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Advancing Accounting Education: A Comprehensive Approach to Inventory Materials Learning through Online Applications and the Smith-Ragan Model

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Abstract

Information technology has significantly influenced accounting and financial practices. This development was marked by several changes in the manual processing of accounting data into a computer accounting system with accounting software. While accurate online teaching materials exist, people still need to explain the logic behind using all the existing features and the related basic rules. This suggests that computer learning resources based on Accurate Educational accounting that discuss inventory could be developed further. This research aims to develop computer accounting teaching materials assisted by accurate online applications in an integrated manner with lesson plans, media, student worksheets, and assessment instruments. This research introduces an accurate online inventory-based inventory module, named Accurate Online, to help students to learn accounting computer material easier based on a scientific approach and problem-based learning. This research uses the Smith-Ragan model to test student responses to learning innovations and analyze their learning outcomes. The subjects in this study were 19 semester six students of the Accounting Education Study Program at PGRI Madiun University. This research develops learning innovations through lesson plans, modules, Student Worksheets, learning media, and evaluation instruments. The analysis results of the computer learning innovation process get very valid criteria with 95.42%, Lesson Plan 96.4%, worksheets 96%, learning media 92.5 %, and 96.25% evaluation instrument. Student responses to computer learning innovations for inventory module accounting based on Accurate Online get a practicality percentage of 87% in the practicality category, which is very practical and can be used without revision. Student learning outcomes have increased after participating in the Accurate Online-based accounting computer learning program. The value of the evaluation questions indicates the increase in student learning outcomes after learning is carried out using a structured learning program where 89% of students score above the Minimum Completeness Criteria.

Keywords: *accurate online,* advancing accounting education, education system, learning innovation, learning programme, Smith-Ragan model

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1. Introduction

Information technology has significantly influenced accounting and financial practices. This development was marked by several changes in the manual processing of accounting data into a computer accounting system with accounting software (Yuliana & Triandi, 2013).

Following the current situation, competition in the world of business and industry is increasing, there is a need for human resources in the form of individuals with a strong will, talent, and competence. Increasing the knowledge and abilities of the younger generation to become Indonesian workers seeks to boost the added value of human resources (Darmayanti et al., 2021). Reliable graduates are needed to support the growth of the business world and industry in the era of the digital economy and the Industrial Revolution 4.0 (Milaningrum & Rahmawaty, 2020). However, the workforce skills required by business and industry can fluctuate occasionally, and there is always pressure to be ready to meet society's demands. So life skills are really needed in the era of globalization (Setyaningsih et al., 2022). The accounting education study program aims to produce competent graduates with connections to the industrial sector, which requires reliable human resources to meet demand. To improve the quality of graduates' transition to today's highly competitive world of work, where employers are looking for more skilled personnel, accounting education graduates are equipped with accounting skills (Prawiyogi & Toyibah, 2020).

The Accounting Education Study Program at the Universitas PGRI Madiun uses competency certification from Accurate, Certified Accurate Professional (CAP), an accounting computer practice exam using Accurate tools for advanced levels. Accurate tools itself have more than 20 years of experience and has been awarded the Top Brand Award for six consecutive years. Accurate has been trusted by more than 377,000 users with different business backgrounds (Ibnu, 2021). The CAP program requires students to understand the features of Accurate Online, not just in cases where the steps are already available. This is to face the world of work, which is now wholly computerized (Yusdita et al., 2022).

Based on the results of interviews and field observations at the Study Accounting Education Program, Universitas PGRI Madiun, it was found that students felt burdened and had difficulties due to limited study reference sources, especially the Accounting Computer course, particularly Accurate online. Students need to understand better the function of the inventory feature contained in Accurate Online. Students need clarification about classifying and recording inventory transaction questions into Accurate online when working on skills or transaction questions. The mistake that often occurs when recording inventory transactions is in the goods requisition feature; students often skip the steps when recording receipt of the transfer of goods at the destination warehouse; when working on inventory adjustment transactions that require inventory reductions, students forget or do not change the type of adjustment when making goods and services in group units, sometimes students are still confused about the steps that must be taken in order to make new goods in group units.

The researcher offers a solution to the problems mentioned above by developing an inventory module based on Accurate Online because the educational version of Accurate Online-based accounting computer learning resources that discuss inventory is minimal. While Accurate Online learning resources exist, they still need to clarify the reasons for using all the available features and the basic guidelines involved (Yusdita et al., 2022).

Researchers develop learning tools integrated with a scientific approach and problem-based learning. A scientific approach to the learning process can increase student activity, motivate students, and improve student achievement (Firman et al., 2018). The learning process with a scientific approach

requires students to explore their knowledge through observing, asking, trying, concluding, and communicating. The learning process with a scientific approach must be accompanied by the proper method (Ain & Huda, 2018).

Problem-based learning is a learning model that involves students solving problems encountered in the learning process. Students work actively, encourage collaborative learning, and allow them to choose what they want to study (Saputro & Rayahu, 2020). In the problem-based learning model, students are given problems to solve and then directed to increase their learning activities to make them more effective (Annisa & Sukanti, 2018).

Philosophically, a textbook must meet the following criteria: (a) ontologically, the validity of textbooks is critical in the learning process. Textbooks contain materials in a curriculum to achieve instructional aims or objectives at school, (b) epistemologically, textbooks are prepared or written by experts in their respective fields, aimed at specific instructional goals, and are intended for students at certain educational levels as well, (c) axiologically, textbooks are used by teachers and students to facilitate understanding of the subjects outlined in the curriculum. In particular, textbooks help direct the Indonesian language learning process to achieve the following objectives: (a) improve students' ability to achieve a certain level of qualification in the language and (b) improve the ability to communicate efficiently and effectively, both verbally and in writing, in various needs in everyday life or the world of work (Kokasih, 2021).

