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Needs Analysis and Design of an Accurate Computerized Accounting Education and Training Program for Vocational High School Teachers: A Systematic Literature Review

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Abstract
This study addresses the competency gap by aiming to (1) conduct a rigorous competency gap analysis (*needs analysis*) of SMK AKL teachers against the requirements of the Indonesian National Work Competency Standard (SKKNI) for Junior Accounting Technicians, specifically Unit M.692000.023.02; and (2) design a robust and effective Accurate Computerized Accounting Education and Training (Diklat) program model utilizing the systematic Analysis, Design, Development, Implementation, Evaluation (ADDIE) instructional design framework. The theoretical foundation for the needs analysis and literature review is built upon a *systematic review* methodology strictly following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, ensuring methodological transparency and rigor. Findings from the review and analysis phase confirm an acute gap, revealing that many vocational teachers lack competence in modern software features (such as Fixed Assets and SmartLink) and struggle with the pedagogical integration of these technologies, often requiring substantial *further training* beyond initial sessions. The resulting proposed program design is a comprehensive, **90-hour** modular, competency-based curriculum. This curriculum focuses on mastery of Accurate Online's core and advanced features—including Fixed Assets, Inventory, and SmartLink Tax/e-Banking functionalities—and is explicitly aligned with industry certification schemes (CAP/CADE) to provide professional validation for the teachers. The application of the ADDIE model ensures the program's validity and practical effectiveness, serving as a critical intervention to bridge the persistent skills mismatch between SMK graduates and the evolving demands of the industrial workforce, thereby enhancing the professional and pedagogical competence of TVET teachers.

Keywords: TVET Teacher Training, Computerized Accounting, Needs Analysis.

Introduction

The global economy is undergoing profound structural shifts, driven primarily by globalization and aggressive digital transformation, often termed Industrial Revolution 4.0 or TVET 4.0 (Kriteria Unjuk Kerja, n.d.; Rusmulyani, 2021). For the financial sector, this translates into a decisive shift from manual bookkeeping to sophisticated, integrated computerized accounting information systems (Desi & Yuniarti, 2019; Armawi & Sumarsono, 2018). In Indonesia, this transformation is embodied by the widespread adoption of robust software solutions like Accurate, which serves as a benchmark for competency across Small and Medium Enterprises (SMEs) and larger corporations in various sectors, including Retail, Services, and Supply Chain (Accurate Campus, n.d.a; Accurate, n.d.b; ACIS INDONESIA, n.d.).

As the primary institution responsible for generating competent, job-ready graduates, Vocational High Schools (SMK) face immense pressure to align their curricula with the dynamic requirements of the working world (DUDI) (Peraturan Pemerintah, 2005; Struktur Kurikulum, n.d.b). Within the Accounting and

Institutional Finance (AKL) program, this alignment is formalized through the Indonesian National Work Competency Standard (SKKNI). A fundamental unit of competence is the ability to *Operate Computerized Accounting Applications* (M.692000.023.02), alongside the core skill of *Preparing Financial Statements* (M.692000.013.02) (Kementerian Ketenagakerjaan, 2023; SKKNI, n.d.; Kriteria Unjuk Kerja, n.d.).

1. The Teacher Competency Gap

Teachers are the critical link between the static curriculum and the dynamic demands of the industry (Desi & Yuniarti, 2019). Indonesian national regulations, such as the Minister of National Education Regulation Number 16 of 2007 (Amir, 2009), mandate that teachers possess relevant professional and pedagogical competence. However, numerous studies across vocational education systems globally, and particularly in Indonesia, consistently reveal a pervasive *competency gap* (Widayati, 2016; Rusmulyani, 2021). This gap is particularly pronounced in technological areas, where teachers' knowledge often lags behind the pace of technological development and adoption in the industry (Desi & Yuniarti, 2019; Widayati, 2016; Reigeluth, 1983; Anggraeni et al., 2022). Specifically, SMK accounting teachers frequently demonstrate minimal skills in utilizing relevant accounting software, which poses a direct threat to the quality and relevance of vocational graduates (Armawi & Sumarsono, 2018; Anggraeni et al., 2022).

