The Implementation of National Work Competency Standards (SKKNI) Level 6 for Expert Accounting Technicians in Technology-Based Learning Device Innovation Screencast

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Abstrak. This study focuses on the development of innovative, technology-based learning tools using screencast media to implement the Indonesian National Work Competency Standards (SKKNI) Level 6 for Expert Accounting Technicians. The goal is to ensure accounting graduates possess competencies relevant to industry needs.The research employs a Research and Development (R&D) approach, following stages of analysis, design, development, validation, and testing. The developed screencast learning devices were validated by subject matter and media experts, then implemented and evaluated in the Accounting Education Study Program. Data were analyzed using descriptive quantitative techniques to assess validity, practicality, and effectiveness. The findings indicate that the SKKNI-integrated screencast learning tools significantly support competency-based education, enhance student engagement, and bridge the gap between academic learning and workplace demands. This study provides a replicable model for integrating national competency standards into technology-enhanced learning environments.

Keywords: Indonesian National Work Competency Standards; Expert Accounting Technician; Learning Tool Innovation; R&D, Screencast Technology

1 Introduction

Work competencies are pivotal in the educational sector, particularly concerning the preparation of graduates to navigate the multifaceted challenges of contemporary workplaces.

In this regard, the Indonesian National Work Competency Standards (SKKNI) emerge as an indispensable framework that educational institutions must comprehend and implement effectively. SKKNI not only delineates the essential competencies required by the workforce but also acts as a vital conduit between educational institutions and the business industry. Data from the National Professional Certification Agency (BNSP) indicates that over 70% of companies expect their employees to hold SKKNI certification, which is instrumental in enhancing productivity and improving the overall quality of work.

The SKKNI is meticulously designed to specify the qualifications and competencies necessary for workers across various sectors. Its primary aim is to bolster the competitiveness of the Indonesian workforce within the global market while ensuring that workers acquire skills that are pertinent to the evolving demands of industry. In this context, SKKNI serves as a bridge between educational attainment and the practical challenges of the workplace, thereby equipping graduates with the requisite competencies to thrive in their respective fields.

Specifically, the role of SKKNI in the development of the accounting technician profession is of significant importance. Proficient accounting technicians are expected to possess not only theoretical knowledge but also the practical skills necessary to meet industry demands. The SKKNI Level 6 delineates the standards anticipated for accounting graduates, empowering them to meet established industry expectations and contribute meaningfully in professional settings. Research conducted by the Ministry of Education and Culture suggests that the implementation of SKKNI within vocational education curricula can enhance the competitiveness of graduates by as much as 40% [16]. Case studies from previous research further corroborate that the adoption of competency-based curriculum policies—particularly those attuned to industry requirements—remains relevant for fostering a workforce that is ready for immediate employment.

The incorporation of SKKNI within educational institutions facilitates the alignment between the competencies of graduates and the dynamic needs of the job market. Research findings [3] indicate that the implementation of SKKNI enhances both the quality of graduates and the relevance of their skill sets to the demands of the employment sector. Consequently, the application of SKKNI Level 6 for accounting technicians benefits not only individual graduates but also industry sectors that necessitate a competent workforce. Moreover, SKKNI plays a critical role in sustaining the quality of education and training offered in Indonesia.

In addition, the Minister of Education and Culture Regulation Number 81 of 2014 governs the issuance of competency certificates as adjuncts to diplomas. Such competency certificates may be dispensed by higher education institutions that conduct competency assessments in cooperation with professional organizations, training providers, or accredited certification bodies. Furthermore, the Decree of the Minister of Manpower and Transmigration of the Republic of Indonesia Number 182 of 2013 outlines the establishment of SKKNI. It regulates its usage as a foundational reference for educational and vocational training institutions concerning pedagogical implementation, curriculum design, and module development. This decree also clarifies qualifications based on specific occupational domains and the scope of associated activities.

The integration of technology within educational frameworks aligns with global trends advocating for technology-enhanced learning methodologies. According to UNESCO data, over 60% of educational institutions globally have embraced digital technology within their learning strategies. Consequently, Indonesian educational institutions must adapt to these technological advancements by embedding technology into their curricula, particularly in the realm of learning tools. The rapid proliferation of diverse learning technologies, including Learning

Management Systems (LMS), instructional videos, and mobile applications, underscores this necessity.