The updating of the learning program carried out is using teaching materials developed by the researchers. Researchers developed the latest version of the Accurate online module. This module discusses inventory management and inventory adjustment for Trading Companies. Kirana & Susilowibowo (2020) revealed that teaching materials were declared feasible for use when the material field validator component obtained a result of 85,9% with very feasible criteria, the validator component in the Language field got a result of 83,7% with very feasible criteria, and the graphic field validator component gets a result of 87,3% with very feasible criteria. As for the point of view of student responses, Rismaini et al. (2019) revealed that teaching material can be used when obtaining an average point of 93,14%. Not only teaching materials that support learning programs should be able to improve student learning outcomes, Akbar et al. (2018) revealed that the teaching materials developed could increase high school students' accounting learning achievement by 31,25 points from 57,81 to 89,06 and the difference in post-test scores was 18,75 points from the control class 70,31 and the experimental class 89,06.

Based on this explanation, accounting teaching materials have been developed but have not been comprehensively carried out in learning programs. This research aims to develop computer accounting teaching materials assisted by accurate online applications in an integrated manner with lesson plans, media, student worksheets, and assessment instruments. This research uses the Smith-Ragan model to test student responses to learning innovations and analyze their learning outcomes. This study, particularly, focuses on the development of two meetings with time allocation of 100 minutes per session. The first meeting focuses on the material that bridges students' conceptual development using the accurate online inventory module application. Meanwhile, the second meeting focuses to work on case studies and

evaluate the achievement of learning objectives.

2. Method

This study uses research and development *(R & D)* method to improve, develop, and evaluate the education system (Yuliani & Banjarnahor, 2021). In particular, this study uses Smith and Ragan's 1993 development model. This model has eight stages: analysis of the learning environment, analysis of student characteristics, analysis of learning tasks, writing test questions, developing learning strategies, creating learning programs, implementing formative evaluations, and improving learning programs (Tyanto & Manoy, 2013).

This study focuses on the Universitas of PGRI Madiun. The samples taken by researchers to conduct field trials were 19 students from 6th-semester Accounting Education students at Universitas PGRI Madiun. The samples researchers took to conduct field trials included 19 students from the 6th semester of Accounting Education at PGRI Madiun University. The researcher took a sample of 6th-semester students because 6th-semester students were taking computer accounting courses to prepare for the CAP exam that the students would take. Apart from that, no practitioner class programs in semester six influenced lecture activities outside of lesson plans.

Data collection techniques used by researchers are (a) researchers observed aspects of needs in the accounting computer learning program at the Universitas PGRI Madiun; (b) the questionnaire used by researchers is an assessment questionnaire or validation of eligibility, learning tools, and learning processes assessed by experts in accounting computer learning. The researcher chose a computer accounting teacher at SMKN 2 Madiun as an expert in evaluating the developed learning innovations. Questionnaire scoring uses a 1-5 Likert scale. Scoring using a Likert scale can be seen in Table 1.

Table 1. Scoring Using a Likert Scale

Score	Category	Conclusion
5	Strongly Agree	SS
4	Agree	S
3	Disagree	KS
2	Disagree	TS
1	Strongly Disagree	STS

Source: (Kartini & Putra, 2020)

Calculation of final value data from validation results is carried out using the equation:

$$V = \frac{X}{Y} \text{ x } 100\%$$

Information:
V = validity value
X = score obtained
Y = maximum score
Table 2 shows the category of validity:

Table 2. Learning Device Validity Category

No	Criteria	Validity Level
1	85,01% - 100%	Very valid
2	75,01% - 85,00%	Valid
3	60,01% - 75,00%	Fairly valid
4	50,01% - 60,00%	Not valid
5	<50,00%	Very invalid

Source: (Osin et al., 2019)

Student's response questionnaire addressed 6th-semester students regarding the practicality of accounting computer teaching materials compiled and the implementation of learning in the class conducted by researchers. Next, all data from the assessment questionnaire is recapitulated, and each statement item is calculated using the following formula:

$$P = \frac{\text{total score resulting from data collection}}{\text{number of criteria scores}} \times 100\%$$

Table 3 presents the practicality level:

Table 3. Practicality Criteria

No	Score Intervals (%)	Practicality Level
1	85,01% – 100,00%	It is very practical and can be used without revision
2	70,01% – 85,00%	Quite practical, can be used but needs revision
3	50,01% – 70,00%	It is not practical, and it is recommended not to use it because it needs major revisions
4	01,00% – 50,00%	Not practical or should not be used

Source: (Alvionita et al., 2019)

The documentation carried out by researchers is documentation during the process of preparing learning tools, assessing or validating the feasibility of learning devices with experts, and the learning process carried out by researchers and field trials on Accounting Education students at the Universitas PGRI Madiun.

Interviews were conducted with students and lecturers in Computer Accounting courses and Accounting Education students at the Universitas PGRI Madiun to discover the problems during the learning process.

3. Result and Discussion

The development of a computer accounting learning program based on Accurate Online for inventory material through the Smith-Ragan model has eight stages. The following are the steps carried out by the researcher to create the learning program:

a. Learning Environment Analysis

From the analysis of the learning environment researchers have carried out, the learning facilities provided by the Accounting Education Study Program are adequate, with classrooms and labs. There are computers for Accounting Education students with desk and chair facilities, blackboard and writing equipment, LED TV, speakers, LCD projector, air conditioning, and fan. According to Hasibuan (2018), Learning facilities facilitate and expedite student learning activities—various learning facilities such as learning places, stationery, and learning media. Learning facilities help students solve problems that arise in learning

and understand teacher lessons and assignments.

The curriculum and syllabus use the *Merdeka Belajar Kampus Merdeka (MBKM)*. According to Nurdiansyah et al. (2022), The MBKM curriculum significantly relates to students' understanding of computer accounting courses. Students participating in Kampus Merdeka activities can add insight into accounting computer courses. The minister asserts that learning must be meaningful and relevant so that students have sufficient provisions to face the real world (Awaludin et al., 2022).

In the learning process, the lecturer not only conducts learning in class but also provides opportunities for students to study independently at home and assign assignments to students. The learning resources used are only practice questions for Accurate Online practice without explaining the features of Accurate Online.