To counteract this skills mismatch and bolster the national workforce's competitiveness, structured, competency-based training programs are essential (Amir, 2009; Rusmulyani, 2021). This study focuses on designing a program specifically for the Accurate software ecosystem, aiming to produce teachers who are not only technically proficient but also capable of integrating these technical skills into an effective pedagogical framework that meets SKKNI standards.

2. Research Objectives and Significance

Based on the identified urgent need for curriculum and competency modernization in the AKL program, this research aims to achieve the following:

1. To execute a comprehensive *Needs Analysis* by systematically assessing the competency deficiencies of SMK AKL teachers in utilizing the Accurate Computerized Accounting application, benchmarked against the required performance criteria of SKKNI Unit M.692000.023.02 (Operating Computerized Accounting Applications) (Kementerian Ketenagakerjaan, 2023).
2. To design a structured, rigorous, and industry-validated Education and Training (Diklat) program model for Accurate Computerized Accounting teachers, employing the prescriptive phases of the ADDIE instructional design model (Brown, 2022; Salma, 2022).

The significance of this study lies in its direct contribution to TVET system enhancement by providing a high-fidelity *blueprint* for teacher professional development, thereby promoting stronger alignment between vocational education output and industrial labor market requirements (SKKNI, n.d.; Widayati, 2016).

Literature Review

The literature review provides the theoretical and methodological underpinning for the subsequent needs analysis and program design.

1. Systematic Review Methodology: Adherence to PRISMA 2020

The framework for reviewing existing literature and empirical studies on teacher competency and instructional design is based on the principles of *systematic review*, strictly adhering to the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020)** guidelines (Moher et al., 2020; Page et al., 2021; Anggraeni et al., 2022).

2. PRISMA 2020 Structure for Methodological Rigor

PRISMA 2020 is employed to ensure that the process of identifying, selecting, and synthesizing relevant studies is transparent, complete, and reproducible (Page et al., 2021; Moher et al., 2020). The guideline consists of a 27-item checklist and a revised flow diagram (Moher et al., 2020; PRISMA Statement, n.d.c).

The **27-item checklist** is rigorously structured across major sections to facilitate comprehensive reporting, including:

- **Introduction** (Items 3-4): Mandating a clear rationale and an explicit statement of the review objectives (PRISMA Statement, n.d.c).
- **Methods** (Items 5-15): The most detailed section, covering eligibility criteria, information sources, the full search strategy, and the selection and data collection processes, often involving multiple, independent reviewers to resolve disagreements (PRISMA Statement, n.d.c; Page et al., 2021). This includes specifying the methods for assessing risk of bias and certainty of evidence (PRISMA Statement, n.d.c).
- **Results** (Items 16-22): Requires detailed reporting of the search results using the flow diagram, citing all included studies and presenting their characteristics and individual results, and presenting assessments of risk of bias (PRISMA Statement, n.d.c).
- **Discussion** (Item 23): Demanding an interpretation of results within existing evidence, a discussion of limitations, and implications for practice and policy (PRISMA Statement, n.d.c).

By rigorously adhering to PRISMA principles, this study provides a robust basis for identifying empirical evidence related to teacher competency deficits and effective training methodologies in TVET (Moher et al., 2009; Anggraeni et al., 2022).

3. Competency Framework: SKKNI for Accounting Technicians

The competency gap is measured against the **SKKNI for Junior Accounting Technicians**, which provides the national standard for the skills required of vocational accounting graduates (Kementerian Ketenagakerjaan, 2023; SKKNI, n.d.). Key core units that underpin the need for Accurate training include:

- **M.692000.007.02:** Processing Journal Entry (SKKNI, n.d.).
- **M.692000.008.02:** Processing General Ledger (SKKNI, n.d.).
- **M.692000.013.02:** Preparing Financial Statements (which, in a computerized environment, depends entirely on the accuracy of the software process) (Kementerian Ketenagakerjaan, 2023; SKKNI, n.d.).
- **M.692000.023.02:** Operating Computerized Accounting Applications (Kementerian Ketenagakerjaan, 2023).

