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Navigating Challenges in E-Learning Implementation at Indonesian High Schools: A Review

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Abstract

The implementation of e-learning in Indonesian high schools encounters substantial challenges, notwithstanding its inherent advantages, such as enhanced flexibility and accessibility. The Ministry of National Education's initiative to promote online learning is significantly impeded by the absence of clear regulatory frameworks and the heterogeneous conditions of educational institutions, particularly distinguishing between Senior High Schools (SMA) and Vocational High Schools (SMK), each of which has distinct curricular demands. This study employs a comprehensive review method, systematically analyzing existing literature, policy documents, and case studies pertinent to the implementation of e-learning in these settings. Preliminary findings indicate that insufficient technological resources, varying educational objectives, and regulatory ambiguity contribute to inconsistencies in the quality of e-learning experiences. To effectively address these challenges, it is imperative to develop a comprehensive e-learning framework that is specifically tailored to the unique requirements of SMA and SMK, accompanied by increased investment in both infrastructure and educator training. Furthermore, engaging policymakers to establish mandatory regulations is critical for fostering a more equitable educational landscape. By addressing these multifaceted issues, e-learning has the potential to significantly elevate the quality of education in Indonesia, thereby cultivating a more skilled and adaptable workforce.

Keywords: Navigating, Challenges, E-Learning, Indonesian, Schools.

Introduction

The concept of e-learning presents numerous advantages, including enhanced interaction between learners and educational resources. Learning materials can be efficiently documented and duplicated, enabling repeated access and flexible engagement that transcends spatial and temporal constraints. This characteristic fosters continuous

improvement and the replication of learning materials, thereby reinforcing the overall benefits associated with e-learning.

The Ministry of National Education, as the apex regulatory body for education in Indonesia, has signaled a robust intent to implement a novel online learning model. However, the absence of explicit regulations delineating a definitive framework for online learning remains a significant impediment. Recent communications from the Ministry indicate that we are situated within an era of disruption, wherein educational institutions are compelled to actively adapt their pedagogical approaches through technological support. This dynamic has spurred educational stakeholders to devise alternative learning models, resulting in the emergence of various methodologies such as e-learning, blended learning, cooperative learning, and problem-based learning (ISPI National Conference, 2014).

The proliferation of these innovative learning models has engendered competitive efforts among schools to enhance their educational systems. Traditional classroom learning is progressively evolving through the integration of media, while offline modalities are being increasingly supplanted by online formats. Despite the conduct of numerous online training sessions and extensive discourse surrounding new learning systems, a universally applicable and reliable model for widespread implementation has yet to materialize. This deficiency can be attributed to the heterogeneous conditions across schools, divergent managerial frameworks, and varying levels of institutional readiness, all of which complicate the replication of successful models in disparate contexts.

The educational landscape in Indonesia is marked by considerable diversity. High schools can be classified into two primary categories: Senior High Schools (SMA), which prioritize intellectual development with a focus on cognitive and psychomotor skills, and Vocational High Schools (SMK), which emphasize practical competencies. The distinct curricular orientations of these institutions complicate the direct application of pedagogical models across both school types. Moreover, disparities in resources are evident; affluent schools are typically better equipped with human resources, technological tools, and infrastructure, whereas schools with limited resources encounter significant barriers to the adoption of alternative, technology-driven learning modalities. The high costs associated with educational technology in Indonesia further exacerbate the challenges of implementing e-learning on a broad scale (Munas ISPI, 2014).

Additionally, the lack of enforceable regulations affords schools the latitude to postpone the implementation of online learning initiatives, often citing financial constraints as a primary concern. The Ministry's reluctance to mandate online learning may stem from the absence of a widely applicable model capable of meeting the diverse needs of various educational contexts. Presently, many online learning initiatives are confined to functional aspects of the learning process (PBM), often overlooking critical structural elements essential for comprehensive educational delivery. This oversight represents a considerable obstacle to the effective realization of online learning models.

Reluctance among educational administrators to fully engage with online learning models is significantly influenced by apprehensions regarding potential unprofitability and associated financial losses. For institutions constrained by fiscal limitations, prioritizing budgets for more immediate needs often supersedes the imperative to invest in online

learning. This hesitation may also be informed by previous experiences with ineffective online education. Conversely, schools equipped with greater resources tend to embrace technological integration, perceiving it as a strategic avenue for advancement. Such institutions typically initiate gradual implementation processes, with the aim of achieving long-term enhancements.

