguists

Language Expert Assessment Criteria	Rating Scale			
	∑ni	∑N	Value	Description
Concise	13	15	86,67	Very Good
Communicative	19	20	95,00	Very Good
Appropriateness for student development	14	15	93,33	Very Good
Compliance with language conventions	17	20	85,00	Very Good

Total Score	63	70		
Average			90,00	Very Good

The results from the linguistic expert evaluation in Table 4. of the product validity test show a percentage score of 90.00%, as indicated by an evaluation score of 63 out of a maximum of 70. In terms of language, the "Accurate Online" module's purchasing feature is rated "Very Good."

c) Design Expert Validation

The design expert validation was conducted by Mr. Dimas Setiawan, M.Kom. This validation was carried out to assess the suitability of the appearance and presentation of the Accurate Online Purchasing Feature module for Android, based on the following aspects: 1) Linguistic Suitability, 2) Presentation Suitability, 3) Benefits.

Table 5. Phase 1 Design Expert Validation

Design Expert Assessment Indicators	Assessment Scale			
	∑ni	∑N	Value	Description
Language Quality	32	40	80,00	Excellent
Presentation Quality	24	35	68,57	Good
Benefit Aspects	8	10	80,00	Excellent
Total Score	64	85		
Average			75,29	Good

Based on Table 5, the design experts' validation results in Phase 1 yielded a total score of 64 out of a maximum of 85, representing 75.29 percent and falling into the "good" category. Although the module meets the validity criteria overall, several aspects still need improvement, particularly the appropriateness of the presentation. The assessment results show a score of 68.57 percent, which falls into the "fairly good" category with revisions. In Phase 1, the design expert provided the following recommendations for improvement: 1) The table of contents needs to be formatted into a manual, 2) the use of sans-serif fonts needs to be adjusted, and 3) blurry images need to be cropped using snipping tools.

Based on the design expert's first-stage revisions, the module requires further revisions and a second-stage evaluation by the design expert to determine the suitability of the revised module. As shown in Table 4.7, the validation results indicate that the module received a score of 69 out of a maximum of 85 (81.18 percent), placing it in the "very good" category and deeming it suitable for use in the learning process. The results of the design expert's second-stage analysis can be seen in the table

Table 6. Validation of Phase 2 Design Expert Results

Design Expert Assessment Indicators	Assessment Scale			
	∑ni	∑N	Value	Description
Language Quality	33	40	82,50	Excellent
Presentation Quality	27	35	77,14	Good
Benefit Aspects	9	10	90,00	Excellent
Total Score	69	85		

Design Expert Assessment Indicators	Assessment Scale			
	∑ni	∑N	Value	Description
Average			81,18	Excellent

Table 6 shows an improvement in the presentability aspect: in Phase 1, it received a score of 68.57 percent, which is "fairly good" with revisions; in Phase 2, it received a score of 77.14 percent, which is "good" without revisions.

2. **Validity Analysis of the Module**

Validation of the Accurate Online module for the Android version's purchasing feature was conducted through an evaluation process by a team of expert validators consisting of subject matter experts, language experts, and design experts. This validation stage evaluated the developed product to ensure the module aligns with learning needs and meets appropriate standards. The three experts' assessment results were combined into a single score by calculating the estimated average, as shown in the table below.

Table 7. Expert Scores

Validator	Phase 1	Phase 2	Average
Subject Matter Expert	85,00	96,25	90,63
Language Expert	90,00	-	90,00
Design Expert	75,29	81,18	78,24
Total Score			258,86
Combined Average			86,29

Based on the evaluation results, the three experts assigned a score of 86.29%. This score indicates that the product is suitable for use without revision and can therefore proceed to limited testing and field testing (Prastyaningtyas & Widianti, 2018)[19].

3. Product Implementation

At this stage, the final Android version of the Accurate Online purchasing feature module, in flipbook format, can be implemented at SMK Negeri 1 Geger in classes XI Ak 1, XI Akl 2, and XI Akl 3.