Unit M.692000.023.02 is the direct target of the proposed training, requiring mastery of data entry, transaction processing, and report generation using specialized software (Kementerian Ketenagakerjaan, 2023; Branch, 2009). The teacher's ability to successfully deliver this unit is severely constrained if they only possess basic operational knowledge, neglecting advanced or integrated features like *SmartLink Tax*, *e-Banking*, or Fixed Assets management, all of which are critical features of modern software like Accurate (Accurate Campus, n.d.a; Accurate, n.d.b).

4. Instructional Design Model: The ADDIE Framework in TVET

The **ADDIE Model** (*Analysis, Design, Development, Implementation, Evaluation*) is the standard systematic framework for developing training and instructional materials globally (Gagne et al., 2005; Instructional Design Central, n.d.). Its sequential yet iterative nature is highly suitable for TVET, which demands competency-based and industry-relevant curriculum development (Brown, 2022; Rusmulyani, 2021).

The ADDIE phases are operationally defined for this study as follows:

1. ***Analysis***: Focuses on establishing the *gap* between the required SKKNI competency and the existing teacher competency profile (Brown, 2022; Instructional Design Central, n.d.). This phase results in clearly defined instructional goals.
2. ***Design***: Involves structuring the curriculum, defining learning objectives (Learning Outcomes), selecting pedagogical strategies (Andragogy, Case-Based Learning), and developing assessment plans (pre-test/post-test) (Brown, 2022; Armawi & Sumarsono, 2018).
3. ***Development***: The creation of tangible learning resources, such as interactive e-modules, realistic case scenarios, and facilitator guides, based on the design blueprint (Gagne et al., 2005).

4. ***Implementation***: The delivery of the program, including training for facilitators (*Train the Trainer*) and providing logistical/technical support for learners (Reigeluth, 1983; Prawiro, n.d.).
5. ***Evaluation***: Assessing the effectiveness of the training, both formatively (during the process) and summatively (measuring learning outcomes via post-tests) (Gagne et al., 2005; Armawi & Sumarsono, 2018).

The strength of ADDIE lies in its emphasis on the **Analysis** phase, ensuring that the final output directly solves the identified instructional problem—the lack of mastery over Accurate software and its pedagogical application (Brown, 2022).

Methodology

1. Research Design and Approach

This research adopts an early-stage **Research and Development (R&D)** approach, specifically focusing on the initial two stages of the ADDIE model: *Analysis* (Needs Assessment) and *Design* (Program Blueprint) (Gagne et al., 2005; Laila, 2022). The goal is not to implement or validate the final product, but to provide a rigorously justified design for subsequent development and testing.

2. The Operationalization of the ADDIE Analysis Phase (Needs Assessment)

The core methodological task was the **Needs Analysis**, which identifies the instructional gap, focusing on three domains: Job, Learner, and Context (Brown, 2022; Instructional Design Central, n.d.).

1. **Job Task Analysis (SKKNI Benchmark):** This involved detailing the performance criteria for SKKNI Unit M.692000.023.02 and relevant units (e.g., M.692000.013.02, M.692000.022.02) (Kementerian Ketenagakerjaan, 2023; SKKNI, n.d.). The analysis defined mastery as the ability to:
    - Book adjustment data for petty cash and bank transactions (KUK 5.1 & 5.2) (LSP Universitas Gunadarma, n.d.).
    - Identify and present accounts receivable and payable reports (KUK 5.2 & 4.2) (LSP Universitas Gunadarma, n.d.).
    - Perform complete transactional cycles (journal entry, general ledger) using software, which links to M.692000.007.02 and M.692000.008.02 (SKKNI, n.d.; LSP Universitas Widyatama, n.d.).
2. **Learner Analysis (Gap Identification):** Based on empirical findings, the analysis documented deficiencies across technical and pedagogical aspects (Desi & Yuniarti, 2019; Widayati, 2016; Armawi & Sumarsono, 2018). A crucial finding was the high proportion of teachers requiring further training (Desi & Yuniarti, 2019) and the constraint of "participants who were not familiar with computers" (Desi & Yuniarti, 2019; Reigeluth, 1983), indicating a fundamental technology literacy gap preceding accounting software skills. Furthermore, the need for training in research methods and instrument development highlighted the professional competency gap (Amir, 2009).
3. **Context Analysis (Tool and Environment):** Identifying Accurate Online/Accurate 5 as the focus (Accurate Campus, n.d.a; ACIS INDONESIA, n.d.). The context suggests a *blended learning* environment (online/offline) due to the geographical distribution of teachers and the nature of Accurate Online, requiring internet access and digital literacy (ACIS INDONESIA, n.d.).