For schools lacking robust resources, the obstacles to implementing e-learning are pronounced. Financial limitations inhibit the provision of adequate infrastructure and high-quality educational offerings, perpetuating a cycle of diminished enrollment and inadequate funding. The Authority (2018) has identified this phenomenon as a circle of problems, wherein insufficient financial resources lead to inadequate facilities and low-quality learning, thereby diminishing student interest and further constraining financial viability. This cycle is particularly prevalent among smaller private vocational high schools, in contrast to public vocational institutions, which benefit from state funding and can more readily align with national educational quality standards.

To address these interrelated challenges, it is imperative to identify effective strategies that can disrupt the cycle of problems, transforming it into a virtuous circle (Pawenang et al., 2018). E-learning possesses the potential to serve as a transformative solution, enhancing educational quality and improving institutional reputations, which in turn may lead to increased student enrollment and financial stability. Nonetheless, current e-learning models, such as MOOCs, Moodle, and Google Classroom, often focus predominantly on delivering a technological framework for learning. Successful implementation of e-learning necessitates careful consideration of a variety of factors, including the preparedness of human resources, infrastructural readiness, institutional vision and mission, and student engagement, thereby distinguishing one educational institution from another.

To date, feedback from school principals, who act as education providers in both Senior High Schools (SMA) and Vocational High Schools (SMK), suggests that the e-learning design for SMK is fundamentally distinct from that of SMA. This differentiation is attributable to several critical variations between the two educational models, which are presented in the following Table 1.

Table 1
Differences between Senior High School and Vocational High School

Items	Senior High School	Vocational High School
Curriculum	Theory 70%, Practice 30%	Theory 30%, Practice 70%
Emphasis	Cognitive	Psychomotor
which is formed	common sense	Skills
Orientation	Advanced Study	Work

Source: Surakarta City Education Department, 2021

The disparities highlighted in the table reveal that the current system utilized in Senior High Schools (SMA) is fundamentally incompatible with the operational framework of Vocational High Schools (SMK). To adapt the SMA model for SMK implementation, substantial modifications would be essential. Therefore, it is imperative for SMK to devise an e-learning design tailored to their distinct characteristics. This underscores the need for a robust and

nuanced approach to e-learning design that takes into account the unique contextual factors inherent to each school type.

Methodology

A systematic review approach was employed to justify the proposed conceptual framework, as illustrated in Figure 1. The review consisted of two parts: 1) collecting and reviewing previous research on integrated learning and student performance, and 2) assessing the relevance of selected papers based on specific criteria. In the first part, Google Scholar and ResearchGate were utilized to search for relevant articles according to the following criteria as shown in Table 2.

