Situation-Based Security Learning Packages Design
การออกแบบชุดกิจกรรมการเรียนรู้ด้านความปลอดภัยโดยใช้สถานการณ์เป็นฐาน

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Abstract

This study focuses on the design of "Situation-Based Security Learning Packages" aimed at enhancing security education effectiveness through situational learning theory. Current challenges in security education for college students include varying levels of interest in security knowledge and a gap between theoretical understanding and practical application. The study aims to develop and implement situational security education packages to enhance students' knowledge, coping skills, and engagement in learning. The research commenced with a needs assessment and objective identification for security education among college students. Learning packages were designed based on situational learning theory, covering topics such as national, public, personal, property, fire, traffic, psychological, and laboratory security. Each topic includes sections on introduction, objectives, activities, resources, and evaluation modules. These are designed to simulate real security scenarios for experiential learning. The effectiveness of these learning packages was evaluated by seven experts who assessed the relevance of teaching topics, richness of resources, and practicality of activities. A preliminary experiment involving five college students demonstrated a significant increase in both enthusiasm for learning and awareness of security issues. The results indicate that these packages effectively enhance students' awareness of security issues, their ability to cope with security challenges, and their overall interest in learning. Future developments could expand the scope of content covered and integrate modern technologies such as virtual and augmented reality to further improve learning outcomes.

Keywords: Situational Learning, Security Education, Learning Packages

บทคัดย่อ

การวิจัยนี้มุ่งเน้นที่การออกแบบ "ชุดการเรียนรู้ ด้านความปลอดภัย โดยใช้สถานการณ์เป็นฐาน โดยมีจุดมุ่งหมายเพื่อเพิ่มประสิทธิภาพการศึกษาด้านความปลอดภัย ผ่านทฤษฎีการเรียนรู้ตามสถานการณ์ความท้าทายในปัจจุบันของการศึกษา ด้านความปลอดภัยสำหรับนักศึกษามหาวิทยาลัย รวมถึงระดับความสนใจที่แตกต่างกันในความรู้ด้านความปลอดภัยและช่องว่างระหว่างความเข้าใจทางทฤษฎีกับการประยุกต์ใช้ในทางปฏิบัติ มีวัตถุประสงค์การวิจัยเพื่อพัฒนาและนำชุดการเรียนรู้ความปลอดภัยโดยใช้สถานการณ์เป็นฐานไปใช้เพื่อเพิ่มความรู้ ทักษะการรับมือ และการมีส่วนร่วมในการเรียนรู้ของนักศึกษา งานวิจัยเริ่มต้นด้วยการประเมินความต้องการและการระบุวัตถุประสงค์สำหรับการศึกษาด้านความปลอดภัยในกลุ่มนักศึกษามหาวิทยาลัยชุดการเรียนรู้ออกแบบขึ้นตามทฤษฎีการเรียนรู้ตามสถานการณ์ ได้แก่ ความปลอดภัยด้านชาติ สาธารณะ ส่วนบุคคล ทรัพย์สิน อัคคีภัย การจราจร จิตวิทยา และห้องปฏิบัติการ แต่ละชุดการเรียนรู้ ประกอบด้วย บทนำ วัตถุประสงค์ กิจกรรม สื่อทรัพยากรและการวัดและการประเมินผล ที่ออกแบบมาเพื่อจำลองสถานการณ์ความปลอดภัยจริงสำหรับการเรียนรู้จากประสบการณ์ ประสิทธิภาพของชุดการเรียนเหล่านี้ ได้รับการประเมินโดยผู้เชี่ยวชาญ 7 คน ประเมินความสอดคล้อง เหมาะสม และความเป็นไปได้ของชุดการเรียนรู้และทดลองใช้กับนักศึกษามหาวิทยาลัย 5 คน ผลการใช้แสดงให้เห็นถึงการเพิ่มขึ้นอย่างมีนัยสำคัญ ทั้งในด้านความกระตือรือร้นในการเรียนรู้ และการตระหนักถึงปัญหาด้านความปลอดภัย ผลลัพธ์บ่งชี้ว่าชุดการเรียนรู้เพิ่มการตระหนักรู้ของนักศึกษาเกี่ยวกับปัญหาด้านความปลอดภัยความสามารถในการรับมือกับความท้าทายด้านความปลอดภัยและความสนใจโดยรวมในการเรียนรู้ได้อย่างมีประสิทธิภาพการพัฒนาในอนาคตอาจขยายขอบเขตของเนื้อหาที่ครอบคลุมและบูรณาการเทคโนโลยีทันสมัย เช่น ความเป็นจริงเสมือนและความเป็นจริง เสริมเพื่อปรับปรุงผลลัพธ์การเรียนรู้ให้ดียิ่งขึ้น

คำสำคัญ: การเรียนรู้ตามสถานการณ์, การศึกษาด้านความปลอดภัย, ชุดการเรียน

1. Introduction

Security is a fundamental human need, as highlighted in Maslow's Hierarchy, reflecting its importance for individuals, families, and society (Maslow, 2023 pp. 72 - 79). It underpins personal development and national progress. In China, security education is prioritized within the university system, serving as a core element of the national educational framework and forming a vital part of students' holistic development and institutional safety practices.