Learning facilities and infrastructure, including learning resources, are examples of external elements that can affect student learning outcomes. It is hoped that students will approach learning with tremendous enthusiasm and make better use of available learning resources. Computer accounting learning outcomes are positively influenced by using learning tools (Rohana & Isroah, 2020).

b. Analysis of Student Characteristics

From the results of interviews with lecturers who teach computer accounting courses, the results of observations and assessments during the learning process show that students are less active and less enthusiastic. Student activity depends on enjoyable learning to make students enthusiastic about learning. Student activity can also be honed through discussions and questions and answers between students and students and between students and lecturers (Rikawati & Sitinjak, 2020).

The results also suggest that there are still problems with students' honesty in completing their assignments. To overcome this, the lecturer provides intensive guidance to students about the tasks that must be done. The teacher does not only provide knowledge in the cognitive domain of honesty but needs to have an affective domain and apply it to actual behavior in applying the value of honesty. Teachers, of course, have to instill the value of discipline because the nature of discipline will instill in students the values of honesty (Munif et al., 2021). To assist students in acquiring the knowledge and skills required for entry into the workforce, the fundamental activity of learning in higher education should help shape their personalities (Thambu et al., 2021). The ability to praise, motivate, and advise is an essential component in the formation of children's character education in the disruptive era in education (Prayitno et al., 2019).

The results also suggests there are problems on the assessment of learning outcomes obtained by students. With learning media, the quality of learning increases because not only do lecturers actively provide material to students, but students can also be active in class and be involved in the learning process so that students more easily accept material delivered by lecturers (Nurrita, 2018). Lecturers provide knowledge to students and students who need to actively construct knowledge in their minds (Sugrah, 2019).

c. Learning Task Analysis

The Accurate Online accounting computer assignment given by the Accounting Education Study Program lecturer is in the form of practical questions in the form of

case studies and short answers. The assignments the lecturer gave are almost identical to the CAP test questions. The CAP test questions contain multiple-choice, case study, and short answer questions. However, the assignment given by the Accounting Education Study Program lecturer did not include multiple-choice questions. Systematic work on computer accounting assignments provided by lecturers through eLMA (e-Learning UNIPMA). Students can access and work on questions anywhere and anytime, so there is no supervision regarding assignments by lecturers.

The accounting computer learning program carried out by researchers has set learning objectives. For instance, students are expected to be able to analyze and apply inventory features in Accurate Online honestly and responsibly, and students are expected to implement inventory management transaction recording honestly and responsibly. In this case, the assignment given is student worksheet questions in the form of practicum questions adapted to the assignment model with CAP test questions and evaluation questions containing knowledge questions. Practicum questions are expected to enhance students' understanding on the use of accounting software in accounting practice in the world of work (Sastra, 2022). Evaluation questions are needed to measure students' thinking skills during learning. This is indicated by the ability of students to work on the evaluation questions (Mariati, 2018).

d. Write Item Test

At this stage, the researcher wrote down the items for the pre-test, student worksheets, and evaluation questions for semester six students of the PGRI Madiun University Accounting Education Study Program. The items written for the pre-test questions come from merchandise inventory materials. The pre-test questions contain ten multiple-choice questions, where 1 item is worth 10 points.

The Student Worksheets questions contain practice or skills to input inventory transactions in the Accurate Online-based inventory feature. The question consists of 6 items, each with a different value or point.

The evaluation questions contain inventory feature material based on Accurate Online. The compiled multiple-choice questions were tested for validity and reliability using SPSS 25. According to the formula (df=N-2), df=19-2 is 16 (df=16). Under the provisions of the obtained df or degree of freedom (df=16, with a sig level of 0.005), it can be concluded that the r-table value is 0.479.

Table 4. Summary of Test Results for the Validity of Pre-Test Questions

No. Question	r count	r table	Conclusion
1	0,653	0,479	Valid
2	0,723	0,479	Valid
3	0,792	0,479	Valid
4	0,573	0,479	Valid
5	0,653	0,479	Valid
6	0,739	0,479	Valid
7	0,620	0,479	Valid
8	0,788	0,479	Valid
9	0,706	0,479	Valid
10	0,671	0,479	Valid

The results of the validity test of the pre-test questions in Table 4 show that from the test items, ten multiple choice questions stated that ten questions were valid with the condition that r-count > r-table.

Table 5. Summary of Post-Test Validity Test Results

No. Question	r count	r table	Conclusion
1	0,818	0,479	Valid
2	0,840	0,479	Valid
3	0,609	0,479	Valid
4	0,893	0,479	Valid
5	0,709	0,479	Valid
6	0,872	0,479	Valid
7	0,462	0,479	Invalid
8	0,945	0,479	Valid
9	0,927	0,479	Valid
10	0,893	0,479	Valid

The results of the validity test of the post-test questions in Table 5 show that ten multiple choice questions from the test item items stated that 1 item was invalid and nine questions were valid with the condition that rcount > rtable. Invalid questions must be revised and retested (Lestari et al., 2016). However, in this study, the researcher did not revise and test the items again due to time constraints, so the assessment only contained nine questions. From this, the researcher adjusted the scoring guidelines for the invalid score treatment to obtain the maximum value calculation.

Reliability measurement is measured by Cronbach's Alpha (α) statistical test with the help of SPSS 25 for Windows. A research instrument is reliable if Cronbach's Alpha > 0.50 (Son, 2019). The results of the reliability test of pre-test questions can be seen in Table 6.

Table 6. Summary of Pre-Test Reliability Test Results

Cronbach's Alpha	N of Item	Conclusion
0,506	10	Reliable

The results of the calculation of the reliability test of Cronbach's Alpha method (r count) can be seen in the Cronbach's Alpha column, namely 0.506 with N of Items indicating that the number of items or the number of questions inputted in the variable view is 10. Cronbach's Alpha results for 19 data items or ten questions, namely 0.506, suggesting that the evaluation questions are reliable, with moderate reliability.

Table 7. Summary of Post-Test Reliability Test Results

Cronbach's Alpha	N of Item	Conclusion
0,707	9	Reliable

The results of the calculation of the reliability test of the Cronbach's Alpha method (r count) as can be seen in the Cronbach's Alpha column is 0.707 with N of Items indicating that the number of items or the number of questions inputted in the variable view is 9. The Cronbach's Alpha results for 19 data of items or nine questions is

0.707, so it is concluded that the evaluation questions are reliable, with a high degree of reliability. The results of the reliability test of post-test questions can be seen in Table 7.