1. Validity Test

This validity test is based on the pretest and posttest results, which indicate credible or valid results. The data can be seen in Tables 12 and 13.

a. Pretest Validity Test

The validity test aims to ensure that research instruments, such as pretest-posttest questions or questionnaires, can accurately measure the aspects under investigation. Therefore, the data obtained can be trusted and align with the research objectives.

Based on the validity test results for the 10 test items, all items had calculated r values higher than the table r value of 0.632. The calculated r values ranged from 0.734 to 0.943, meaning that all test items met the validity criteria, namely that the calculated r was greater than the table r. Thus, all ten items are

[19] Prastyaningtyas, "Pengembangan Modul Pembelajaran Berbasis Group Investigation Dengan Pendekatan Problem Based Learning Pada Mata Kuliah Sistem Akuntansi Mahasiswa Pendidikan Ekonomi Universitas Nusantara Pgri Kediri", *Equilibrium: Jurnal Ilmiah Ekonomi dan Pembelajarannya*, 6(2), 148-160,2018.

deemed valid and suitable for use as a research tool to measure student learning outcomes related to the "Purchase" feature in Accurate Online.

b. Posttest Validity Test

The posttest validity analysis showed that the calculated r values for each item ranged from 0.832 to 0.896. All values exceeded the table r value of 0.632, meaning each question met the validity criteria. These results indicate that the posttest questions strongly correlate with the total score and can therefore be used to measure students' learning achievement after they complete the learning process using the Accurate Online-based interactive module. Consequently, all posttest questions are considered suitable for use as data collection tools in this study.

2. Reliability Test

A reliability test assesses how well an instrument measures what it is intended to measure. Reliability measures how trustworthy a measurement instrument is. The results are presented in the table below

a. Pretest Reliability Test

The reliability test for the pretest instrument yielded a Cronbach's Alpha value of 0.968. This value exceeds the 0.70 benchmark, so the pretest instrument is considered reliable. This indicates that the instrument has excellent internal consistency, enabling stable and consistent measurement results when used to assess students' learning progress. Therefore, the pretest instrument can be used as a data collection tool in this study. The results are shown in Table 8.

Table 8. Pretest Reliability Test

Measurement Criteria		
Reference Value	Cronbach's Alpha Value	Description
0,70	0,968	Reliabel

3. Item Discrimination Test

The discrimination power of each item in Anates can be seen in the discrimination power table under the "DP" column, expressed as a percentage. Items with a discrimination power of ≥ 0.30 are considered good, while those with a discrimination power of < 0.30 are considered poor (Magdalena et al., 2021)[20].

1. Pretest Test

Based on the results of the assessment of the items' ability to differentiate responses in the pretest instrument, 6 of the 10 items met the differentiation criteria: items 2, 3, 5, 7, 8, and 10. These six items are classified as good to very good, enabling them to distinguish high-ability students from low-ability students. Meanwhile, questions 1, 4, 6, and 9 did not meet the required selection standards and were therefore not used in this study. Consequently, only 6 questions were deemed appropriate for use as a pretest instrument.

2. Posttest

Based on the discriminant validity test of the posttest instrument, 8 of the 10 items met the criteria for discriminant validity: items 1, 2, 4, 5, 6, 7, 8, and 10.

[20] Magdalena, "Analisis Validitas, Reliabilitas, Tingkat Kesulitan Dan Daya Beda Butir Soal Ujian Akhir Semester Tema 7 Kelas Iii Sdn Karet 1 Sepatan", Bintang: Jurnal Pendidikan Dan Sains, 3(2),198-214, 2021.

All of these items fell into the "good" category, meaning they distinguished students based on their ability to understand the material. Items 3 and 9 did not meet the discrimination criteria and were therefore not used in this study. Consequently, the posttest instrument used for data collection consisted of 8 items that met the requirements for discriminating among participants' responses.