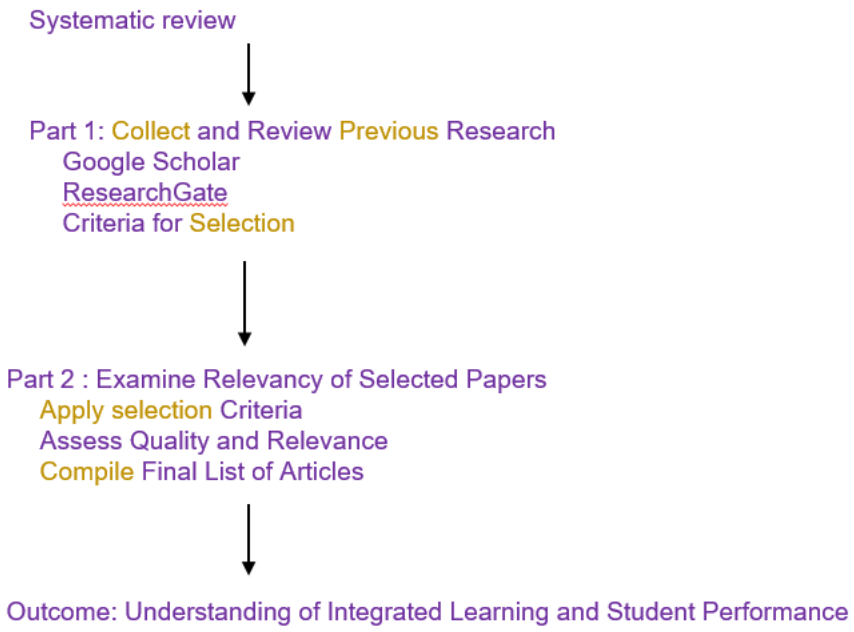

Figure 1. Process Flow Diagram in a Systematic LR

Table 2
The Focused Criteria

Criteria	Remarks
Keyword	Integrative learning; learning performance; student performance; learning outcome;
Search engine	Google Scholar; Research Gate; Science Direct
Language	English; Indonesia
Objective of the study	• Producing an integrated ecosystem model which is capable of creating a learning system in schools, so that it can be implemented massively in senior high schools. • Measure and determine the effectiveness of the resulting learning ecosystem model.

To ensure relevant articles were collected, following combination of search string were used ("integrative learning" AND "learning performance") OR ("integrative learning" AND "student performance") OR ("integrative learning" AND "learning outcome").

All selected articles from the first stage were analyzed in the second stage of the research process. A deductive research approach was employed, starting with a clearly defined set of theoretically established assumptions regarding the relationships among the constructs under investigation. The deductive approach involves developing a theory through hypothesis formulation, observation, and subsequent acceptance or rejection. Extracting relevant data during this phase is crucial to synthesizing the evidence effectively. The findings will focus on the impact of integrative learning on high school learning outcomes. Based on the review, this study identifies common antecedents in the literature, including educational policies, individual readiness, technological support, and management priorities, which will inform the research. The constructs and hypotheses will be discussed in the next section.

Discussion

Figure 2 shows the Integrative Learning Model used as a comprehensive approach aimed at enhancing learning outcomes by consciously incorporating various educational resources and strategies. It emphasizes the synergy between individual learners and their environments, drawing from both micro (educational institutions) and macro (national education policies) perspectives. This model promotes the effective use of learning technologies and encourages teachers to act as mentors and facilitators, fostering a more efficient and impactful learning process.

Implementing this framework requires educational institutions to engage in systematic planning, organizing, execution, evaluation, and management of resources, including human, operational, marketing, and financial aspects. Each component must be aligned to create a cohesive learning environment. Specifically, it is crucial to ensure that learning materials, objectives, and strategies support one another to optimize educational outcomes.

Moreover, the interplay between these layers of activity must consider broader factors such as educational policies, management priorities, human resource readiness, and available technologies. This interdependence underscores the importance of a micro-macro dynamic in educational settings, reinforcing the need for an integrative perspective when designing effective learning experiences.

In summary, the integrative learning model illustrates that successful educational practices require a holistic approach, integrating diverse resources and strategies while aligning with institutional goals and external policy frameworks. This comprehensive perspective not only enhances the quality of learning, but also equips learners to tackle complex real-world challenges. The summary of the relevant literature are presented in Table 3.