At the implementation stage of the pre-test questions for students, there are three questions with the most errors, namely questions 1, 3, and 5. The analysis of pre-test questions can be seen in Figure 1.

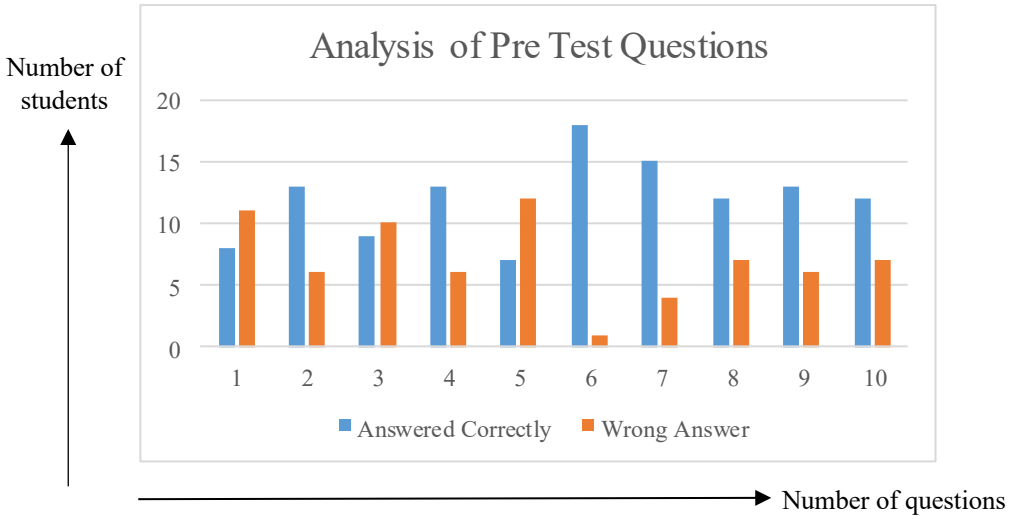


Figure 1. Analysis of Pre-Test Questions

Each incoming item is given a unique identification in question number 1 regarding the inventory valuation method. 58% of students answered using the FIFO method, but the correct answer was the specific identification method. In this question, students did not pay close attention to the questions, so most answered incorrectly.

Question number 3 contains inventory recording questions that do not use the physical method. 53% of students answered with expensive goods, but the correct answer was goods with mass production. Question five presents data using the physical or periodic inventory method, and 63% of students answered that the method is the average. In these questions, students need help understanding how to record inventory using physical or periodic methods. Based on these problems, the researcher rediscussed the results of the analysis of pre-test questions.

At the implementation stage of post-test or evaluation questions for students, there are two questions with the most errors, namely questions 1 and 8. Analysis of post-test questions can be seen in Figure 2.

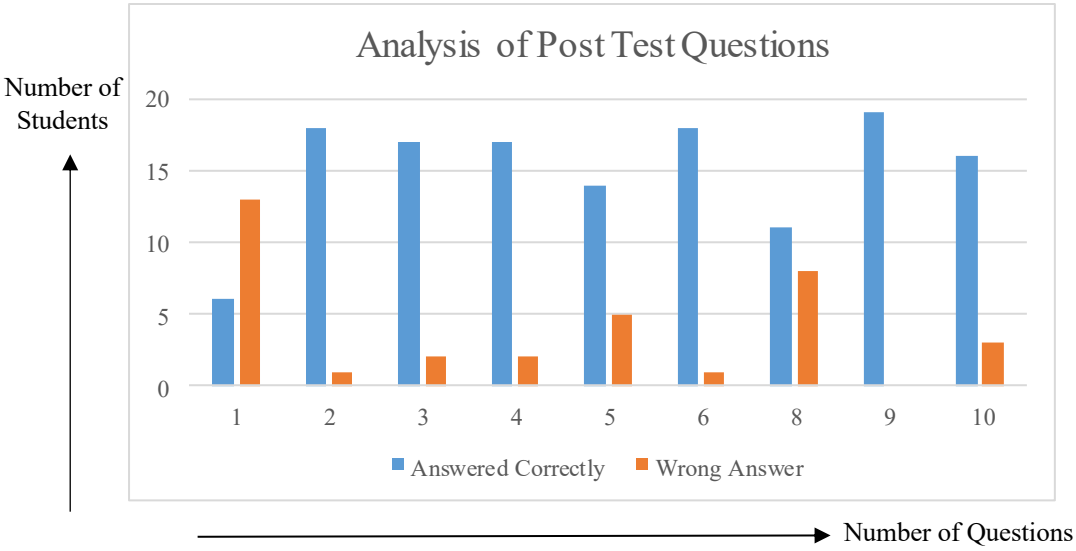


Figure 2. Analysis of Post-Test Questions

Question number 1 asked which features are used when the warehouse requests to buy goods because the stock in the warehouse is running low, so the correct answer is to use the goods request feature. 68% of students answered with the feature of adding raw materials. Based on the analysis, students need help understanding the flow or recording cycle when the inventory stock in the warehouse runs out or runs low. Students still need clarification about the function of adding raw materials, so further discussion is needed regarding the function of this feature. The researcher made revisions to the compiled modules regarding the features of demand for goods and the features of adding raw materials.

Problem number 8 is presented about transactions when the company gets an order different from what is usually produced. The correct steps for inputting the question should have been the inventory feature, and then work orders, but 42% of students answered order fulfillment and the addition of raw materials. The analysis of these questions found that students still needed clarification about the functions of the job order and order fulfillment features, so further discussion was needed. The researcher revised the compiled modules regarding job order and order fulfillment features. After making revisions, the researcher reflected on the revisions of the teaching materials compiled. However, further testing was not carried out due to time constraints.