The utilization of such technologies not only enhances accessibility to information but also fosters more interactive and collaborative learning environments. This discourse aligns with research findings [5], highlighting that simulation-based learning approaches significantly augment the development of essential skills and competencies for accounting students. Innovations in technology-driven learning tools, such as screencast technology, present opportunities to enhance educational effectiveness. This technology enables educators to record and visually present material, thereby granting students access to instructional content at their convenience.

The significance of screencasts in the learning process is increasingly pronounced in the context of the rising demand for distance education. Screencasts serve as a method for users to document their computer screens while providing visual explanations of instructional material, thus proving particularly efficacious for elucidating complex concepts within the domain of accounting, where data interpretation and application are essential.

2 Method

This study employed the Research and Development (R&D) methodology, a systematic approach widely used in educational research to design, develop, and validate innovative learning products aimed at improving teaching and learning effectiveness [20]. The primary objective of R&D is not only to produce a functional educational product but also to evaluate its quality in terms of validity, practicality, and effectiveness [22]. In this study, the product developed was a screencast-based learning device specifically designed to align with the Indonesian National Work Competency Standards (SKKNI) Level 6 for Expert Accounting Technicians, ensuring that the content and competencies delivered are directly relevant to industry expectations and professional certification requirements [13; 16].

The development process followed the ADDIE model, a widely recognized instructional design framework that comprises five systematic phases: Analyze, Design, Develop, Implement, and Evaluate [14; 18]. This model was selected due to its flexibility, iterative nature, and proven effectiveness in technology-integrated educational development. Each phase was implemented as follows:

- Analyze: This phase involved identifying the competency standards outlined in SKKNI Level 6 for Expert Accounting Technicians, analyzing curriculum gaps, and assessing student needs in the Auditing course. Task analysis ensured that learning objectives were directly mapped to industry-recognized competencies.
- Design: Learning objectives, storyboards, media formats, and assessment instruments were designed to reflect both SKKNI requirements and pedagogical best practices in technology-enhanced learning.
- Develop: The screencast learning materials were created using screen recording software (e.g., OBS Studio, Camtasia), incorporating narration, visual annotations, and real-world accounting scenarios aligned with auditing standards. The materials were structured to support self-paced, competency-based learning.
- Implement: The developed learning device was introduced in the Auditing course within the Accounting Education Study Program at the Faculty of Economics, Universitas Negeri Medan. The implementation targeted all students enrolled in the course.

- Evaluate: Formative and summative evaluations were conducted through expert validation, user response questionnaires, and learning outcome assessments to measure the product's validity, practicality, and effectiveness.

The research was conducted within the Accounting Education Study Program at Medan State University, focusing on students enrolled in the Auditing course. The population consisted of 63 students distributed across two intact classes. As this study aimed for comprehensive evaluation and maximum generalizability within the available cohort, the entire population was used as the sample, following the total sampling technique. This approach ensured that the feedback and performance data collected were representative of the target user group and aligned with the principles of competency-based education.

By integrating SKKNI Level 6 standards into a technology-driven learning environment through a rigorously structured R&D process, this study contributes to the advancement of vocational-oriented accounting education and supports the national agenda for producing industry-ready graduates.

3 Results and Discussion

This study successfully implemented the Indonesian National Work Competency Standards (SKKNI) into a screencast-based learning device through a systematic Research and Development (R&D) process guided by the ADDIE model—comprising the phases of Analyze, Design, Develop, Implement, and Evaluate [14; 18]. The integration of SKKNI Level 6 for Expert Accounting Technicians into a technology-enhanced learning environment was strategically designed to bridge the gap between academic instruction and industry expectations, ensuring that graduates are equipped with job-ready competencies as defined by the national standard [13, 16]. The following sections detail the outcomes of each development stage, with a focus on alignment with SKKNI, pedagogical innovation, and implications for accounting education.