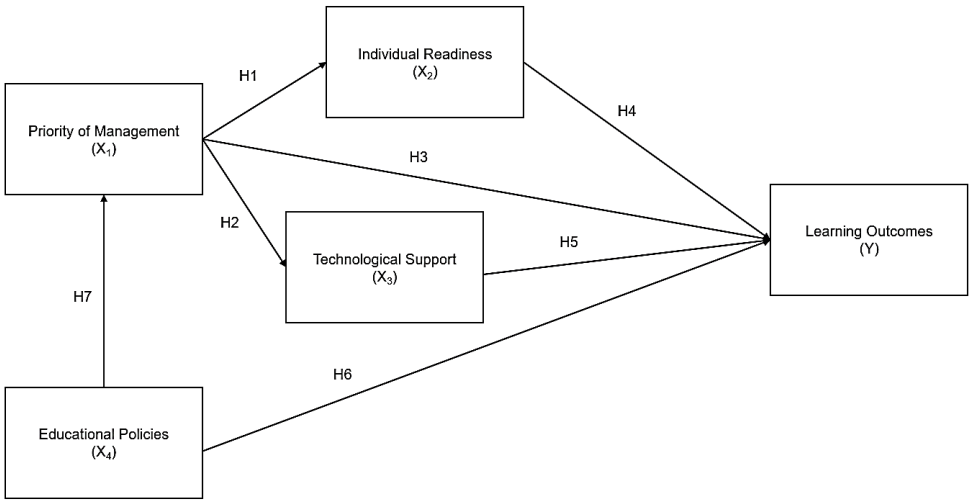

Figure 2. The proposed conceptual framework

As illustrated in Figure 2, research conducted by Afsar (2016), Afsar & Badir (2016), and Turek & Turek (2016) underscores the critical importance of aligning organizational interests with individual interests for achieving success. To facilitate this alignment, Rusly et al (2012), present evidence that organizations must account for both psychological and structural dimensions of individuals. By prioritizing these factors, organizations can enhance individual readiness, which in turn positively influences a culture of knowledge sharing. Therefore, it is proposed that: **H1.** Management Priority significantly affects Individual Readiness.

Kramer & Benson (2013), assert that organizational managers frequently evaluate the costs and benefits associated with their decisions, often prioritizing key initiatives while relegating less critical matters. In the context of contemporary technological advancements, management increasingly emphasizes supporting technological initiatives as a central priority. Consequently, it can be concluded that: **H2.** Management Priority significantly affects Technological Support.

Lyons and Bandura (2020), elucidate that the adoption of case-based instruction (CBI) within educational institutions correlates with enhanced student learning outcomes. In a similar vein, Armson and Whiteley (2010), confirm that policies designed to improve interaction and communication significantly elevate learning quality. Furthermore, Saabye et al (2023), contend that the prioritization of certain matters by educational institutions notably influences overall learning quality. Therefore, it is believed that: **H3.** Management Priority significantly affects Learning Outcomes.

A substantial body of literature highlights the pivotal role of individual readiness within organizations. For instance, Vakola (2014), demonstrates that individual readiness can enhance organizational performance in Greece. Sun (2010), posits that individual readiness serves as a crucial determinant of an organization's capacity to adapt to change. Additionally, Rusli et al (2012), observe that individual readiness positively contributes to the development of professional service firms in New Zealand. Based on these findings, it can be concluded that: **H4.** Individual Readiness significantly affects Learning Outcomes.

Research conducted by Pizmony-Levy et al (2012), Bin-Hady and At-Tamimi (2021), Kramer & Benson (2013), and Punie (2007), indicates that learning technologies provide significant

support for enhancing learning outcomes. Accordingly, it is hypothesized that: **H5.** Technological Support significantly affects Learning Outcomes.

The Norwegian Directorate of Education and Training (2011), reports that national education policies in Norway have a positive impact on the quality of learning outcomes. Similarly, Sato (2017), in an examination of education policies among OECD and PISA member countries, notes improvements in learning outcomes following the implementation of macro-level education policies. Xiao & Meier (2011), also demonstrate that the integrated education policy CALIS in China resulted in enhanced learning outcomes. Therefore, it is proposed that: **H6.** Educational Policies significantly affect Learning Outcomes.

Sutton-Levinson (2001) highlights that macro-level educational policies exert influence on micro-level policies within educational institutions. Pizmony-Levy et al (2012), similarly find that institutional policies frequently reflect national educational policies. Furthermore, Vicente (2016) argues that bureaucratic policies in the education sector shape operational practices within educational institutions. Thus, it can be concluded that: **H7.** Educational Policies significantly affect Management Priority.

Table 3
Summary for the related LR in the topic.

Authors	Theoretical Indicators	Adapted indicators
Priority Management		
Kramer & Benson (2013)	a. Consideration of needs b. Technical readiness c. Financial limitations d. Technology limitations e. HR limitations f. Limited facilities and infrastructure	Consideration of needs and benefits
Rusly et al (2012)	a. Psychological Aspect b. Structural Aspect	Strengthening of fundamental aspects
Lin, 2007; Yi, 2009	a. Supports Knowledge-sharing action capabilities b. support the organization's operations	Smooth organization operations
Afsar (2016), Afsar & Badir (2016), Turek & Turek (2016)	a. Alignment of individual-organizational interests b. Improve innovative performance behavior	Improve the performance
Becerra-Fernandez dan Sabherwal, 2010; Rusly et al, 2012	a. Improve individual quality b. Improve collective quality c. Strengthen the character of the organization d. Clarify the organizational context	Strengthen character
Individual Readiness		
Rusly et al (2012)	a. Generating knowledge	Provide added value