Things that are simple for teachers are sometimes challenging for students; the difficulty level of the questions can be determined by the student's ability to answer them, not based on the assumptions of the teacher who prepared the questions. Items can identify able students (who have mastered the material) and students who are less able (who do not know the material) (Son, 2019; Utomo, 2018). Preparing materials, assignments, and quizzes that serve as the final assessment produces learning aids that encourage students to participate more actively in their academic activities (Yahya et al., 2020).

e. Determining Learning Strategies

The learning strategy used in this learning program is problem-based learning. Implementation of problem-based learning starts from problem orientation, organizing

students, guiding individual, or group investigations, developing and presenting work, and analyzing and evaluating problem-solving processes. Students feel happy in the learning program conducted by researchers during the learning process, evidenced by student responses from the distributed questionnaires. The distributed questionnaire contained the components of the novelty of the learning program, attractiveness, clarity, and usefulness and got a percentage of 87%.

The learning process in class using problem-based learning conducted by researchers can improve student learning outcomes. Before learning, students worked on pre-test questions, showing that 21% completed the Minimum Completeness Criteria score above, and the other 79% scored below the Minimum Completeness Criteria. The value indicates increased student learning outcomes after learning with a problem-based learning strategy, where 89% of students score above the Minimum Completeness Criteria.

Problem-based learning helps students develop independent learning, investigation, problem-solving, and behavior (Gumartifa et al., 2023). In problem-based learning, the learning process takes place by giving problems, which are then identified as problem ideas, with the aim of students identifying problems relevant to the subject matter (Setyaningsih et al., 2022). Problem-based learning methods can positively affect students in the accounting computer learning process, especially in increasing student achievement (Jaya, 2022).

Iswinar (2019) documented increased average score achievement for computational accounting subjects using problem-based learning strategies. Nurcahyani et al. (2022) show that applying problem-based learning strategies can improve accounting computer learning outcomes regarding cognitive, affective, and psychomotor aspects.

f. Producing Learning Programs

Producing learning programs begins with developing learning tools, including a lesson plan, teaching materials in modules, Student Worksheets, learning media, and evaluation instruments.

1) Develop a Learning Implementation Plan

The CPL and CPMK guide the Computer Accounting Learning Implementation Plan in the Accounting Education Study Program to direct student learning activities in achieving competency. The Lesson Plan developed contains the CPL-Study Program, CPMK, Sub-CPMK, learning objectives, learning materials, approaches, learning models and methods, media, learning materials and resources, learning steps, and assessment of learning outcomes.

The lesson plan in accounting computer learning is assessed by Hariyadi, S.Pd., M, Si., an accounting computer teacher at SMKN 2 Madiun. Lesson Plan assessment analysis can be seen in Table 8.

Table 8. Validation Analysis of Learning Implementation Plans by Material Experts

Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Formulation of the purpose of the problem	15	15	100%	
Selection and organization of presentation teaching materials	18	20	90%	
Selection of learning resources/learning media	10	10	100%	96,4%
Learning Activities	23	25	92%	
Assessment of learning outcomes	15	15	100%	

Analysis of the validation of the lesson plan by material experts shows that the lesson plan of Accounting Computer gets a very valid category with a final validation percentage of 96.4%. A learning device is valid if it achieves a minimum criterion score of 78,57% (Nasution & Oktaviani, 2020).

Researchers use the lesson plan as a reference so that each learning process and step can be carried out in a structured manner. Researchers manage learning by the lesson plan that has been created. The learning process carried out by the lesson plan shows that the implementation of learning with teaching materials and learning strategies has gone well (Weriyanti et al., 2020). This aligns with research (Yahya et al., 2020), where the learning tools developed are lesson plans and teaching materials. This learning is practical if at least 85% of the students get a score more significant than the Minimum Completeness Criteria, so the learning tool is valid, practical, and efficient.

2) Developing an Accurate Online Based Inventory Module for Service & Trade Companies

The material's content in the supply module is adjusted to the applicable CPMK in the Accounting Education Study Program, which becomes the learning objective students must achieve. The compiled module contains a cover display, preface, table of contents, instructions for using the module, the concept of the inventory cycle, an explanation of the inventory features in Accurate Online, illustrations of the use of the inventory features and how to solve them, material summaries, knowledge questions, and skills questions.

The Accurate Online-based inventory feature module for service and trade companies was assessed by Hariyadi, S.Pd., M, Si., accounting computer teacher at SMKN 2 Madiun, a material expert in accounting computer learning. Module assessment analysis can be seen in Table 9.

Table 9. Analysis of Module Validation by Material Experts

Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Content Eligibility	57	60	95%	
Eligibility of Presentation	28	30	93,33%	
language	14	15	93,33%	95,42%
Usefulness	10	10	100%	

Analysis of module validation by material experts shows that the Computer Accounting Module for Inventory Features Based on Accurate Online gets a very valid category with a final validation percentage of 95.42%. The module is valid if the average feasibility is 86.18% (Ambarwati & Rochmawati, 2020).

The steps taken in preparing contextual learning teaching materials are: 1) reviewing core competencies and basic competencies to identify teaching materials based on facts, concepts, principles, and procedures; allocating study time; and developing indicators and student assessment tools, and 2) determining learning time, and assessing learning outcomes. 3) selecting teaching material competencies and building learning tools based on topic competencies, 4) designing learning materials and learning assessment tools using learning strategies, and 5) compiling learning scenarios and activities using a learning approach (Cahyadi, 2019).

In the learning process, researchers use the module as a learning resource. Each student gets their module so that students can freely study the contents of the module. Some pictures or illustrations can be observed to make it easier for students to understand the lesson. According to Setiyadi et al. (2017), the use of scientific-based learning modules has met the effectiveness criteria because student learning outcomes tests have met the classical completeness criteria of 84.21%.

3) Compile Student Worksheets

Computer Accounting Student Worksheets are structured to help simplify the learning process so that effective interaction between students and lecturers can be realized. Student worksheets can also increase student learning activities and achievements (Zamrodah, 2020).

The prepared student worksheets contain cover displays, courses, intended semesters, CPL-Study Programs, CPMK, Sub-CPMK, learning objectives, learning materials, brief material regarding Accurate Online-based inventory features, and practice questions. Computer accounting student worksheets were assessed by Hariyadi, S.Pd., M, Si., an accounting computer teacher at SMKN 2 Madiun. Student worksheet assessment analysis can be seen in Table 10.