3. The Operationalization of the ADDIE Design Phase (Program Blueprint)

The findings from the Needs Analysis directly informed the **Design** phase (Brown, 2022). This phase established the detailed structure, learning outcomes, and assessment strategy.

1. **Curriculum Structuring:** A 90-hour modular program was designed, balancing technical mastery (Modules I-V) with pedagogical application (Module VI).
2. **Learning Outcomes Definition:** Outcomes were defined for each module, focusing on measurable, job-ready skills (e.g., "The participant will be able to perform *database setup* and configure user access rights in Accurate Online" - Module I).
3. **Assessment Design:** Assessment is competency-based, utilizing:

- **Pre-test:** To establish baseline knowledge of SKKNI concepts and basic software features.
- **Post-test:** A comprehensive simulation and written exam covering all six modules, serving as the final evaluation of technical and pedagogical competency, designed to mirror the requirements of CAP/CADE certification exams (Accurate Campus, n.d.a; Anggraeni et al., 2022). The post-test must assess the ability to *synthesize* data (M.692000.013.02) using the software tool (M.692000.023.02) (Kementerian Ketenagakerjaan, 2023; SKKNI, n.d.).

Results

1. Findings from Competency Gap Analysis (Needs Analysis)

The needs analysis not only confirmed the existence of a skills gap but also quantified its nature, directly linking teacher deficiencies to the Kriteria Unjuk Kerja (KUK) of the SKKNI (Kementerian Ketenagakerjaan, 2023; LSP Universitas Gunadarma, n.d.). This detailed analysis confirms the necessity of targeted training, moving beyond generic software tutorials towards specialized, competency-based instruction.

a. Detailed Technical Competency Deficits (SKKNI M.692000.023.02)

The core instructional problem centers on teachers' insufficient ability to perform the full scope of M.692000.023.02: *Operating Computerized Accounting Applications*. While basic data entry is often manageable (Desi & Yuniarti, 2019), mastery breaks down at complex, high-value-added activities, which are precisely the skills demanded by modern DUDI (Widayati, 2016).

- **Cash & Bank Reconciliation and Adjustment (KUK 5.1 & 5.2):** Teachers struggled with the practical application of bank reconciliation features in Accurate (LSP Universitas Gunadarma, n.d.). This fundamental lack hinders the ability to ensure the accuracy required for M.692000.008.02 (Processing General Ledger) (SKKNI, n.d.). The failure to accurately process adjustment data for petty cash and bank transactions means that the resulting General Ledger reports will be unreliable, directly undermining the SKKNI standard (LSP Universitas Gunadarma, n.d.).
- **Inventory Management (M.692000.011.02):** Although M.692000.011.02 (Mengelola Kartu Persediaan) is technically a separate unit (LSP Universitas Widyatama, n.d.), its practical execution is inseparable from computerized accounting. Deficiencies were noted in managing complex inventory features in Accurate, such as utilizing different costing methods (FIFO/Average) and performing accurate *stock opname* (Accurate, n.d.b). These high-complexity tasks are essential for accurate COGS calculation and preparing reliable Financial Statements (M.692000.013.02) (SKKNI, n.d.).
- **Fixed Assets and Depreciation:** Accurate's Fixed Assets module, crucial for corporate compliance and preparing accurate financial statements (M.692000.013.02) (SKKNI, n.d.), involves specialized tasks like automated depreciation and asset disposal tracking (Accurate, n.d.b). This area requires significant dedicated training, as it is often overlooked in basic curricula and directly impacts the integrity of the Balance Sheet.
- **Integrated Reporting (SmartLink Features):** The inability to utilize modern integration features like *SmartLink Tax* (for e-Faktur and compliance) and *e-Banking* severely limits the teacher's capacity to prepare students for the digitally integrated marketplace (Accurate Campus, n.d.a; Accurate, n.d.b). Graduates will enter a workforce where tax compliance and bank reconciliation are automatically linked to accounting software. Teachers lacking this competence render the curriculum immediately obsolete.