4. Item Difficulty Test
   1. Pretest Difficulty Test

      The difficulty-level test results for the pretest items show that all 10 items have difficulty levels ranging from 0.50 to 0.70. All of these values fall into the moderate category, meaning the questions' difficulty is balanced—neither too easy nor too difficult for students. Therefore, all of these pretest questions meet the appropriate difficulty standards and can be used as a research tool.
   2. Posttest Difficulty Analysis

      The posttest difficulty analysis shows that all 10 questions have difficulty indices ranging from 0.40 to 0.70. All questions fall into the moderate category, so the difficulty level is appropriate for measuring students' abilities after they complete the instruction. This indicates that the posttest questions have a fairly balanced level of difficulty, allowing them to provide a more objective picture of students' abilities. Therefore, all posttest questions meet the difficulty standards and can be used as a research tool.

   a) Limited Pilot Test

      The researcher conducted a limited pilot test on 10 students from 11th-grade Accounting 1 and 11th-grade Accounting 2 classes. Before presenting the Accurate Online module on the "Purchase" feature for the Android version, the researcher distributed post-test sheets and explained the "Purchase" feature via PowerPoint. This was done to assess the extent of the students' understanding of the "Purchase" feature. Following the PowerPoint presentation and student feedback, the researcher explained the workflow and how to use the module. The students then worked on the case studies in the module according to the provided workflow. After completing the case studies and the interactive quiz (posttest), the students were asked to fill out a questionnaire regarding their responses to using the Accurate Online Android version's purchasing feature module.

   b) Field Test

      This field test was conducted with 36 students in the 11th-grade Accounting 3 class. Before presenting the module, the researcher distributed post-test sheets and explained the purchasing process using a PowerPoint presentation. Afterward, the researcher explained the workflow and how to use the module. The students then worked on the case study included in the module and were asked to complete a questionnaire regarding their responses to using the Accurate Online module's purchasing feature on the Android version.

      The learning assessment for the Accurate Online purchasing feature has a minimum passing score (KKM) of 70. Based on the final score calculations, all 36 students (100%) met the KKM. Figure 4 compares the average pretest and posttest scores between the limited pilot test and the field test.

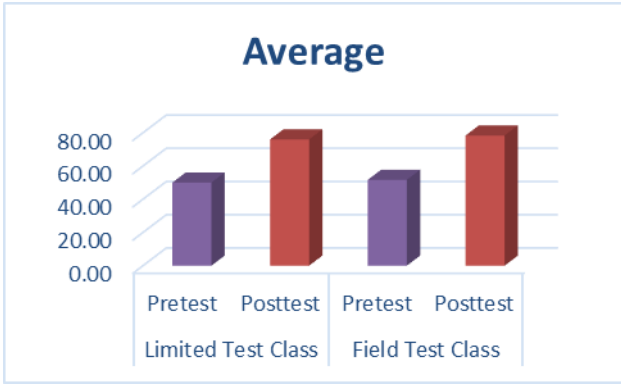


Figure 4. Pretest-Posttest Results

Based on the results in Figure 4, students' average learning outcomes increased after the Accurate Online-based learning module was used. In the limited pilot class, the average score rose from 73.33 to 92.50 after the posttest. In the field pilot class, the average score rose from 64.35 to 92.36. These results indicate that the developed module successfully improved student learning achievement in both the limited pilot and the field pilot.

The increase in average pretest and posttest scores was corroborated by the Wilcoxon test and N-Gain analysis to determine the significance level of the improvement in learning outcomes and the category of improvement.

5. Practicality Analysis of the Module

The usability analysis was based on a student questionnaire about the Accurate Online module's "Purchase" feature on the Android version. The usability test covered several aspects, namely: 1) Appearance and Presentation, 2) Technical Quality, and 3) Benefits. The results of the student questionnaire are presented in Table 9.

Table 9. Results of the Student Questionnaire

Student Response Assessment Indicators	Grading Scale			
	∑ni	∑N	Value	Description
Appearance and Presentation	1069	1150	92,96	Very Good
Technical Quality	1483	1610	92,11	Very Good
Benefits	1058	1150	92,00	Very Good
Total Score	3610	3910		
Average			92,33	Very Good

6. Normality Test

A normality test is a statistical test used to determine whether data follow a normal distribution. The Shapiro-Wilk test is considered the most effective method, especially for small to medium-sized samples, typically fewer than 50 (Sianturi, 2025)[21].