Table 10. Analysis of Computer Accounting Student Worksheets Validation by Material Experts

Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Student Worksheets Structure	24	25	96%	
Writing Organization	23	25	92%	96%
Language	15	15	100%	

Validation analysis by material experts showed that Computer Accounting Student Worksheets were in the very valid category with a final validation percentage of 96%. Student Worksheets are considered valid if the validation results reach a minimum valid level with the criteria of 75.01% - 85.00% (Osin et al., 2019).

Worksheets are needed to increase student participation or activity in the teaching and learning process, change learning conditions from teacher-centered to student-centered, and help teachers orient students to be able to generate concepts (Zamrodah, 2020). With worksheets, students understand the material with document summaries and example questions included in the

worksheets. Using worksheets helps students learn independently, participate actively, and take responsibility for the tasks presented on the worksheets, making it easier for teachers to direct the learning process. Assessment of the effectiveness of worksheet learning tools can be seen from the results of student learning tests (Osin et al., 2019).

4) Developing PowerPoint Learning Media

Choosing the right learning media can make computer accounting learning more enjoyable. Learning media is also a means of conveying inventory material in Accurate Online. The PowerPoint design contains a title page, learning objectives, the concept of the inventory cycle, a learning video, and an explanation of the Accurate Online-based inventory feature.

Computer accounting PowerPoint learning media was assessed by Hariyadi, S.Pd., M, Si., an accounting computer teacher at SMKN 2 Madiun. Analysis of learning media assessment can be seen in Table 11.

Table 11. Analysis of Learning Media Validation by Material Experts

Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Material	10	10	100%	
Illustration	9	10	90%	
Quality and Display	9	10	90%	92,5%
Attractiveness	9	10	90%	

Analysis of the validation of learning media by material experts shows that computer accounting PowerPoint learning media gets a very valid category with a final validation percentage of 92.5%. The media is valid if it is in the range of≥ 61% (Bintiningtiyas & Lutfi, 2016).

One exciting learning medium that can be utilized in learning is the interactive PowerPoint application, which has been proven to increase student interest and motivation and improve learning achievement (Wulandari, 2022). Learning media is also a tool that teachers can use as a learning resource to explain material to students. In the learning process, there is a need for tools so that students are more interested in learning, especially by utilizing learning media designed in the form of applications (Muftizar et al., 2020). Student learning outcomes have increased with the existence of learning media. The teaching and learning process becomes easy and exciting so students can understand the lessons easily (Nurrita, 2018).

5) Develop Evaluation Instruments

Evaluation instruments are structured to collect and process the results of student learning outcomes. The evaluation instrument compiled was a test instrument containing evaluation questions and non-tests in the form of an attitude assessment observation sheet. The evaluation instrument contains an attitude assessment rubric, attitude observation sheets, knowledge assessment, skills assessment, and scoring guidelines. The accounting computer evaluation instrument was assessed by Hariyadi, S.Pd., M, Si., an accounting computer teacher at SMKN 2 Madiun. Analysis of an analysis of the evaluation instrument is seen in Table 12.

Table 12. Analysis of Evaluation Instrument Validation by Material Experts

Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Question Material	18	20	90%	
Content Construction	19	20	95%	
language	15	15	100%	96,25%
Time	5	5	100%	

Analysis of the validation of evaluation instruments by material experts shows that computer accounting evaluation instruments get a very valid category with a final validation percentage of 96.25%. The results of expert validation show that all validated learning tools are classified as quite valid criteria with a percentage of > 70% (Fatmawati, 2016).

In the learning process, the evaluation instruments used contain affective (attitude) assessment rubrics, student observation sheets, knowledge and skills assessment sheets, and scoring guidelines. According to Imania and Bariah (2019), instruments for successful learning, for example, are about cognitive and affective aspects. The application of the learning tools developed has been practical in supporting learning activities; this is based on the product's cognitive learning outcomes meeting the Minimum Completeness Criteria (individual and classical), the cognitive process learning outcomes being assessed as good, and the students' psychomotor learning outcomes are assessed as suitable.

Thus, the learning tools are valid, practical, and effective (Fatmawati, 2016). The application of practical learning tools for use in learning activities is based on the results of learning implementation, which are classified as very good and positive student responses, and evaluation tools based on Bloom's taxonomy can improve student understanding (Mariati, 2018).

g. Conduct Formative Evaluation

Formative evaluation is carried out by giving test questions to students. A test is a tool or instrument used to measure student behavior on a specific scale. The measures used to assess learning outcomes are tests and non-tests. Based on test results, lecturers can make decisions about the learning process (Ananda & Fadhilaturrahmi, 2017). For example, the instrument for learning success involves cognitive and affective aspects (Imania & Bariah, 2019).

The researcher gave pre-test and post-test questions to measure the increase in student learning outcomes before and after treatment. The results of the formative evaluation will later be calculated using the assessment instruments that have been made. Evaluation results will be measured using the Minimum Completeness Criteria. The Minimum Completeness Criteria score is determined if students score ≥ 71. Student test results are declared complete if the scores at least meet the specified Minimum Completeness Criteria (Osin et al., 2019).

From the pre-test results conducted for semester six students with 19 students, only four students were declared complete, while 15 other students scored below the Minimum Completeness Criteria. So, 79% of students still need to complete it, and 21% have completed it.

After students do the pre-test, they follow the learning process by researchers. The learning process by researchers follows the Lesson Plan that has been prepared. Ac-

counting computer learning is carried out using a problem-based learning strategy. The purpose of holding accounting computer learning is that students can analyze and apply inventory features in Accurate Online honestly and responsibly and analyze and apply inventory management transaction records honestly and responsibly.

After the learning process is carried out, students work on evaluation questions that have been prepared. Evaluation questions contain practice or skills questions on Student Worksheets and knowledge questions. The work results of students are then assessed based on the evaluation instruments that have been prepared. The assessments included affective (attitude), knowledge, and skills assessments.

The formative evaluation of the accounting computer shows that 89% of students complete, where students get scores above the Minimum Completeness Criteria set by the Accounting Education Study Program at the University of PGRI Madiun. The product is effective if the student's score achieves classical learning mastery, which is at least 85% (Yahya et al., 2020).

