



A Comparison of Learning Outcomes in Basic Accounting 2: Recording Goods Transactions in a General Journal with and without VAT Using Problem-Solving versus Conventional Teaching Methods for First-Year Vocational Certificate Students

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Abstract

Within accounting education, refining pedagogical approaches is vital to improving academic performance. Problem-solving methodologies, widely adopted in mathematics, offer substantial enhancements to critical thinking, decision-making, and analytical abilities. This study examines learning outcomes in accounting courses by comparing problem-solving techniques with traditional teaching methods, aiming to better prepare students for future professional challenges. This research aimed to 1) To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first year Higher Vocational Certificate students before and after instruction using the problem-solving teaching method. 2) To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first year Higher Vocational Certificate students before and after instruction using the traditional teaching method. 3) To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first year Higher Vocational Certificate students taught using the problem-solving teaching method versus the traditional teaching method. 4) To compare the satisfaction of first year Higher Vocational Certificate students with the learning experience in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax. The



sample consisted of 60 first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024 at Thai-Asia Technology College, selected through two-stage random sampling. Two classrooms were randomly selected and subsequently assigned as the experimental group and the control group, each comprising 30 students. The research instruments included 1) a learning management plan employing the problem-solving teaching method, 2) a learning management plan employing the conventional teaching method, 3) an academic achievement test with a reliability coefficient of 0.846, and 4) a learning satisfaction questionnaire. The data were analyzed using mean, standard deviation, and t-test statistics. The findings revealed that 1) academic achievement in both the problem-solving and conventional teaching methods improved significantly after instruction, at the 0.05 significance level 2) academic achievement was significantly higher with the problem-solving method compared to the conventional method, at the 0.05 significance level and 3) student satisfaction was significantly higher with the problem-solving method than with the conventional method, at the 0.05 significance level.

Keywords: Basic Accounting 2; VAT, Learning Outcomes; Conventional Teaching Methods

Introduction

In today's rapidly evolving world, driven by advances in science and technology, education is pivotal in equipping individuals to adapt and grow in response to such changes. Improving the quality of education at all levels is a core objective, aligned with the human development strategy outlined in the 13th National Economic and Social Development Plan (2023-2027). This strategy is articulated through five primary goals 1) Restructuring the Manufacturing and Service Sectors: Transitioning towards an innovation-based economy by enhancing the competitiveness of key sectors to align with modern technological and societal advancements. This also includes making these sectors environmentally sustainable and integrating local economies into the value chains of targeted industries. 2) Developing People for the Modern World: Equipping Thais with the skills and attributes required for the contemporary world, encompassing cognitive and behavioral competencies that adhere to societal norms. This goal also involves preparing a skilled workforce that meets labor market demands and enhancing social security systems to ensure life stability. 3) Fostering a Society



of Opportunity and Fairness: Reducing inequality in geographical and business competition contexts, while supporting vulnerable and disadvantaged groups in their economic and social advancement. 4) Transitioning to Sustainability: Optimizing the use of natural resources, addressing major pollution challenges sustainably, and reducing greenhouse gas emissions to achieve long-term carbon neutrality. 5) Strengthening Thailand's Capacity to Address Global Changes and Risks: Preparing for an aging society, climate change, and pandemics by developing the necessary infrastructure and institutional mechanisms to support a digital economy and society. This includes reforming governmental structures and administrative systems to respond swiftly to rapid changes. These goals highlight the importance of sustainable human resource development, fostering a lifelong learning society that enhances physical, intellectual, emotional, and moral capacities, and enabling individuals to adapt to societal changes (National Economic and Social Development Board, 2023).

In the context of accounting education, teaching this discipline is crucial because accounting serves as a fundamental tool for analyzing and evaluating business performance, requiring rigorous data collection and financial reporting, regardless of whether the organization is profit-oriented (IFAC (International Federation of Accountants), 1994). However, research has indicated that academic achievement in the field of commerce among vocational students remains low compared to national and provincial averages (Nawarat Sueksakit, 2018). This underscores the need to refine and develop teaching methodologies to meet curriculum objectives and enhance student achievement.