[21] Sianturi, "Uji Normalitas Sebagai Syarat Pengujian Hipotesis", *Jurnal Pembelajaran Dan Matematika Sigma (Jpms),* 11(1), 1-14, 2025

The Kolmogorov-Smirnov test is more suitable for large samples, i.e., more than 40 or 50 (Sianturi, 2025)[22]. In this study, 10 samples and 36 samples met the small-sample criteria.

Based on the Shapiro-Wilk normality test results, the pretest and posttest data for both the small and large classes were non-normally distributed (Sig < 0.05). To determine differences in learning outcomes between pretest and posttest scores, the Wilcoxon signed-rank test was conducted. The results of the normality test are presented in Table 10.

Table 10. Normality Test (Shapiro-Wilk)

Class	Mean	Median	Min	Max	Sig Value	Data Interpretation
Small Class Pretest	73,30	75	50	83	0,008 (>0,05)	Abnormal
Small Class Posttest	94,00	94	88	100	0,000 (<0,05)	Abnormal
Large Class Pretest	70,00	67	50	83	0,024 (>0,05)	Abnormal
Large Class Posttest	95,20	100	88	100	0,000 (<0,05)	Abnormal

Source: Processed using SPSS 23 (2026)

7. Test for Differences in Small Sample Sizes

A test for differences in small-sample scores was conducted to determine whether student learning outcomes differed before and after using the Accurate Online module's "Purchasing" feature on the Android version in a limited pilot study. Since the posttest data from the limited pilot study were not normally distributed, the difference between pretest and posttest scores was analyzed using the Wilcoxon Signed-Rank Test.

According to Rizki & Watulingas (2023)[23], the Wilcoxon test is used to determine differences in the mean learning outcomes between two consecutive data cycles. This Wilcoxon test was used to analyze differences between pretest and posttest scores in both small and large classes because the data were non-normal. Based on the Wilcoxon test, an Asymp. Sig. (2-tailed) value of 0.005 was obtained. This value is less than 0.05 (0.005 < 0.05), so H_0 is rejected, and H_1 is accepted. Thus, the pretest and posttest scores differ significantly in the small class. Consequently, student learning outcomes improved after the module was incorporated into the instruction.

Table 11. Wilcoxon Test for the Small Class

Group Data	Statistical Tests	Sig/P-Value	Data Interpretation
Pretest Posttest -Small Class	Wilcoxon test	0,005 (<0,05)	Significant

8. Large-Sample Differences Test

A large-sample differences test was conducted to determine whether student learning outcomes differed before and after using the Accurate Online module's "Purchases" feature on the Android version during the field test. Differences in

[22] Sianturi, "Uji Normalitas Sebagai Syarat Pengujian Hipotesis", *Jurnal Pembelajaran Dan Matematika Sigma (Jpms),* 11(1), 1-14, 2025

[23] Rizki, "Analisis Perbedaan Nilai Setiap Siklus dalam Penelitian Tindakan Kelas Menggunakan Uji Wilcoxon", Jurnal Ilmiah Matematika dan Pendidikan Matematika, 13(2), 169-10, 2023.

learning outcomes can be observed by comparing pre-test scores before the module was used with post-test scores after the module was used. The Wilcoxon test was used to determine the impact of the module on students' learning abilities. The results are shown in Table 12.

Table 12. Wilcoxon Test for Large Class Sizes

Group Data	Statistical Tests	Sig/P-Value	Data Interpretation
Pretest Posttest – Large Class	Wilcoxon test	0,000 (<0,05)	Significant

9. Test of Improvements in Student Learning Outcomes

A test of improvements in student learning outcomes was conducted to determine the extent to which students' abilities improved after participating in the learning process using the Accurate Online module's "Purchasing" feature on the Android version. The study assessed improvements in learning abilities by comparing pre-test scores (before the module was used) with post-test scores (after the module was used). In this test, the N-Gain test was used to calculate the percentage of improvement in student learning outcomes.