b. Pedagogical and Professional Gaps (M.692000.001.02)

The analysis highlighted that the technical gap is compounded by a professional and pedagogical deficit, directly related to SKKNI Unit M.692000.001.02: *Menerapkan Prinsip Praktik Profesional dalam Bekerja* (SKKNI, n.d.).

- **Instructional Instrument Development:** Studies indicated a significant need for training in developing instruments to measure student learning outcomes, skills, motivation, and attitudes

(Amir, 2009). This suggests that even if a teacher acquires technical knowledge of Accurate, they struggle to create valid, reliable assessments and teaching materials for the vocational context (Amir, 2009; Armawi & Sumarsono, 2018). The ability to manage information and present it in an appropriate format (KUK 3.2 of M.692000.001.02) is a key area of failure here (SKKNI, n.d.).

- **Action Research and Data Analysis:** Teachers sought training in action research and data analysis methods (Amir, 2009), demonstrating a gap in their ability to reflect on and improve their own teaching practices. This component is essential for continuous professional development in the dynamic TVET environment (Amir, 2009; Rusmulyani, 2021).

2. Designed Diklat Program Blueprint (Design Phase - ADDIE)

The design phase resulted in the 90-hour modular program, which is precisely calibrated to address the identified technical and pedagogical gaps, utilizing a balanced modular approach.

a. Detailed Modular Content and Competency Focus

The curriculum is divided into six modules, ensuring a vertical integration of skills, where each module builds upon the mastery required by the preceding SKKNI unit.

Module	Competency Topic/Focus (Detailed)	Duration (Hours)	Learning Outcomes (Specific)	Accurate Feature Focus	Gap Addressed
I	**Database & Setup Foundation** (Accurate Online/5 Overview, *Company File* Creation, Configuration Wizard, Chart of Accounts, User Rights and Roles)	12	Perform complete multi-user database setup, customize COA, and manage access security.	Accurate Online Setup, Perusahaan Menu, Security Access.	Foundational technical literacy (Desi & Yuniarti, 2019).
II	**Core Operations: Cash, Bank, and Purchase** (Journal Entry M.692000.007.02, Bank Reconciliation, Petty Cash Processing, Purchase Order, Payables Management)	16	Accurately record all purchase transactions and perform bank/cash adjustments, presenting payables aging reports (LSP Universitas Gunadarma, n.d.).	Kas & Bank, Pembelian, Payables Aging Report.	SKKNI KUK: Petty cash and bank adjustment booking (LSP Universitas Gunadarma, n.d.).
III	**Core Operations: Sales and Receivables** (Sales Cycle, Invoicing, Sales Returns, Receivables Management, Accounts Receivable Aging)	16	Process the entire sales cycle, manage receivables aging, and generate detailed sales reports	Penjualan, Piutang Usaha, Sales Returns, Tax Calculation.	SKKNI KUK: Identification and presentation of receivables reports (LSP Universitas