One effective approach to improving academic outcomes is the implementation of problem-solving teaching methods. Widely recognized and employed in mathematics and other disciplines, these methods help cultivate critical thinking and problem-solving skills in students. The problem-solving frameworks proposed by scholars such as Alan H. Schoenfeld (1978) and Dewey (1971) have been instrumental in developing these skills across various educational levels. Research on the application of problem-solving techniques in mathematics education has consistently demonstrated significant improvements in academic achievement (Jones & Green, 2020). Moreover, problem-solving processes foster analytical thinking, decision-making, and information-seeking skills, which are essential for students to adapt to change and pursue continuous self-development. This study, therefore, aimed to compare the learning outcomes of two introductory accounting courses: recording transactions in



general journals, using problem-solving versus traditional teaching methods, among first-year vocational certificate students.

The choice of problem-solving teaching methods is critical because these methods not only deepen students' understanding of the subject matter but also develop essential life skills such as analytical thinking, decision-making, and problem-solving, which are transferable to everyday life and future careers. Furthermore, employing such teaching methods has the potential to significantly enhance academic performance compared to conventional teaching approaches that primarily focus on content delivery. Given the significance of these findings, this research proposes a novel approach to accounting education one that extends beyond content mastery to emphasize the development of problem-solving skills, better preparing students for the challenges they will face in future work and life.

Objectives

1. To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first-year Higher Vocational Certificate students before and after instruction using the problem-solving teaching method.
2. To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first-year Higher Vocational Certificate students before and after instruction using the traditional teaching method.
3. To compare the learning achievement in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax, among first-year Higher Vocational Certificate students taught using the problem-solving teaching method versus the traditional teaching method.
4. To compare the satisfaction of first-year Higher Vocational Certificate students with the learning experience in Basic Accounting 2: Recording Sales Transactions in General Journals, with and without Value Added Tax.



Research Conceptual Framework

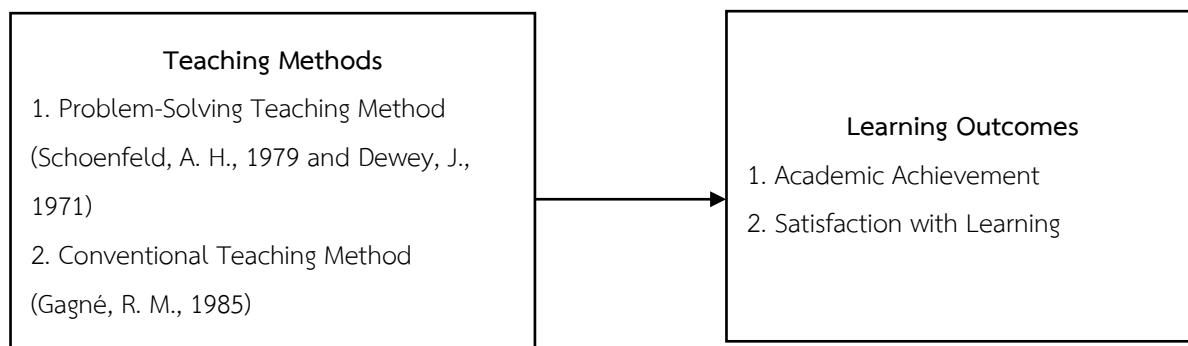


Figure 1 Conceptual Framework of the Research

Research Methods

This research was designed as a quantitative study by the research team, aiming to compare two teaching methods: 1) the Problem-Solving Teaching Method and 2) the Conventional Teaching Method. The study focused on learning outcomes, specifically 1) academic achievement and 2) satisfaction with learning. The objective was to compare learning outcomes in Basic Accounting 2: Recording Goods Transactions in a General Journal with and without VAT, using problem-solving versus conventional teaching methods, among first-year vocational certificate students.

