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SCREENING MOBILE APPLICATION BASED ON SOCIAL ECOLOGICAL MODEL WITH PANCASILA IN LEARNING AS AN EFFORT TO PREVENT RADICALISM IN THE DIGITAL AGE

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Abstract

This study evaluated the effectiveness of a mobile screening application based on the Social Ecological Model (SEM) of Pancasila in preventing radicalization in universities, particularly in addressing exposure to extreme digital content. We used a quantitative pre-experimental design, involving 76 students, with data collected through pre-test and post-test assessments measuring understanding of radicalism, digital literacy, and attitudes toward extreme digital content. The results showed a significant increase in post-test scores, indicating that the SEM-based screening application effectively enhances digital literacy and critical analysis of radical digital content. The application fosters more critical and tolerant perspectives because both individual and interpersonal components within SEM contribute significantly to attitude changes. Individual elements, such as knowledge of radicalism and digital literacy, combined with interpersonal factors, including social interactions and lecturer support, strengthen students' resilience to radical influences. These findings highlight the importance of integrating Pancasila values into digital education curricula to raise awareness of radicalism threats.

Keywords: Digital age, Mobile learning application, Pancasila values, Prevention of radicalism, Social ecological model.

1. Introduction

The digital era has expanded learning beyond physical and temporal constraints [1]. Internet access, social media, and online platforms have also become key facilitators of modern radicalism, enabling the spread, planning, and promotion of extremist ideologies [2]. Addressing this issue requires proactive prevention, such as the Pancasila-Based Social Ecological Model (SEM) Mobile Screening Application, which integrates Pancasila principles to enhance digital literacy and resilience against radical content.

Previous studies showed that technology-based education can effectively counter radicalism among students. The internet is a primary tool for extremist propaganda [3], while low ideological literacy and weak critical thinking increase student vulnerability [4]. Inadequate emphasis on tolerance and nationalism in education further exacerbates this issue [5]. SEM, widely applied in behavioural studies, helps understand how social and environmental factors shape attitudes, including in anti-radicalism education [6].

This study evaluates the Pancasila-Based SEM Mobile Screening Application in enhancing critical thinking and awareness of radicalism. Using a quantitative pre-experimental design, 76 students were assessed through pre- and post-tests on radicalism and digital literacy. Results showed significant improvement, particularly in individual and interpersonal SEM aspects.

The novelty of this research lies in several aspects: (i) Integration of Pancasila Values in a Digital Screening Model. Unlike previous anti-radicalism tools, this study incorporates Pancasila principles into an SEM-based mobile application, making it both a detection tool and an educational platform to reinforce national ideology and tolerance; (ii) Use of a Mobile Screening Application for Digital Literacy and Radicalism Prevention. The study develops a mobile screening application specifically designed to enhance students' digital literacy and resilience against radical content, an approach that has not been widely explored in university settings; (iii) Application of the SEM in Digital Radicalism Prevention; While SEM has been applied in education and behavior studies, this study uniquely applies it to understanding how individual, interpersonal, and institutional factors contribute to shaping students' resistance to digital radicalism; (iv) Empirical Evidence on the Effectiveness of Digital-Based Prevention in Higher Education. This research provides quantitative evidence on how a mobile intervention model significantly improves students' understanding of radicalism and critical thinking skills, addressing a gap in technology-based deradicalization strategies; and (v) Dual Function: Early Detection and Ideological Resilience Building.

Unlike traditional radicalism detection systems, this study presents an interactive, educational model that not only identifies students' susceptibility to radical content but also strengthens their critical awareness and civic engagement in a structured learning process. These innovations make this study a pioneering effort in leveraging digital technology to prevent radicalism in higher education while embedding Pancasila values into digital civic education.

2. Literature Review

Figure 1 illustrates a mobile learning application concept based on the Framework for Rational Analysis of Mobile Education (FRAM) [7]. It integrates social

interaction (S), mobile technology (D), and human learning capabilities (L) [8]. The intersections between these components create key attributes: (i) S + L → Interaction in Learning; (ii) D + L → Device Usability; and (iii) S + D → Social Technology. DLS acts as a bridge between students, information, and community interactions, enhancing mobile learning experience.