According to Oktavia et al. (2019)[24], this test aims to determine the effectiveness of the intervention on student learning outcomes. The N-Gain test was conducted to determine the level of improvement in student learning outcomes after using the Accurate Online module's "Purchasing" feature on the Android version. The calculation was performed by comparing the posttest and pretest scores of a small class of 10 students and a large class of 36 students. This comparison was made because both the small and large classes received the same treatment using the module. Based on the SPSS analysis, the following results were obtained.

Table 13. N-Gain Analysis

Group	N-Gain	Percentage	N-Gain Percent	Effectiveness Rate
Small Class	0,72	Medium	72,27%	Fairly Effective
Large Class	0,93	High	93,35%	Effective

4. **Product Evaluation**

A product evaluation was conducted to assess the quality of the Accurate Online Purchasing module developed for the Android version. The evaluation was carried out by reviewing the results of pilot tests and field tests to determine how practical and effective the module is in the teaching and learning process.

Based on the pilot test results, students' learning abilities improved after using the Android-based Accurate Online Purchasing module. The final scores in Figure 4 show that the average score rose from 73.33 to 92.50 after the posttest. Additionally, the average attitude score reached 70.00, and the skill score reached 87.00, indicating that the module successfully improved students' abilities during the learning process.

Furthermore, in the field trial involving 36 students, learning outcomes improved. The average pretest score in Table 9 was 64.35 and rose to 92.36 on the posttest, while the average attitude score was 79.44 and the skills score was 83.50. These results indicate that the Android version of the Accurate Online module with the "Purchases" feature can

[24] Oktavia,"Uji Normalitas N-Gain Untuk Pemantapan Dan Modul Dengan One Group Pre And Post Test", Simposium Nasional Ilmiah: Peningkatan Kualitas Publikasi Ilmiah Melalui Hasil Riset Dan Pengabdian Kepada Masyarakat", 596-601, 2019.

help students better understand the subject matter and engage in more effective learning practices.

In addition, the student response questionnaire results in Table 10 show that this module received an average rating of 92.33%, falling into the "very good" category. This assessment covers aspects of appearance and presentation, with a rating of 92.

The results of this research can increase students' interest and understanding, as indicated by previous studies (Fitria & Rohayati, 2024)[25]. This study involved three experts—a subject matter expert, a language expert, and a media expert—who were deemed highly qualified based on prior research (Sulastri & Andryani, 2023)[26]. The product created in this study can be used for both self-directed and classroom-based learning, similar to the findings in (Putra & Susilowibowo, 2021)[27]. The application used to create this module—Heyzine Flipbook—is the same as that used in the study by (Putri & Hakim, 2025)[28]. Student responses to the product used in this study were very positive and achieved a high percentage, consistent with the findings of (Anggraini & Susanti, 2025)[29].

Within the context of constructivist pedagogy, e-modules encourage students to actively construct knowledge through exploration, problem-solving, and collaboration (Keengwe et al., 2014)[30]. Furthermore, while the constructivist learning model has a moderate effect on learning outcomes, it has a high impact on thinking skills and academic achievement (Demir & Kaya, 2022)[31]. Thus, developing this type of flipbook improves learning outcomes and fosters students' creative thinking to address real-world problems, particularly in accounting transactions.

CONCLUSION

This development research produced an Accurate Online learning module for the purchasing feature on Android, based on the Heyzine Flipbook platform, using the ADDIE

[25] Fitria, "Pengembangan E-Book Berbasis Kontekstual pada Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Kelas XI Akuntansi dan Keuangan Lembaga", *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, *7*(8), 8606–8614.

[26] Sulastri, "MACC: Inovasi Media Pembelajaran Accurate Online Berbasis Android", *Jurnal Pendidikan Ekonomi (JUPE)*, 11(1),39-49, 2023.

[27] Putra, "E-Modul Berbasis Android Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Siswa Kelas XI", *Penelitian dan Pengembangan Pendidikan*, 5(2),250-256, 2021.