At this stage, an expert assessment is also carried out on implementing learning in the classroom. The implementation of accounting computer learning was assessed by Hariyadi, S.Pd., M, Si., an accounting computer teacher at SMKN 2 Madiun. The expert validation sheet contains 23 questions: nine questions are the introductory component, ten questions are the core activity component, and four are the closing component. Analysis of expert judgment on implementing learning can be seen in Table 13.

Table 13. Analysis of Learning Implementation by Material Experts

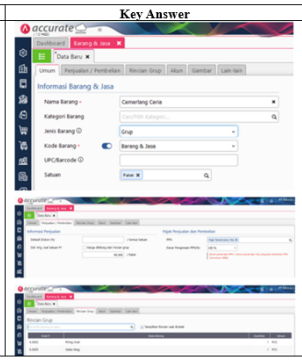
Assessed Components	Earned Score (*X*)	Maximum Score (*Y*)	Validity Percentage (*V*)	Final Validity Percentage
Introduction	42	45	93,33%	
Core activities	46	50	92%	93,44%
Closing	19	20	95%	

Analysis of the implementation of learning by material experts shows that Computer Learning Innovation Accounting Computer Features Inventory Based on Accurate Online gets a very valid category with a final validation percentage of 93.44%. The product is valid if it has been validated by a validator who is an expert in the field with a minimum valid category (Yahya et al., 2020).

h. Revise the Learning Program

At this stage, the researcher adjusted the scoring guideline evaluation instrument for the invalid score treatment to obtain the maximum value calculation. Revisions help to improve the evaluation tool developed (Ananda & Fadhilaturrahmi, 2017). The evaluation instrument before revision can be seen in Table 14, and the one after revision can be seen in Table 15.

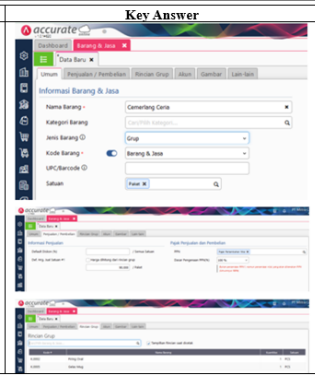
Table 14. Analysis before Revising the Learning Program

Before Revision			Information
7. PT Ananda moved the goods from the front warehouse to the spare warehouse because the goods were damaged. The steps to input the transaction are … a. Inventory – transfer of goods b. Inventory – goods per warehouse c. Inventory – warehouse d. Inventory – opname stock order	A	True = 2 False = 0	The scoring of question number 7 before testing the validity and reliability of the questions. Question number 7 gets 2 points correct.
Questions: 1. Transaction 1: June 1st, 2022 PT Indah Cemerlang provides a promo packet with the following details: a. Name of promo : Cemerlang Ceria b. Unit : Packet c. Price : IDR 90,000/packet d. Content : 1 pcs of oval plate and 1 mug-made glass e. Tax : 11%	Key Answer: 	Scoring: 3 3 4	Before the revision was carried out because question number 7 was invalid, skill question number 1 received 10 points according to what was determined by the researcher.
		14	The maximum total score for the skills assessment is 72 points.
	Maximum Scores	72	

Maximum scores = effective score + score of knowledge + score of skill = 100

Ex: Maximum Score = 8 + 20 + 72 = 100

Table 15. Analysis After Revising the Learning Program

After Revision			Information
Questions	Reviewer A	Reviewer B	Question number 7 was removed from the scoring calculation because it was invalid.
7. PT Ananda moved the goods from the front warehouse to the spare warehouse because the goods were damaged. The steps to input the transaction are … a. Inventory – transfer of goods b. Inventory – goods per warehouse c. Inventory – warehouse d. Inventory – opname stock order	Invalid	Invalid	
Questions: 1. Transaction 1: June 1st, 2022 PT Indah Cemerlang provides a promo packet with the following details: a. Name of promo : Cemerlang Ceria b. Unit : Packet c. Price : IDR 90,000/packet d. Content : 1 pcs of oval plate and 1 mug-made glass e. Tax : 11%	Key Answer: 	Scoring: 4 4 4	As a result of eliminating the scoring of question number 7, the researcher added a score to skill question number 1 so that students get the maximum score not affected by the elimination of question number 7.
		14	The maximum score for skills assessment after revision is 74 points. So, the maximum value obtained by students from affective assessment + knowledge assessment + skills assessment = 100 points.
	Maximum Scores	74	

Maximum scores = effective score + score of knowledge + score of skill = 100

Ex: Maximum Score = 8 + 18 + 74 = 100

Researchers also revised the inventory module. The revised features include requests for goods, adding raw materials, job orders, and order fulfillment. Improvements were made from various deficiencies and weaknesses in the products developed,

which were the results of evaluations (Imania & Bariah, 2019). The module before revision can be seen in Table 16, and the module after revision can be seen in Table 17.

Table 16. Module Revision Based on Problem Number 1

Before Revision	After Revision	Information
A. Features of Demand for Goods The goods request feature in Accurate Online which serves to record requests for goods due to the purchase of goods or requests from 1 warehouse to another. In manufacturing companies, generally the demand for goods comes from the production department because it is related to the production process of goods. In addition to manufacturing companies, generally requests are made by the warehouse department related to the stock of merchandise to be sold.	**A. Features of Demand for Goods** The goods request feature in Accurate Online which serves to record requests for goods due to the purchase of goods or requests from 1 warehouse to another. In trading and service companies, generally requests are made by the warehouse department related to the stock of merchandise to be sold. The function of the goods demand feature is that when requesting goods from the warehouse to the purchasing section, there is a request from the warehouse to buy goods because the stock is running low or running out.	The function of the goods demand feature in trading and service companies is generally carried out by the warehouse department related to the stock of merchandise to be sold.
E. Features of Adding Raw Materials The Adding Raw Materials feature has 2 functions, namely adding raw materials due to a shortage of raw materials when producing orders, by using the addition of raw materials (take goods) or adding raw materials to inventory because there is an excess of raw materials after the production process (returns). The addition of raw materials, both pick up goods and return goods, can be done before order completion is made. Usually this feature of adding raw materials is used by manufacturing companies.	**E. Features of Adding Raw Materials** The Adding Raw Materials feature has 2 functions, namely adding raw materials due to a shortage of raw materials when producing orders, by using the addition of raw materials (take goods) or adding raw materials to inventory because there is an excess of raw materials after the production process (returns). The addition of raw materials, both pick up goods and return goods, can be done before order completion is made. Usually this feature of adding raw materials is used by manufacturing companies.	When producing orders, manufacturing companies add raw materials due to a shortage of raw materials.