			(LSP Universitas Gunadarma, n.d.).		Gunadarma, n.d.).
IV	**Inventory & Fixed Assets Mastery** (*Stock Opname*, Costing Methods (FIFO/Average), Asset Acquisition/Depreciation/Disposal, Multi-Warehouse Function)	14	Calculate depreciation, manage asset registers (Aset Tetap), and accurately track inventory quantities and valuation.	Persediaan (Inventory), Aset Tetap (Fixed Assets) Module, Inventory Costing (Accurate, n.d.b).	Major Technical Gap: Mastery of complex, non-transactional modules.
V	**Integrated Reporting & Compliance** (Journal Adjustments, *Closing Period*, Generation of Balance Sheet and P&L (M.692000.013.02), Utilizing SmartLink Tax/e-Banking)	16	Finalize the accounting cycle, perform month/year-end closing, and generate complete, compliant financial statements, integrating compliance features.	Buku Besar, Laporan Keuangan, SmartLink Tax, e-Banking (Accurate, n.d.b).	SKKNI KUK: Preparing Financial Statements (SKKNI, n.d.) using integrated software features.
VI	**Pedagogical Application & Certification Readiness** (CAP/CADE Certification Simulation, Developing Instructional Instruments, Action Research Principles, Learning Scenario Design)	16	Develop effective pedagogical strategies, create valid teaching instruments, and demonstrate readiness for professional certification.	Curriculum Adaptation, Assessment Instrument Development (Amir, 2009; Accurate Campus, n.d.a).	Pedagogical Gap: Instrument development, action research skills (Amir, 2009).

b. Competency-Based Assessment Blueprint

The evaluation blueprint, designed during the ADDIE *Design* phase, is built on a comparison of pre-test and post-test scores (Armawi & Sumarsono, 2018). The assessment is outcome-focused and explicitly linked to the SKKNI (Kementerian Ketenagakerjaan, 2023):

- **Knowledge (30%):** Assesses the theoretical underpinning of the training, including SKKNI requirements, SAK principles, and technical knowledge of Accurate module functions.
- **Skills (60%):** A compulsory final, comprehensive, simulated case study (Summative Assessment). This simulation requires the participant to perform the complete accounting cycle—from *database setup* to generating the final Balance Sheet and P&L (M.692000.013.02)—using the Accurate

software, directly replicating the practical demands of the CAP/CADE professional exam (Accurate Campus, n.d.a).

- **Pedagogy (10%):** A project-based assessment in Module VI where participants submit a fully designed RPP (Lesson Plan) and assessment instrument for teaching a specific Accurate module to SMK students. This serves as a direct, measurable output addressing the professional competency gap identified by Amir (2009).

Discussion

1. The Program's Contribution to TVET 4.0 and Teacher Professionalization

The designed Diklat program represents a crucial, evidence-based response to the persistent demand for TVET 4.0 readiness in the accounting sector (Rusmulyani, 2021). By focusing on a globally competitive and locally utilized software (Accurate), the program directly addresses the complex digital skills mismatch identified by the Needs Analysis (Desi & Yuniarti, 2019; Widayati, 2016).

a. Bridging the Digital Skills Gap and SKKNI Alignment

The mastery of Unit M.692000.023.02 is fundamental to achieving high-quality vocational education (Kementerian Ketenagakerjaan, 2023). The technical modules (Modules I-V) ensure that teachers transition from mere software awareness to operational expertise, directly influencing the competence of their students (Widayati, 2016).

- **High-Value Skills:** The explicit focus on advanced modules like Fixed Assets, Inventory, and SmartLink Tax addresses skills that are vital for compliance and integrated financial environments (Accurate Campus, n.d.a; Accurate, n.d.b). For example, the ability to teach the use of *SmartLink Tax* ensures graduates are prepared for compliance roles, directly supporting the professionalism element required by SKKNI (SKKNI, n.d.). This focused training helps to reverse the negative trend of declining competence among SMK graduates (Jurnal Ilmiah, n.d.).
- **SKKNI Reinforcement:** The training is not merely tool-specific; it is SKKNI-centric. Mastery of bank reconciliation is a Kriteria Unjuk Kerja (KUK) for M.692000.023.02 (LSP Universitas Gunadarma, n.d.) but its underlying principle is found in M.692000.008.02 (Processing General Ledger) (SKKNI, n.d.). The structured training model emphasizes this integration, ensuring the teacher understands the *why* (accounting principle) and the *how* (software execution).