3.1 Analysis (Define) Stage

The initial phase of the ADDIE model involved a comprehensive needs analysis to identify gaps in existing learning tools within the Accounting Education Study Program at the Faculty of Economics and Business, Universitas Negeri Medan (FE-UNIMED). Observations, curriculum reviews, and consultations with lecturers and industry partners revealed that current instructional materials were predominantly text-based and lecture-oriented, with minimal integration of competency-based frameworks such as SKKNI. Furthermore, there was no systematic implementation of SKKNI Level 6 standards—particularly for the role of *Expert Accounting Technician*—into the curriculum delivery or assessment strategies.

This misalignment between academic training and industry requirements has been widely recognized as a critical barrier to graduate employability in Indonesia [19]. As noted by the Ministry of Education, Culture, Research, and Technology [16], the failure to embed SKKNI-based competencies into learning processes results in graduates lacking the practical, technical, and professional skills demanded by Dunia Usaha dan Dunia Industri (DUDI). The findings of this analysis underscore the urgent need for technology-mediated, competency-driven learning tools that reflect real-world accounting practices—particularly in specialized areas such as auditing.

3.2 Design Stage

The design phase focused on the systematic planning and structuring of the screencast-based learning device to ensure fidelity to both SKKNI standards and principles of multimedia learning [17]. This stage included material design, media design, and assessment alignment, all tailored to the cognitive and technical demands of SKKNI Level 6.

3.2.1 Material Design Aligned with SKKNI Level 6

The learning content was explicitly mapped to SKKNI Unit Code M.692000.024.02, titled *"Implementing the Financial Information Audit Process"*, a core competency for Expert Accounting Technicians [13]. This unit encompasses critical audit procedures, including risk assessment, evidence collection, internal control evaluation, and audit reporting—skills directly transferable to professional practice.

The material design followed a competency-based approach, where each learning module was structured around Key Performance Indicators (KPIs) derived from the Unit of Competency Standards (KUK). As shown in Table 1, the screencast content was segmented to address each KUK, ensuring full coverage of required skills and knowledge.

Table 1. Alignment of Screencast Modules with SKKNI Key Performance Indicators (KUK)

Kuk Code	Key Performance Indicator (Kuk)	Screencast Module Title	Duration (Min)
M.692000.024.02.01	Prepare audit engagement procedures	Preparing Audit Planning and Risk Assessment	12
M.692000.024.02.02	Collect and evaluate audit evidence	Gathering and Assessing Audit Evidence	15
M.692000.024.02.03	Evaluate internal control systems	Internal Control Evaluation in Auditing	10
M.692000.024.02.04	Prepare audit reports	Drafting Audit Opinions and Reports	13

This structured alignment ensures vertical integration between curriculum content and national occupational standards, promoting authentic learning experiences that mirror workplace tasks [22]. Each screencast module was designed using cognitive load theory principles [21], incorporating visual cues, step-by-step demonstrations, and real-world case studies to enhance comprehension and retention.

3.2.2 Media Design and Screencast Development

The media design emphasized interactivity, clarity, and accessibility. Screencasts were developed using Camtasia Studio, integrating screen recordings of accounting software (e.g., Excel, audit templates), voice-over narration, annotations, and embedded quizzes. The design adhered to Mayer's [17] principles of multimedia learning, including the *coherence, signaling, redundancy, and modality principles*, to optimize cognitive processing and learner engagement.

For instance, complex audit procedures were broken into short, focused videos (5–15 minutes), allowing students to engage in self-paced, repeated learning—a feature shown to improve mastery in technical subjects [15]. The use of real audit scenarios (e.g., fictitious company financials) further enhanced the authenticity of the learning experience, supporting the development of professional judgment and critical thinking—key attributes of SKKNI Level 6 competence.

3.3 Development and Validation

The developed screencast modules underwent expert validation by a panel of three assessors: two accounting education experts and one multimedia learning specialist. Validation instruments assessed content validity, technical quality, and pedagogical effectiveness using a Likert-scale questionnaire. The average validity score was 4.67 out of 5.0, indicating that the learning device was highly valid and suitable for implementation [20].

Feedback from validators emphasized the strong alignment with SKKNI, the clarity of instruction, and the professional quality of production. Minor revisions were made to improve subtitle accuracy and navigation cues, reflecting the iterative nature of the ADDIE model.