The significance of security education is particularly pronounced in the developmental trajectory of university students. Concurrent with China's

progressive reform and opening policies, universities have undergone substantial transformation from enclosed educational environments to open institutions, evolving from conventional teaching and research establishments to multifaceted social organizations encompassing pedagogical functions, scientific inquiry, production, and commercial activities. For most students, university matriculation represents their initial experience of navigating an unfamiliar social context with relative autonomy. The interpersonal networks, socialization protocols, and interactive spatial dimensions they encounter exhibit marked differentiation from those experienced during secondary education, generating novelty while simultaneously presenting more complex situational challenges. Under these circumstances, insufficient familiarity with social dynamics, particularly regarding security considerations, inevitably precipitates various security-related incidents. Consequently, enhancing security education for university students and strengthening their security awareness and self-protective capabilities has become an educational imperative requiring immediate attention.

Integrating security education into students' learning experiences requires advanced instructional strategies that balance educational effectiveness with student engagement. The curriculum must not only raise security awareness but also maintain intellectual curiosity and enthusiasm to ensure deep understanding. Effective implementation requires collaboration across disciplines to develop relevant curricula, design contextual learning activities, and align content with students' cognitive and psychological development. Activity-based learning and contextual frameworks should be used to facilitate deeper engagement with security topics, encouraging students to internalize security consciousness. This responsibility extends beyond security instructors to the entire faculty, as students need guidance to connect classroom knowledge with real-life experiences for comprehensive understanding and practical application (Hemmeter, 2006 pp. 2-12).

Situation-based teaching is an innovative approach that drives educational technology forward, especially in security education. By integrating tools like virtual and augmented reality, it offers students immersive, realistic learning experiences that improve understanding and retention of key security

concepts. This method also empowers educators to strengthen students' decision-making and problem-solving skills. In simulated scenarios, learners critically assess various actions, engaging in analysis, judgment, and selection - processes that build resilience and real-world emergency management capabilities. Ultimately, this approach cultivates transferable skills vital for responding effectively to security-related situations, making it a valuable strategy for enhancing both instructional quality and learner preparedness. (Almeida, & Simoes, 2020 p. 27).

As a researcher in a western Chinese university engaged in security education, I recognize its vital role in national interests, family welfare, and individual well-being. Security education is essential in developing students' safety awareness, self-protection skills, and fostering a culture of campus safety. It also supports accident prevention and contributes to students' personal growth. Beyond individual benefits, it enhances societal security, resilience, and stability, making it a critical component of contemporary university education.

Although security education is essential, its implementation in universities still presents certain shortcomings. This research aims to develop a situation-based instructional approach to enhance students' knowledge, skills, and safety awareness through real-life scenarios. It also seeks to improve the effectiveness of teaching practices for educators in contemporary university settings.

2. Objectives of the Research

1. To develop situation-based learning packages on security education.

2. To evaluate situation-based learning packages created.

3. Research Methodology

3.1 Population and Sample

The researcher invites educational management professionals, academic experts, and teachers with experience in curriculum development, security education, assessment, and evaluation as members of the project evaluation team. The team consists of seven people by purposive sampling. Evaluate learning packages created. The researcher revised and improved it according to the guidance of the evaluation expert group.

3.2 Research Instruments. The research tools used a questionnaire.

3.3 Data Collection: Filter out valid data from 7 tables from experts. And conduct an in-depth analysis of experts' opinions and suggestions on learning packages to extract key views and attitudes.

3.4 Data Analysis (1) Focuses on the basic information of the respondents and adopts a checklist format. (2) The constructed learning packages assessment tool adopts a Likert scale with approximately 5 levels to inquire about the appropriateness and feasibility of the training components. (3) Open-ended closing questions.

3.5 Statistical Methods Used for Analysis. Analyze data from the questionnaire using frequency, mean, and standard deviation, and conduct a content analysis.