[28] Putri, A.K, "Pengembangan E-Modul Interaktif Berbasis Heyzine Flipbook Yang Terintegrasi Dengan Accurate Education Guna Meningkatkan Hasil Belajar Praktikum Komputer Akuntansi Siswa Smk", *Jurnal Pendidikan Akuntansi Indonesia*,23(1), 57-76,2025.

[29] Anggraini, "Pengembangan E-Modul Berbasis Pembelajaran Berdiferensiasi Ditinjau dari Gaya Belajar Siswa pada Elemen Perpajakan Fase F", *Jurnal Studi Guru Dan Pembelajaran*, 8(2),118-1200,2025

[30] Keengwe, "Promoting effective e-learning practices through the constructivist pedagogy", *Education and Information Technologies*, *19*(4), 887–898.

[31] Demir, "Analysis of Constructivist Learning Model's Effects on Student Outcomes: A Second Order Meta-Analysis", *Journal of Theoretical Education Science*, *15*(4), 938–957. https://doi.org/http://doi.org/10.30831/akukeg.1122136

model (Analysis, Design, Development, Implementation, Evaluation). The development process began with an analysis of student needs and course material, which revealed that students struggled to understand the transaction flow in the purchasing feature. This was followed by designing a module tailored to students' kinesthetic and visual learning styles, as well as the lesson plan for the Computerized Accounting course.

Expert validation results indicate that the module is highly suitable for use, with a combined average score of 86.29%, including a content expert validation score of 96.25%, a language expert validation score of 90.00%, and a design expert validation score of 81.18%. Results from pilot testing on 10 students (limited test) and 36 students (field test) showed a significant improvement in learning outcomes, as evidenced by the Wilcoxon Signed-Rank Test with significance levels of 0.005 (small class) and 0.000 (large class), as well as the N - Gain test with an average of 0.72 (moderate category) in the pilot test and 0.93 (high category) in the field test. Furthermore, student feedback on this module was highly positive at 92.33%, covering aspects of appearance and presentation, technical quality, and benefits.

The limitations of this study are as follows: (1) During the implementation of this study—which involved both a limited classroom pilot and a field trial—the Wi-Fi internet connection was unreliable, necessitating the use of each student's personal cell phone data connection to access the modules; (2) The study was conducted in accordance with the accounting computer class schedule at the vocational high school; the researcher was unable to select days other than those already designated in the class schedule

Based on these findings, it can be concluded that the Accurate Online learning module featuring the "purchases" function for the Android version has proven to be valid, practical, and effective for use as teaching material in the Computerized Accounting course at SMK Negeri 1 Geger, as it is capable of significantly improving student learning outcomes while also receiving positive feedback from users. This module can also serve as an alternative solution to the limitations of conventional teaching materials in digital technology-based accounting education, particularly for topics that require a step-by-step procedural understanding, such as the purchase feature. Future researchers are encouraged to develop Accurate Online learning modules with a broader scope of material—not limited to purchasing features but also covering sales, inventory, cash and bank transactions, fixed assets, and financial reporting. In addition, the module can be enhanced by adding more interactive learning features, such as transaction simulations, case-based exercises, and more varied assessments, thereby improving students' learning experience and overall proficiency in using Accurate Online.

REFERENCES

Anggraini, N. T., & Susanti. (2025). Pengembangan E-Modul Berbasis Pembelajaran Berdiferensiasi Ditinjau dari Gaya Belajar Siswa pada Elemen Perpajakan Fase F. *Jurnal Studi Guru Dan Pembelajaran*, *8*(2), 1188–1200. https://doi.org/https://doi.org/10.30605/jsgp.8.2.2025.6555

Aprilianti, A. R., & Siswandari. (2024). Keefektifan Model Problem Based Learning (PBL) untuk Meningkatkan Kemampuan Berpikir Kritis Siswa SMK Akuntansi pada Pembelajaran Komputer Akuntansi. *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)*, *4*(3), 1255–1266. https://doi.org/https://doi.org/10.53299/jppi.v4i3.733