3.4 Implementation and Evaluation

The screencast-based learning tool was implemented in the Auditing course with 63 students from two classes in the Accounting Education Study Program. Implementation was conducted over four weeks, with students accessing the materials via a Learning Management System (LMS). Pre- and post-tests, along with user feedback surveys, were used to evaluate effectiveness.

Results showed a significant improvement in learning outcomes, with the average post-test score increasing by 28.7% compared to the pre-test ($p < 0.05$). Student response surveys indicated high levels of satisfaction (mean score: 4.5/5.0), particularly regarding the clarity of demonstrations, relevance to real-world auditing, and flexibility of access.

These findings support the growing body of evidence that technology-enhanced, competency-based learning improves both knowledge acquisition and skill application in vocational education [23]. The screencast format not only facilitates active learning but also enables standardized delivery of SKKNI-aligned content, reducing variability in instruction quality.

3.5 Discussion: Bridging Education and Industry Through SKKNI-Integrated Screencasts

The successful implementation of this learning tool demonstrates that integrating SKKNI into technology-based media is not only feasible but highly effective in preparing accounting graduates for professional roles. By embedding industry-recognized competencies into interactive, visual, and self-directed learning experiences, this study addresses a critical gap in Indonesian higher education: the disconnect between academic curricula and workplace demands.

Furthermore, the use of screencast technology aligns with global trends in blended and flipped learning models, which emphasize student-centered instruction and mastery of practical skills [12]. In the context of accounting education, where procedural knowledge and software proficiency are essential, screencasts provide an ideal medium for demonstrating complex tasks in a repeatable and scalable format.

This study contributes to the advancement of vocational pedagogy by offering a replicable model for SKKNI-based learning innovation. It also supports national efforts to strengthen link and match between education and industry, as promoted by the Indonesian Ministry of Education and the National Agency for Certification of Competency (BNSP).

4 Conclusion

This study successfully developed and implemented a screencast-based learning device that integrates the Indonesian National Work Competency Standards (SKKNI) Level 6 for Expert Accounting Technicians, specifically aligned with the competency unit

M.692000.024.02: Implementing the Financial Information Audit Process. Guided by the ADDIE development model, the learning tool was systematically designed, validated, and tested within the Auditing course of the Accounting Education Study Program at Universitas Negeri Medan. The integration of SKKNI into a technology-enhanced learning environment proved effective in bridging the gap between academic instruction and industry expectations, offering a scalable and replicable model for competency-based education in accounting.

The findings demonstrate that the screencast-based learning device is highly valid, as confirmed by expert validation, and practically effective in improving student learning outcomes and engagement. The structured alignment of each module with Key Performance Indicators (KUK) ensures that students acquire not only theoretical knowledge but also the procedural and analytical skills required of professional accounting technicians. Furthermore, the use of multimedia principles—such as signaling, segmentation, and modality—enhanced cognitive processing and facilitated self-paced, mastery-oriented learning. This innovation directly supports Indonesia's national agenda for link and match between education and industry, ensuring that accounting graduates are not only academically proficient but also work-ready and aligned with the standards of Dunia Usaha dan Dunia Industri (DUDI). By embedding SKKNI into dynamic, technology-driven media, this study advances the transformation of traditional accounting education into a competency-based, student-centered, and industry-relevant learning experience.

In sum, the implementation of SKKNI Level 6 through screencast technology represents a significant step forward in vocational education innovation. It affirms that technology is not merely a delivery tool, but a strategic medium for standardizing, enriching, and professionalizing technical learning. Institutions of higher education, particularly in vocational and professional programs, are encouraged to adopt similar models to enhance curriculum relevance, improve graduate employability, and strengthen national competitiveness in the global workforce.

Recommendations for Future Research

Future studies may explore the long-term impact of screencast-based SKKNI learning tools on student certification success rates, workplace performance, and soft skill development. Additionally, research could investigate the scalability of this model across other competency units and disciplines within vocational education, as well as the integration of interactive features such as quizzes, simulations, and AI-driven feedback to further enhance learning effectiveness.

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