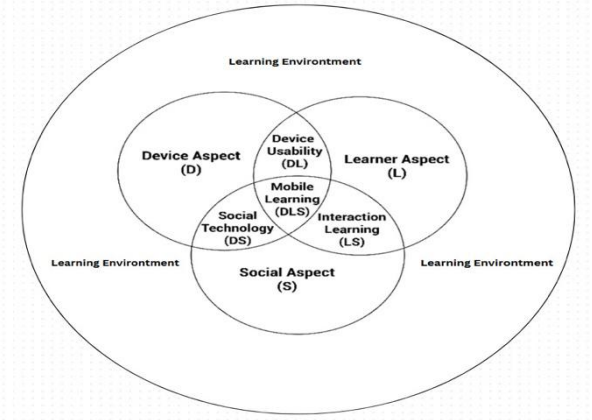

Fig.1. The Framework for the rational analysis of mobile learning application.

3. Methods

This study employed the Analyze, Design, Develop, Implement, and Evaluate (ADDIE) model. The evaluation stage assesses the screening mobile application through both qualitative (expert judgment from the IT team) and quantitative (pre-experimental one-group pre-test-post-test design with 76 students) methods. The quantitative test includes:

(i) Pre-test-Measures students' initial knowledge and exposure to radical content.

(ii) Intervention-Learning activities using an SEM-based mobile application incorporating Pancasila values.

(iii) Post-test-Assesses changes in students' understanding after intervention.

4. Results and Discussion

Figure 2 illustrates the SEM-based screening mobile application reinforced with Pancasila values. It features (i) a questionnaire to assess students' radicalism exposure, (ii) educational resources (posters, videos, articles, and e-magazines), and (iii) a student complaint feature for reporting concerns. Technology plays a key role in education and information filtering, supporting collaborative learning and digital literacy [9-13]. Social media [14-18] and e-learning platforms [19-23] enhance learning, while tools like fact-checking software [24-29] help students critically evaluate information [30-32]. Technology prevents misinformation and radicalism by promoting media literacy and responsible digital engagement [33-37].

The integration of Pancasila values in mobile learning fosters critical thinking, social awareness, and resilience against radical ideologies [38]. Students, as active agents, not only benefit from this approach but also contribute to building inclusive

communities [39, 40]. This research follows a digital campaign model, producing student-led counter-narratives against radicalism [41].

Table 1 presents the normality test results (Kolmogorov-Smirnov and Shapiro-Wilk), confirming that the pre-test and post-test data were normally distributed, allowing further parametric analysis. Detailed information regarding the analysis statistically is reported elsewhere [42-44]. The paired t-test revealed a statistically significant improvement ($p < 0.05$) in students' critical thinking skills after using the SEM-based mobile screening application. These findings align with Bronfenbrenner's theory on how social, cultural, and technological factors shape cognition and behavior [45, 46].

Within the Social Ecological Model, this study emphasizes individual and interpersonal influences, demonstrating how Pancasila values serve as an effective countermeasure against radicalism by fostering tolerance, national identity, and unity [47-50]. These findings highlight the role of character education in preventing radicalism and strengthening students' ideological resilience.

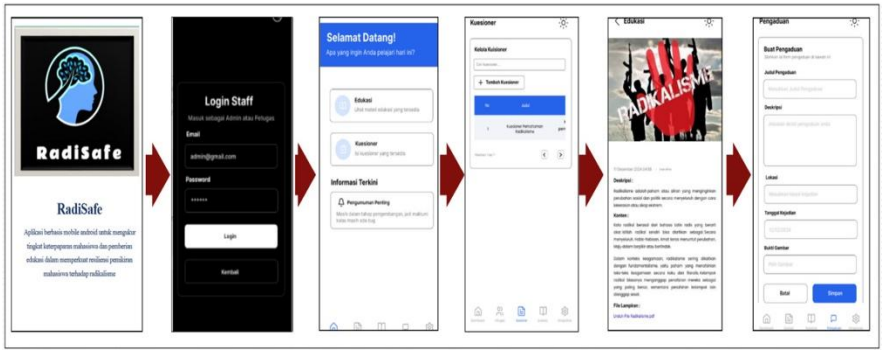

Fig. 2. Mobile screening application display.

Table 1. Normality test results.

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.038	76	.200*	.990	76	.842
Posttest	.084	76	.200*	.985	76	.486

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

5. Conclusion

This study confirms the effectiveness of the SEM-based mobile screening application in strengthening students' critical thinking and resilience against radicalism through Pancasila values. The application significantly improved digital literacy and awareness, as shown by pre-test and post-test results. By integrating education, technology, and ideological reinforcement, this approach fosters tolerance, national identity, and social cohesion. These findings align with previous theories, highlighting environmental influences on cognition and behavior. The research underscores the importance of character education in countering radicalism, providing a scalable, digital-based strategy for enhancing civic awareness and ideological resilience in the digital era.

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