Demir, M., & Kaya, M. (2022). Analysis of Constructivist Learning Model's Effects on Student Outcomes: A Second Order Meta-Analysis. *Journal of Theoretical Education*

Science, *15*(4), 938–957. https://doi.org/http://doi.org/10.30831/akukeg.1122136

Fitria, R. D., & Rohayati, S. (2024). Pengembangan E-Book Berbasis Kontekstual pada Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Kelas XI Akuntansi dan Keuangan Lembaga. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, *7*(8), 8606–8614. https://doi.org/10.54371/jiip.v7i8.5049

Hafizah, S. (2020). Penggunaan Dan Pengembangan Video Dalam Pembelajaran Fisika. *Jurnal Pendidikan Fisika, Universitas Muhammadiyah Metro*, *8*(2), 225–240. https://doi.org/https://doi.org/10.24127/jpf.v8i2.2656

Hakim, A. N., & Yulia, L. (2024). Dampak teknologi digital terhadap pendidikan saat ini. *Jurnal Pendidikan Sosial Dan Humaniora*, *3*(1), 220–229. https://publisherqu.com/index.php/pediaqu

Hasanah, N. R. J., Sriyulyani, N. S., Wijaya, R., & Ratnasari, D. T. (2020). Meningkatkan motivasi belajar siswa melalui pembelajaran inovatif di era digital. *Jurnal Psikologi Pendidikan*, *8*(4), 200–217. https://doi.org/https://doi.org/10.31004/jpion.v4i4.783

Imansari, N., & Sunaryantiningsih, I. (2017). Pengaruh Penggunaan E-Modul Interaktif Terhadap Hasil Belajar Mahasiswa pada Materi Kesehatan dan Keselamatan Kerja. *VOLT : Jurnal Ilmiah Pendidikan Teknik Elektro*, *2*(1), 11. https://doi.org/10.30870/volt.v2i1.1478

Jafar, A. F. (2021). Penerapan Metode Pembelajaran Konvensional Terhadap Hasil Belajar Fisikan Peserta Didik. *Al Asma: Journal of Islamic Education*, *3*(2), 190–199. https://doi.org/https://doi.org/10.24252/asma.v3i2.23748

Keengwe, J., Onchwari, G., & Agamba, J. (2014). Promoting effective e-learning practices through the constructivist pedagogy. *Education and Information Technologies*, *19*(4), 887–898. https://doi.org/10.1007/s10639-013-9260-1

Magdalena, I., Fauziah, S. N., Faziah, S. N., & Nupus, F. S. (2021). Analisis Validitas, Reliabilitas , Tingkat Kesulitan Dan Daya Beda Butir Soal Ujian Akhir Semester Tema 7 Kelas Iii Sdn Karet 1 Sepatan. *BINTANG :Jurnal Pendidikan Dan Sains*, *3*(2), 198–214. https://doi.org/https://doi.org/10.36088/bintang.v3i2.1291

Oktavia, M., Prasasty, A. T., & Isroyati. (2019). Uji Normalitas Gain Untuk Pemantapan Dan Modul Dengan One Group Pre And Post Test. *Simposium Nasional Ilmiah "Peningkatan Kualitas Publikasi Ilmiah Melalui Hasil Riset Dan Pengabdian Kepada Masyarakat," November*, 596–601. https://doi.org/10.30998/simponi.v0i0.439

Prastyaningtyas, E. W., & Widianti, H. S. (2018). Pengembangan Modul Pembelajaran Berbasis Group Investigation Dengan Pendekatan Problem Based Learning Pada Mata Kuliah Sistem Akuntansi Mahasiswa Pendidikan Ekonomi Universitas Nusantara Pgri Kediri. *Equilibrium: Jurnal Ilmiah Ekonomi Dan Pembelajarannya*, *6*(2), 148–160. https://doi.org/10.53682/gj.v2i1.911