4. Research Results

The process of researching "situation-based security learning packages design" typically involves the following steps:

Part 1: Learning Packages Development Results Based on China's laws, regulations, policies, current social security conditions, student needs, and educational realities, we structured the foundational elements of college student security education to develop these learning packages.

1. Information Collection: In 2022, to enhance the security and stability of colleges and universities, the Education Department of Sichuan Province issued the Implementation Plan for Safe Campus Construction. This plan emphasizes the enhancement of security education curricula, the development of specialized curricula through discussions, quality exhibitions, and evaluations, and the integration of security education across disciplines and educational levels. Furthermore, it underscores the importance of researching security initiatives, disseminating outcomes, encouraging participation of security educators in research projects, actively publishing educational and scientific research papers, and exploring mechanisms for professional development and technology accreditation among security educators. The eight themes of security education identified include: 1) National security, 2) Public security, 3) Personal security, 4) Property security, 5) Fire security, 6) Traffic security,

7) Psychological security, and 8) Laboratory security (Sichuan Provincial Department of Education, 2022 pp. 19-35).

2. Development of Learning Packages: The design outcomes of the eight teaching themes are structured into components essential for the Situation-based Security Learning Packages Design. Each theme comprises six components: 1) Introduction, 2) Learning Objectives, 3) Teaching Themes, 4) Learning Activities, 5) Learning Resources, and 6) Learning Evaluation.

Part 2: Results of Evaluation and Improvement of Situation-Based Security Learning Packages

This section presents the evaluation outcomes of the created situation-based security learning packages. The primary objective was to assess the relevance, appropriateness, and feasibility of each program component. To achieve this, feedback was solicited from a panel of seven experts, including five professionals from Thailand and two from China, specializing in education and safety education. The panel, consisting of four women and three men, holds advanced degrees (Masters and Ph.D.) and senior professional roles as professors or associate professors in their respective fields.

The evaluation employed a structured assessment tool addressing eight core teaching and learning themes, each encompassing nine dimensions, totaling 72 evaluation items. Experts rated each item independently, and the collected data underwent statistical analysis to derive mean scores and standard deviations for each item and dimension. These metrics provided insights into strengths and areas for improvement across instructional topics, ensuring a comprehensive evaluation process. Each expert evaluated the eight teaching topics autonomously, with scores for each topic considered independently of others.

Table 1 Evaluate a summary of the mean and standard deviation for each teaching theme.

Teaching Theme	Relevance			Appropriateness		
	$\bar{x}$	S.D.	Meaning	$\bar{x}$	S.D.	Meaning
Teaching Theme 1	4.73	0.39	Highest	4.68	0.52	Highest

Teaching Theme 2	4.66	0.42	Highest	4.65	0.43	Highest
Teaching Theme 3	4.71	0.43	Highest	4.62	0.45	Highest
Teaching Theme 4	4.65	0.49	Highest	4.48	0.58	High
Teaching Theme 5	4.65	0.41	Highest	4.62	0.48	Highest
Teaching Theme 6	4.71	0.43	Highest	4.64	0.46	Highest
Teaching Theme 7	4.57	0.49	Highest	4.54	0.54	Highest
Teaching Theme 8	4.66	0.47	Highest	4.57	0.58	Highest
Total	4.67	0.44	Highest	4.60	0.51	Highest

Table 1 presents expert evaluation results across seven reviewers. The thematic evaluation indicators show high overall scores. 'Relevance' averaged 4.67 (S.D.=0.44) and 'Appropriateness' averaged 4.60 (S.D.=0.51). Teaching Theme 4 scored slightly lower on 'Appropriateness' at 4.48 (S.D.=0.51), while all other topics achieved maximum scores on these indicators.

Table 2 Evaluation summary of the mean and standard deviation of all teaching theme evaluation items.

NO.	Evaluation Item	Teaching Theme 1-Teaching Theme 8					
		Relevance			Appropriateness		
		$\overline{x}$	S.D.	Meaning	$\overline{x}$	S.D.	Meaning
1	Elements of the training program To determine the elements of the training program	4.71	0.45	Highest	4.71	0.44	Highest
2	Relevance and Appropriateness of teaching theme to learning objectives	4.86	0.29	Highest	4.88	0.24	Highest
3	Relevance and Appropriateness of	4.71	0.44	Highest	4.55	0.58	Highest