Authors	Theoretical Indicators	Adapted indicators
	b. Enhance creation c. Passion for sharing knowledge	
Sun (2000)	a. sharing knowledge b. Develop knowledge c. Optimistic attitude to move forward d. Performance oriented	Individual capability
Armenakis et al (1993)	a. Confidence of implementation b. Preparedness of the implementer c. Have a target	Confidence to move forward
Vakola (2014)	a. Have high confidence b. Able to communicate well c. Aware of the target	Social interaction skills
Rusly et al (2014)	a. Individual commitment b. Collective commitment c. Response to the character of the organization d. Response to organizational context	Commitment to organization
Technological Support		
Pizmony-Levy et al (2012)	a. Professional b. Skills c. Competence	Proficiency in using technology
Bin-Hady and At-Tamimi (2021)	a. Use of technology b. Ease of access c. Suitability for learning d. Enrich strategy	Usefulness in learning
Kramer & Benson (2013)	a. As a learning tool b. Support for pedagogy c. Effective and efficient d. Stimulating student involvement in learning e. Teachers are familiar with technology	Suitability of learning technology
Punie (2007)	a. As a strategic asset b. Reducing learning barriers c. Easy integration d. Speed up access e. Improve cognitive development f. Facilitate interaction g. Connecting social elements	Value added technology

Authors	Theoretical Indicators	Adapted indicators
Hwang & Francesco (2010)	a. discussion room b. Communication Room c. Web Conference d. Online social network e. Reference access	Access interaction and integration
Educational Policies		
Sutton-Levinson (2001)	a. Macro education policy (government) b. Micro education policy (organization)	National Education Policy
Pizmony-Levy et al (2012)	a. Compliance with national education standards b. Educational institution accreditation	National Standard Compliance
Vicente (2016)	a. Educational bureaucratic model b. Educational democracy model	The educational model chosen by the organization
Xiao & Meier (2011); Moller dan Skedsmo (2013a)	a. Curriculum policy b. Subject matter c. Basic competencies d. Global Standard	Basic competencies to be achieved
Takayama (2014)	a. Learning content b. Teacher quality c. Management of educational institutions	Teacher quality
Learning Outcomes		
Karanja & Malone (2020)	Cognitive Aspect: a. Knowing b. Understand c. Apply d. Analyze e. Evaluate f. Creation	Cognitive
Shephard (2008)	Affective Aspect: a. listen b. respond c. show attitude d. show balance e. commitment f. revise	Affective
Canto et al (2019)	Skill Aspect: a. Awareness of benefits b. Sensibility c. Basic Skills d. Specialized Skill	Skillfulness

Authors	Theoretical Indicators	Adapted indicators
	e. Involving f. Organization and innovation skills	
Kyndt et al (2014)	a. Learning outcomes are general and strategic b. Learning outcomes are organizational c. Learning outcomes are special skills	Efficacy Proactive Personality Motivation

Conclusion

The objectives of this review, are to identify key variables influencing integrative learning, synthesize existing theories, and establish a research model that is both theoretically sound and empirically viable. Achieving these objectives provides a solid foundation for examining the interactions among various factors within the context of integrative learning, thereby enhancing our understanding of educational practices. Future research could further investigate the applicability of the integrative learning model in diverse educational settings, including different cultural and institutional contexts, and conduct longitudinal studies to assess the long-term effects of integrative learning strategies on student outcomes. Additionally, exploring the integration of emerging technologies into the model may yield valuable insights for adapting to the rapidly evolving educational landscape. The findings of this research also hold significant commercialization potential; educational institutions and organizations can utilize the integrative learning model to enhance curriculum design and pedagogical strategies, ultimately improving student engagement and outcomes. Furthermore, training programs for educators based on Integrative Learning Theory could be marketed to schools and educational platforms seeking innovative teaching methodologies. Thus, this study not only contributes to academic discourse but also offers practical applications and tangible benefits for educational practitioners and policymakers.

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