Putra, A. P., & Susilowibowo, J. (2021). E-Modul Berbasis Android Mata Pelajaran Komputer Akuntansi Program Aplikasi Accurate Accounting V5 untuk Siswa Kelas XI. *Penelitian Dan Pengembangan Pendidikan*, *5*(2), 250–256. https://doi.org/https://doi.org/10.23887/jppp.v5i2.36500

Putri, A. K., & Hakim, A. R. (2025). Pengembangan e-modul interaktif berbasis heyzine flipbook yang terintegrasi dengan accurate education guna meningkatkan hasil belajar praktikum komputer akuntansi siswa smk. *Jurnal Pendidikan Akuntansi Indonesia*, *23*(1), 57–76. https://doi.org/https://doi.org/10.21831/jpai.v23i01.83875

Rahma, A., & Kurniawati, Y. (2024). Pengaruh model pembelajaran problem based learning (PBL) terhadap pemahaman konsep matematika siswa. *Jurnal Pendidikan Matematika*,

8(2), 301–308. https://doi.org/10.33087/phi.v8i2.403

Ritonga, M., & Syabrus, H. (2025). Faktor Penentu Keberhasilan Belajar Komputer Akuntansi. *JIIP (Jurnal Ilmiah Ilmu Pendidikan)*, *8*(8), 8926–8930. https://doi.org/https://doi.org/10.54371/jiip.v8i8.8777

Rizki, N. A., & Watulingas, J. R. (2023). Analisis Perbedaan Nilai Setiap Siklus dalam Penelitian Tindakan Kelas Menggunakan Uji Wilcoxon. *Jurnal Ilmiah Matematika Dan Pendidikan Matematika*, *13*(2), 169–180. https://doi.org/https://doi.org/10.36456/buanamatematika.v13i2.7258

Septianingsih, R., Yunita, M. I., Jalaludin, A. A., & Wahyu, H. S. (2025). Analisis Kelayakan Bahan Ajar Cetak Dan Digital Dalam Pembelajaran Di Era Teknologi Pendidikan. *Jurnal Ika : Ikatan Alumni Pgsd Unars*, *16*(2), 290–299. https://doi.org/https://doi.org/10.36841/pgsdunars.v16i2.7522

Sianturi, R. (2025). Uji Normalitas Sebagai Syarat Pengujian Hipotesis. *Jurnal Pembelajaran Dan Matematika Sigma (Jpms)*, *11*(1), 1–14. https://doi.org/https://doi.org/10.36987/jpms.v10i2.5881

Suhaedin, E., Giatman, M., & Maksum, H. (2024). Manajemen Kepemimpinan dalam Meningkatkan Kualitas Pendidikan Sekolah Menengah Kejuruan (SMK). *Journal of Education Research*, *5*(1), 170–179. https://doi.org/10.37985/jer.v5i1.719

Sulastri, S., & Andryani, A. (2023). MACC: Inovasi Media Pembelajaran Accurate Online Berbasis Android. *Jurnal Pendidikan Ekonomi (JUPE)*, *11*(1), 39–49. https://doi.org/10.26740/jupe.v11n1.p39-49

Wahyuni, Y. (2017). Identifikasi Gaya Belajar (Visual , Auditorial , Universitas Bung Hatta. *Jppm Jurnal Penelitian Dan Pembelajaran Matematika*, *10*(2), 128–132. https://doi.org/https://dx.doi.org/10.30870/jppm.v10i2.2037

Yeni, A., Suparti, & Warju. (2025). Analisis Penerimaan Teknologi dengan Metode UTAUT pada Siswa SMK dalam Menggunakan Accurate Online. *JIIP (Jurnal Ilmiah Ilmu Pendidikan)*, *8*(2), 1201–1210. https://doi.org/https://doi.org/10.54371/jiip.v8i2.6807

Zuhro, I. N., Sutomo, M., & Mashudi. (2022). Desain pembelajaran pendidikan agama islam dengan model addie. *Jurnal Studi Pendidikan Islam*, *5*(2), 180–193. https://doi.org/https://doi.org/10.52166/talim.v5i2.3085