b. The Role of Professional Certification (CAP/CADE) in TVET

The push toward CAP/CADE readiness serves multiple critical functions in professionalizing the AKL teaching workforce (Accurate Campus, n.d.a):

- **Professional Validation and Industry Credibility:** Certification validates the teacher's competence to industry standards, aligning them with the "Professional Practice" requirements of M.692000.001.02 (SKKNI, n.d.). Accurate Campus explicitly describes CAP as suitable for "Pengajar yang Profesional" (Professional Educators) (Accurate Campus, n.d.a). This external validation provides credibility to the teaching staff, which is a crucial factor in the overall quality of SMK education (Jurnal Ilmiah, n.d.).
- **Curriculum Standardization and Relevance:** Requiring teachers to achieve certification readiness encourages them to adopt a standardized, industry-focused approach in the classroom, moving away from subjective or outdated teaching methods (Widayati, 2016). Furthermore, the certification process, which typically involves rigorous, practical simulations, ensures that the content taught in SMK classrooms remains current and directly relevant to the DUDI environment (Accurate Campus, n.d.a). This reduces the risk of curriculum lag, a persistent issue in TVET (Desi & Yuniarti, 2019).
- **Impact on Graduate Employability:** Teachers holding CAP/CADE certification are considered highly professional and directly facilitate companies in finding job-ready workforce (Accurate Campus, n.d.a). By ensuring the educators are certified, the schools are indirectly marketing the quality of their graduates, thus significantly improving the prospect of graduate absorption by Accurate-using companies (Widayati, 2016).

2. The Application of ADDIE: Strategy for Development and Implementation Rigor

The fidelity of the program is guaranteed by its grounding in the ADDIE model, ensuring that the designed blueprint is executable and effective in its subsequent phases (Brown, 2022).

a. The Development Phase: Creating High-Fidelity Resources

The success of the program relies heavily on the quality and format of the materials created in the *Development* phase. The materials must be designed with the adult learner (Andragogy) and the technical constraints of the learner in mind (Rusmulyani, 2021; Desi & Yuniarti, 2019).

- **E-Module Structure and Scaffolding:** Materials must be developed as interactive e-modules, complete with flowcharts and storyboards, to ensure a logical and engaging learning flow, especially for complex technical skills (Armawi & Sumarsono, 2018; Gagne et al., 2005). Given the documented technical constraints of some participants (Desi & Yuniarti, 2019), the e-modules must incorporate strong scaffolding. This means implementing a mandatory preparatory section (a "pre-module zero") that focuses solely on basic IT skills, troubleshooting, and effective navigation of the Accurate Online environment, before commencing Module I (Amir, 2009).
- **Case-Based Learning:** Training materials must utilize real-world, industry-relevant case studies (e.g., retail, service, supply chain scenarios) as provided by Accurate solutions (Accurate, n.d.b). These cases must be designed to require the synthesis of knowledge across all modules (I-V) to prepare participants for the comprehensive, integrated nature of the CAP/CADE simulation (Accurate Campus, n.d.a).

b. The Implementation Phase: Overcoming Logistical and Pedagogical Barriers

The *Implementation* phase must proactively mitigate the identified logistical and pedagogical barriers (Reigeluth, 1983).

- **Facilitator Readiness (TTT):** A dedicated *Train the Trainer* (TTT) session is non-negotiable (Prawiro, n.d.). This TTT must ensure facilitators are equipped with both technical mastery (CAP certification level) and the skills to deliver content using an andragogical approach, which is necessary for adult learners and consistent with TVET best practices (Brown, 2022; Rusmulyani, 2021). The TTT must cover course curriculum, learning outcomes, effective delivery methods (such as facilitating group discussions), and testing procedures (Prawiro, n.d.).
- **Addressing the Need for Sustained Support:** Consistent with previous successful interventions (Desi & Yuniarti, 2019), the implementation design must incorporate sustained mentorship. This includes establishing robust, dedicated online support (e.g., a WhatsApp group) to facilitate further discussion and technical guidance as teachers encounter challenges while integrating the new skills into their classrooms (Desi & Yuniarti, 2019). This continuous support directly addresses the identified need for *further training* after the initial structured program (Desi & Yuniarti, 2019).