NO.	Evaluation Item	Teaching Theme 1-Teaching Theme 8					
		Relevance			Appropriateness		
		$\overline{x}$	S.D.	Meaning	$\overline{x}$	S.D.	Meaning
	teaching theme and activities						
4	Relevance and Appropriateness of teaching theme and resources	4.48	0.50	High	4.39	0.55	High
5	Relevance and Appropriateness of teaching theme and evaluations	4.66	0.47	Highest	4.55	0.6	Highest
6	Relevance and Appropriateness of the learning objectives and activities of the teaching theme	4.77	0.38	Highest	4.54	0.60	Highest
7	Relevance and Appropriateness of the learning objectives and resources of the teaching theme	4.52	0.51	Highest	4.36	0.62	High
8	Relevance and Appropriateness of the learning objectives and evaluations of the teaching theme	4.71	0.44	Highest	4.79	0.40	Highest

NO.	Evaluation Item	Teaching Theme 1-Teaching Theme 8					
		Relevance			Appropriateness		
		$\overline{x}$	S.D.	Meaning	$\overline{x}$	S.D.	Meaning
9	Relevance and Appropriateness of the activities and evaluations of the teaching theme	4.61	0.52	Highest	4.62	0.52	Highest
	Total	4.67	0.44	Highest	4.60	0.51	Highest

Table 2 presents evaluation results from seven experts across eight scenario-based safety education topics. Mean values ranged from 4.48-4.86 for 'Relevance' and 4.36-4.88 for 'Appropriateness,' indicating high expert consensus. This suggests the themes and their components (instructional topics, objectives, activities, resources, and assessment) were deemed highly relevant and appropriate.

Conclusion

1 Comprehensive Analysis of Safety Education Needs Based on Sichuan Province's safe campus construction guidelines, we identified eight core teaching themes: (1) National Security - national security laws; (2) Public Security - earthquake survival strategies; (3) Personal Security - campus violence prevention; (4) Property Security - online fraud prevention; (5) Fire Control Security - emergency fire responses; (6) Traffic Security - handling traffic incidents; (7) Psychological Security - stress management and interpersonal relationships; and (8) Laboratory Security - managing chemical accidents. These themes form the foundation for university student safety education programs.

2. Development of Safety Education Learning Packages. We developed comprehensive safety education learning packages to enhance student engagement, awareness, and prevention skills. Each package contains six components: 1) Introduction 2) Learning objectives 3) Teaching theme 4) Learning activities 5) Learning resources and 6) Learning evaluations.

3. These elements are consistent across all eight teaching topics, ensuring systematic instructional design. Seven experts from Thailand and China

with advanced credentials in education and safety evaluated the learning packages. Statistical analysis showed high average scores for 'relevance' (4.48-4.86) and 'appropriateness' (4.36-4.88), indicating strong expert consensus on the packages' validity. A pilot test with five students demonstrated that the context-based approach effectively stimulated interest and improved learning outcomes, confirming both theoretical soundness and practical impact.

5. Discussion of Research Results

Context-based safety education learning packages are essential for enhancing safety education effectiveness. They stimulate student interest by simulating real-life situations, integrating theory with practice, addressing diverse learning needs, and promoting innovation in safety education. This approach builds a foundation for developing safety awareness and emergency response capabilities.

1. Context-based learning packages differ from traditional teaching methods. As Wilson and Karen Madsen Myers argue, situated cognition represents a distinct learning theory compared to information processing theory (David & Susan, 2000: 65). These packages offer strong practicality through real safety incident scenarios, good interactivity via role-playing and group discussions, easy promotion through modular design, and comprehensive evaluation systems.

2. Richness of Teaching Resources: While teaching topics covering national, public, personal, property, fire, traffic, psychological, and laboratory safety were recognized for their practicality, experts noted the need for enhancement in depth and breadth. As Loukomies Anni et al. assert, incorporating teaching practice into educational plans is vital, with educators supporting students' reflective processes to merge theoretical and practical viewpoints (Loukomies et al., 2022 pp. 255-279).

3. Teaching Resources Coordination: Despite good coordination between topics, objectives, and evaluations, deficiencies exist in resource richness and real-time updates. Future development should prioritize digitization and real-time updates, like the PARCEL program's chemistry resource packages that relate to students' lives and promote inquiry-based learning (Fiford, 2014 pp. 7-14).

4. Teaching Tools Diversity: While the variety and practicality of teaching tools have been recognized, further enhancement is needed, particularly through simulation tools and multimedia resources, including VR and AR technologies. As Wen Yun noted, AR technology significantly enhances students' critical thinking and knowledge cultivation efficiency (Wen et al., 2023 pp. 21).

5. Scenario Simulation Effectiveness: Scenario simulation and role-playing have proven effective, but current scenarios lack diversity and complexity. It is recommended to enhance these activities to strengthen students' resilience and decision-making skills, aligning with Collins' view that situated cognition effectively fosters learners' advanced thinking skills (Collins, 2006 pp. 47-60).