1. Scope of the Population

1.1 Population

The study population comprises first-year Higher Vocational Certificate (Vocational Certificate) students enrolled in Room 2 of the Digital Marketing major, Semester 1, Academic Year 2024, at Thai-Asia Technology College. This population includes 90 students distributed across three classrooms, with 30 students per room.

1.2 Sample

The sample consists of 60 first year Higher Vocational Certificate (Vocational Certificate) students from Room 2, Digital Marketing major, Semester 1, Academic Year 2024, at Thai-Asia Technology College. The sample was selected through a two-stage random sampling process. Two classrooms were randomly chosen, and one classroom of 30 students was assigned to the experimental group, which received instruction using the problem-solving



teaching method. The other classroom of 30 students was designated as the control group and received instruction using the conventional teaching method.

2. Instruments Used in the Research

2.1 Five problem-solving teaching plans with an Item-Objective Congruence (IOC) of 1.00, deemed suitable for instructional management.

2.2 Five conventional teaching plans with an IOC ranging from 0.80 to 1.00, deemed suitable for instructional management.

2.3 A 40-item multiple-choice achievement test with four response options, demonstrating a reliability coefficient of 0.846, a difficulty index ranging from 0.42 to 0.89, and a discrimination index ranging from 0.20 to 0.45.

2.4 A 20-item satisfaction questionnaire rated on a five-point Likert scale.

3. Experimental Procedures

3.1 Administer a pretest to both groups to assess their initial knowledge and abilities prior to the intervention.

3.2 Implement the teaching intervention, with the researcher serving as the instructor for both groups. Instruction was delivered over six weeks, with three sessions per week, each lasting two hours, totaling 36 hours, based on the respective learning management plans.

3.3 Conduct a posttest for both groups to evaluate academic achievement and measure learning satisfaction using the satisfaction questionnaire.

4. Data Collection and Analysis

Data were collected through achievement tests and satisfaction questionnaires administered to the sample groups. The collected data were analyzed using statistical methods to summarize and interpret the research results, in accordance with the research objectives.

5. Statistics Used in the Research

The Independent Samples t-test was employed to compare mean values between the two independent groups. This statistical test assessed whether any observed differences in post-test scores were statistically significant, ensuring that variations in learning outcomes could be attributed to the teaching methods rather than pre-existing differences between the groups.



Research Results

The learning achievement in Basic Accounting 2: Trading of Goods Recorded in General Journals, both with and without VAT, demonstrated significant improvement following instruction with the problem-solving teaching method among first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024, at a statistical significance level of 0.05. Similarly, learning achievement in Basic Accounting 2: Trading of Goods Recorded in General Journals, with and without VAT, also showed a significant improvement after instruction with the conventional teaching method among first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024, at a statistical significance level of 0.05. The academic achievement in Basic Accounting 2: Trading of Goods Recorded in General Journals, which includes transactions with and without VAT, was significantly higher following instruction using the problem-solving teaching method compared to the conventional teaching method among first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024, at a statistical significance level of 0.05. Furthermore, satisfaction with the learning experience in Basic Accounting 2: Trading of Goods Recorded in General Journals, involving transactions with and without VAT, was significantly greater among first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024, when taught using the problem-solving teaching method as opposed to the conventional teaching method, with statistical significance at the 0.05 level.

Summary and Research Discussion

The findings of this research underscore several significant points, discussed across four main issues

1. Learning Achievement with Problem-Solving Teaching Method: In Basic Accounting 2, Trading of Goods Recorded in General Journals, both with and without VAT, the learning achievement among first year Higher Vocational Certificate students in Room 2 of the Digital Marketing Program, Semester 1, Academic Year 2024, showed a statistically significant improvement after instruction using the problem-solving teaching method, with a significance level of 0.05. The average pre-study score ($\bar{X} = 18.91$) increased to a post-study average score



($\bar{X} = 29.98$). This enhancement is attributed to the problem-solving approach, which engages students in collaborative activities, critical thinking, and problem resolution. The method involves comprehensive learning plans, including media, knowledge sheets, activity sheets, and evaluation criteria, aligning with Kolb's (1984) assertion that problem-solving teaching emphasizes systematic, step-by-step problem resolution, including defining, planning, and analyzing the problem.