Table 17. Module Revision Based on Problem Number 8

Before Revision	After Revision	Information
D. Order Spelling Features The Order Work feature serves to produce finished goods based on orders from customers. In addition, it can also be used as a form to issue goods that are used for the benefit of the company, for example as a promotional sample. 	**D. Order Spelling Features** The Order Work feature functions to produce finished goods based on orders from customers. In addition, it can also be used as a form to issue goods that are used for the benefit of the company, for example as a promotional sample. In manufacturing enterprises, the feature of order work serves to record orders that are different from the usual production. 	The job order feature functions to produce finished goods and customer orders. In manufacturing companies, the job order record differs from the usual production.
E. Features of Adding Raw Materials The Adding Raw Materials feature has 2 functions, namely adding raw materials due to a shortage of raw	**E. Features of Adding Raw Materials** The Adding Raw Materials feature has 2 functions, namely adding raw materials due to a shortage of raw materials when producing orders,	Order fulfillment provides information to users regarding the stock adequacy of goods ordered (Sales Orders) by customers. The user can

Before Revision	After Revision	Information
materials when producing orders, by using the addition of raw materials (take goods) or adding raw materials to inventory because there is an excess of raw materials after the production process (returns). The addition of raw materials, both pick up goods and return goods, can be done before order completion is made. Usually this feature of adding raw materials is used by manufacturing companies.	using the addition of raw materials (take goods) or adding raw materials to inventory because there is an excess of raw materials after the production process (return). The addition of raw materials, both pick up goods and return goods, can be done before order completion is made. Usually this feature of adding raw materials is used by manufacturing companies.	know two things, namely (1) knowing the items that need to be purchased because there is an insufficient number of orders and (2) knowing the orders that need to be sent if the goods ordered are sufficiently in stock.

1) Student Responses to Accurate Online-Based Accounting Computer Learning Programs Using the Smith Ragan Model

Questionnaire analysis of responses to learning innovations, updates to learning innovations, attractiveness, clarity, and usefulness get a practicality percentage of 87%. The innovation of computer learning accounting inventory modules based on Accurate Online obtains practical, valid results that can be used without revision.

Alvionita et al. (2019) state that learning media is practical if the score is at least 70.01% to 85%. CTL-based textbooks on accurate computer accounting subjects received a response from 94.5% of students, concluding that computer accounting textbooks were feasible to use (Ambarwati & Rochmawati, 2020). Student responses in using interactive learning media get a rating of 88%; this indicates that learning media can increase student interest and learning outcomes (Yahya et al., 2020).

2) Student Learning Outcomes Against Accounting Computer Learning Program Inventory Materials Based on Accurate Online Through the Smith Ragan Model

Only four students were declared complete from the pre-test results, while 15 others scored below the Minimum Completeness Criteria. After students do the pre-test, they follow the learning process carried out by researchers. The learning process by researchers follows the Lesson Plan that has been prepared.

Students use modules and learning media developed as learning resources in the learning process. After participating in the learning process, students work on evaluation questions containing Student Worksheets and knowledge questions. The value of the accounting computer evaluation questions shows that 89% of students complete them, where students get scores above the Minimum Completeness Criteria set by the Accounting Education Study Program at the University of PGRI Madiun.

This shows increased student learning outcomes after implementing computer learning accounting inventory modules based on Accurate Online. Before the learning innovation was carried out, students worked on pre-test questions with the result that 21% of students completed the score above the Minimum Completeness Criteria, and the other 79% scored below the Minimum Completeness Criteria. The increase in student learning outcomes is indicated by the value of the evaluation questions after learning innovations were carried out, where 89% of students scored above the Minimum Completeness Criteria.

The learning device developed by (Yahya et al., 2020) received test results that stated that as many as 86% of students scored more than or equal to 75 so that learning could be said to be effective. These learning tools are valid, practical, and efficient. Nasution and Oktaviani (2020) developed learning tools with the result that students' math problem-solving skills increased. After revision, the mathematics learning tools in lesson plans, worksheets, instructional media, and assessment instruments were said to be suitable for use in schools.

The application of learning tools developed effectively supports learning activities; this is based on cognitive learning outcomes of products that achieve completeness of learning outcomes (individual and classical), process cognitive learning outcomes are classified as good, and students' psychomotor learning outcomes are classified as good. Thus, the learning tools developed are valid, practical, and effective enough to be used in learning (Fatmawati, 2016).

4. Conclusion

The advantages of developing an accounting computer learning program assisted by an accurate online inventory material application are: 1. An accurate online inventory material module developed to be a pioneer in writing the latest version of a similar book. 2. Developing a learning program using the Smith and Ragan model can be a reference for further research because references using this model are minimal. 3. Teaching materials, learning media, worksheets, and assessment instruments developed using the Smith-Ragan model are carried out in clear and coherent stages. 4. The learning program innovation meets very valid criteria based on material experts. 5. Comprehensive development of learning innovations can improve student learning outcomes.

This research will increase insight and knowledge regarding inventory management and online Accurate inventory adjustments. This research also implements the courses obtained, namely educational planning. This research uses the Smith-Ragan model to test student responses to learning innovations and analyze their learning outcomes.

This research is limited to technical constraints regarding internet connection, which causes the field test not to follow the planned time allocation. When testing the validity of the questions, there is one invalid question. Researchers should reflect on the revision of the compiled modules. However, further testing was not carried out due to time constraints.

The results of this study can be used as a comparison and reference for further research. In the validity and reliability stages, revisions should be made before being tested to get maximum results. For further research, it is best to assess the implementation of learning directly (offline). After analyzing the questions that received the most errors, the researcher should be able to reflect on the difficulties faced.

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71

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