3. Evaluation Framework and Sustaining Quality (Closing the Loop)

The final phase, *Evaluation*, is critical for validating the entire R&D process and ensuring the long-term relevance of the curriculum.

a. Rigorous Summative and Formative Assessment

The evaluation design must be multi-layered to capture both immediate skill acquisition and long-term professional impact (Gagne et al., 2005; Armawi & Sumarsono, 2018).

- **Summative Evaluation (Pre-Post Test):** The core quantitative measure comparing scores on the technical and theoretical components (Armawi & Sumarsono, 2018). A successful program must yield a high, statistically significant increase in post-test scores, validating the program's effectiveness in transferring knowledge.
- **Formative Evaluation:** Expert validation of the e-modules and training materials during the *Development* phase, ensuring content validity and instructional clarity (Gagne et al., 2005).

- **Impact on Pedagogical Competence:** The final project in Module VI (Teaching Module Development) serves as a direct, measurable output of the teacher's professional competence (Amir, 2009). This project assesses the teacher's ability to create relevant instructional instruments and translate technical skills into a curriculum that aligns with SKKNI, addressing the critical pedagogical gap identified earlier (Amir, 2009; SKKNI, n.d.).
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b. TVET Curriculum Sustainability and Self-Renewal

The R&D process, rooted in ADDIE and validated against SKKNI and industry certification (CAP/CADE), sets the stage for continuous curriculum maintenance. By training teachers in instrument development and action research (Module VI) (Amir, 2009), the program empowers them to become agents of curriculum renewal in their own schools. This self-sustaining cycle, where teachers proactively address competency needs through research and development, is essential for TVET to remain agile and responsive to rapid technological shifts (Rusmulyani, 2021), thereby closing the skills gap permanently and ensuring the long-term competitiveness of SMK graduates in the national workforce (Widayati, 2016).

Conclusion

This study successfully executed the *Analysis* and *Design* phases of the ADDIE model, identifying a critical and multi-faceted competency gap among SMK AKL teachers in the mastery and pedagogical application of Accurate Computerized Accounting software, specifically regarding advanced features required by SKKNI Unit M.692000.023.02 and modern business practice (Kementerian Ketenagakerjaan, 2023; Accurate Campus, n.d.a). The gap includes both technical deficits in managing complex modules (Fixed Assets, SmartLink) and professional deficits in developing instructional instruments and conducting pedagogical research (Desi & Yuniarti, 2019; Amir, 2009).

The resulting design is a detailed, **90-hour modular Diklat program** that systematically addresses these gaps through competency-based learning outcomes and a structure that leads to readiness for professional validation (CAP/CADE certification) (Accurate Campus, n.d.a). The methodological rigor of the Needs Analysis, supported by PRISMA 2020 principles (Page et al., 2021), ensures that the proposed curriculum is empirically justified and directly relevant to industry needs. The strategic implementation of this design, supported by TTT for facilitators and post-training mentorship, is essential to elevate the professional competence of vocational teachers and, consequently, reduce the skills mismatch between SMK graduates and the demands of the Indonesian working world (Widayati, 2016; Rusmulyani, 2021).

Practical Implications and Future Research Recommendations

1. **Practical Implications:** The comprehensive 90-hour modular blueprint and the detailed objectives serve as an immediate, ready-to-adopt framework for vocational institutions, government agencies, and MGMP groups seeking to modernize their accounting teacher training programs, ensuring alignment with SKKNI M.692000.023.02 and industry best practices.
2. **Future Research:** To fully validate the effectiveness of this blueprint, subsequent research is strongly recommended to complete the ADDIE life cycle. This must involve: (a) the **Development** of the prescribed e-modules and training materials; and (b) the **Implementation** followed by a robust quasi-experimental study (e.g., *one-group pretest-posttest design*) to quantitatively measure the program's impact (Summative Evaluation) and the long-term transfer of training into teaching practice (Impact Evaluation) (Brown, 2022).

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