2. Learning Achievement with Conventional Teaching Method: Similarly, in Basic Accounting 2 Trading of Goods Recorded in General Journals, both with and without VAT, students who were taught using the conventional teaching method also demonstrated significant improvement, with a significance level of 0.05. The average pre-study score ($\bar{X} = 19.24$) increased to a post-study average score ($\bar{X} = 29.89$). The conventional method, characterized by structured steps such as introduction, teaching, conclusion, and evaluation, aligns with Anderson and Krathwohl's (2001) description of traditional teaching as a process of lecturing and demonstration aimed at achieving specific learning objectives.

3. Comparison of Teaching Methods Academic achievement in Basic Accounting 2: Trading of Goods Recorded in General Journals, with and without VAT, was notably higher for students taught using the problem-solving teaching method compared to those taught with the conventional method, at a statistical significance level of 0.05. The problem-solving method had an average score ($\bar{X} = 29.99$) compared to the conventional method's average score ($\bar{X} = 29.91$). This outcome supports Polya's problem-solving steps—understanding, planning, implementing, and checking which help develop students' problem-solving abilities in novel situations. In contrast, the conventional method, which relies on structured lectures and summaries, was found to be less effective, as noted by Smith and Robinson (2018), who reported that Polya's method yielded higher academic achievement compared to traditional approaches.

4. Satisfaction with Teaching Methods Students' satisfaction with the learning experience in Basic Accounting 2 Trading of Goods Recorded in General Journals, involving transactions with and without VAT, was significantly higher among those taught using the problem-solving teaching method compared to those taught with the conventional method, at a statistical significance level of 0.05. The average satisfaction score for the problem-solving method was 4.98, indicating a high level of satisfaction, compared to 4.59 for the conventional



method. The problem-solving approach, which emphasizes systematic problem-solving stages and fosters teamwork, analysis, and decision-making, received more favorable ratings. This finding is consistent with Smith and Robinson's (2018) research, which found high levels of student satisfaction with problem-solving processes in accounting education.

Research Suggestions

1. Suggestions for Implementation

1.1 Adopting Polya's Problem-Solving Method, educators at the vocational certificate level should incorporate this approach into their teaching practices, particularly in subjects requiring numerical calculations, such as creating adjustment lists, recording transactions in cash books, and preparing worksheets. This method promotes analytical thinking and systematic problem-solving.

1.2 Planning and Resources, when implementing problem-solving teaching methods, educators must meticulously plan learning activities to align with the steps of the problem-solving process to ensure effectiveness. Providing adequate and appropriate teaching resources is also essential. Teachers should create opportunities for students to express their opinions and actively engage in the learning process, thereby enhancing learning outcomes and further developing students' skills. Instructional content should be carefully sequenced, beginning with simpler concepts and progressively advancing to more complex material.

1.3 Focus on Problem-Solving Activities, teachers should design and conduct teaching activities that emphasize problem-solving as the primary instructional method to cultivate students' critical thinking skills. The teaching process should clearly define students' roles and responsibilities at each stage of the activity. Understanding these roles will help students fully participate in learning activities, thereby improving their problem-solving abilities and overall learning effectiveness.

2. Suggestions for Future Research

2.1 Expansion to Other Subjects and Levels, the problem-solving teaching method should be further developed and evaluated across various subjects and vocational certificate levels to assess its effectiveness in diverse educational settings.

2.2 Integration with Other Teaching Methods, the problem-solving teaching method should be integrated with other pedagogical approaches, such as project-based or inquiry-



based teaching, to foster a more dynamic learning environment that enhances analytical thinking and develops students' problem-solving skills more comprehensively.

2.3 Comparison with Alternative Problem-Solving Methods, the efficacy of Polya's problem-solving teaching method should be compared with other problem-solving methodologies, such as those proposed by John Dewey or Weir. This comparative analysis will elucidate the strengths and limitations of each method and provide insights for enhancing the overall effectiveness of problem-solving instruction.

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