6. Evaluation Methods: Current evaluation methods primarily rely on tests and discussions, lacking situational judgment tests and practical assessments. It is recommended to incorporate scenario-based tests and practical drills to thoroughly evaluate students' safety skills, reflecting Jean Lave and Etienne Wenger's finding that learning involves complex engagement with social interaction and situational participation.

7. External Collaboration: There is insufficient collaboration with external safety organizations and professionals. Involving professionals such as firefighters and doctors would improve students' practical understanding, like the cognitive apprenticeship model proposed by Collins and Brown that encourages learners to participate in expert practice communities (Collins, 2006: 47-60).

8. Teaching Methods Innovation: While existing methods have received positive feedback, they can be further enhanced. As John D. Bransford believes, technology-supported learning environments provide rich resources that enhance both effectiveness and enjoyment of learning

In summary, while the context-based safety education learning packages effectively enhance students' safety awareness and interest, further optimization is needed to address variations in knowledge mastery and skill application. Implementing these strategies will improve the validity and practicality of the learning packages.

6. Suggestions

Based on our analysis, we propose the following recommendations to optimize the safety education learning packages:

1. Enhance Teaching Resources: Incorporate current events and real incidents into targeted case studies. Prioritize digital resources with timely updates to ensure access to current safety knowledge.

2. Align Teaching Themes with Resources: Strengthen coherence among themes, objectives, and evaluation criteria. Ensure continuous development of digital educational resources that accommodate various learning preferences.

3. Diversify Instructional Tools: Introduce VR/AR technologies and specialized simulation kits for immersive, practical learning experiences, particularly for laboratory safety training.

4. Improve Scenario Simulations: Expand scenario-based learning and role-playing exercises focusing on disaster response and emergency preparedness to foster adaptability and decision-making skills.

5. Enrich Assessment Methods: Integrate scenario-based evaluations and practical drills alongside situational judgment tests to ensure comprehensive skills assessment.

6. Strengthen External Collaboration: Involve professionals such as firefighters and healthcare experts to share firsthand experiences that enhance understanding of real-world safety challenges.

7. Implement Personalized Instruction: Utilize pre-assessments to determine baseline knowledge and provide tiered content ensuring appropriate progression for students with different learning needs.

8. Reinforce Skill Practice: Increase practical training opportunities in areas of lower proficiency. Establish robust feedback channels between instructors and students for continuous improvement.
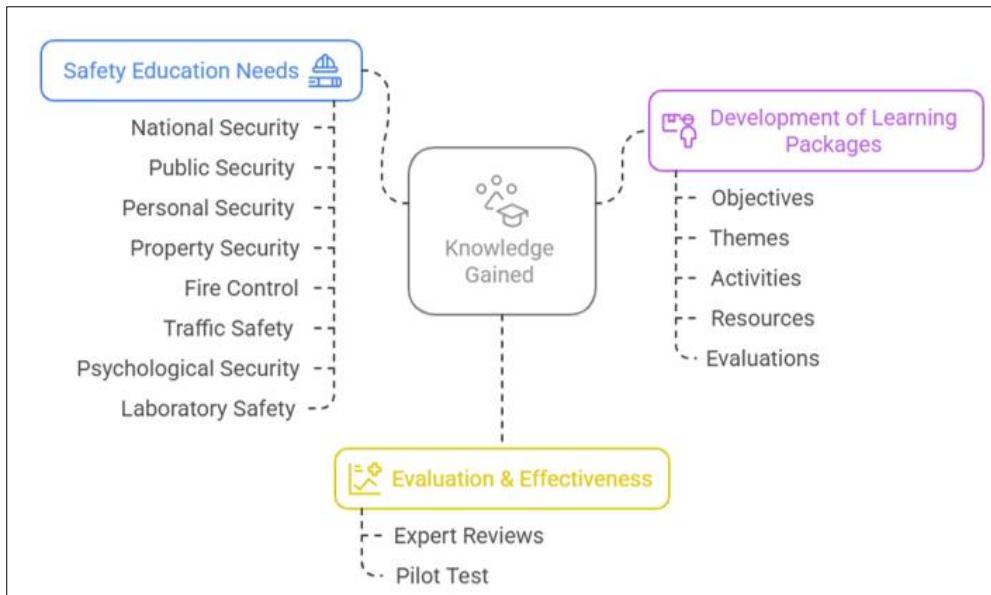
9. Knowledge Gained

Figure 2 Knowledge gained

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