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INTELLIGENCE WISDOM REPOSITORY MANAGEMENT PLATFORM (I-WRMP) TO PROMOTE LIFELONG LEARNING SKILLS AND LEARNING INNOVATION

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ABSTRACT

This research project the research objectives are as follows: 1) To analyze Systematic reviews and Meta Analyses and the bibliometrics analysis of research related to promoting lifelong learning skills and learning innovation with Intelligence Wisdom Repository Management platform (I-WRMP) 2) To develop a prototype, I-WRMP. 3) To evaluate the I-WRMP use of the in Chachoengsao Province (Thailand) in real situations. Research is an application of the research and development concept (Research and Development). The target group is administrators, teachers, a total of 113 people, and schools under local administrative organizations in Chachoengsao Province. The research framework is divided into 3 phases, Phase 1 Analysis and synthesis of the digital intelligence system model to promote lifelong learning skills based on innovation and A new way of life in Chachoengsao Province. Phase 2 Development of prototype digital intelligence system to promote lifelong learning skills based on innovation and a new way of life in Chachoengsao Province. Phase 3 Evaluation of the use of the digital intelligence system to promote skills. The interdisciplinary nature of the field was underscored by the varied subject areas involved, including Computer Science, Social Sciences, and Engineering. The research concludes that while substantial progress has been made in understanding and implementing (I-WRMP), further exploration is necessary to optimize these systems for practical applications. This continued research is crucial to leverage AI full potential, enhancing lifelong learning skills and supporting continuous, self-directed education across diverse contexts. The evaluation results showed that the developed I-WRMP was the most suitable, with the combined mean of 4.77, and the standard deviation was 0.43 and indicating that the results of the measurement before studying and the learning achievement after studying with the normal teaching method were statistically significantly different at the .01 level.

Keywords: *Intelligence Wisdom Repository, Lifelong Learning skills, Learning Innovation*

1. INTRODUCTION

Education is the process of developing people in society to be competent, the educational system is an important factor for the growth and development of the country, as information technology and digital technology has changed and developed more and more, the world is moving towards In the age of digital manpower generation, educational institutions, especially universities, play an important role in producing graduates that meet the modern labour market needs, universities need to adapt still include: 1. Curriculum development is up to date in modern times and more important to keep up with the technology that changes the way of life of the people in society. 2. Technology, teaching and learning tools, practical teaching for students to do

their work, learn to work as a team and to solve immediate problems. 3. Educational personnel must act as coaches, provide guidance to make students the centre of learning. 4. Learning innovations should not only have a network of educational institutions but must build a network of partnerships with private businesses to create opportunities for students [1].

Thailand is currently entering the digital era in a true sense. In the 4.0 era, the government has emphasized the expansion of an economy driven by innovation, technology, and creativity. This emphasis is reflected in the 13th National Economic and Social Development Plan [2], which accelerates the development of strategic foundational factors in various areas. These include increasing investment in research and development, advancing science, technology, and innovation, and concurrently raising the skill levels of both new entrants to the labor market and those currently employed, aligning them with target production and service sectors and technological changes. Additionally, the overall development of individuals is prioritized, ensuring that people at all life stages are well-equipped to manage changes in their living environments. Particularly, human capital development is emphasized through the enhancement of education quality, learning, skill development, and the improvement of public health services to be accessible in all areas. This is highlighted in Strategic Issue 1: Enhancing and Developing Human Capital Potential, which involves accelerating the development of an integrated information system for workforce demand and supply across relevant agencies. It also includes the establishment of information and consulting centers to support new students and independent careers, aligning with the 20 Year National Strategy Thailand [3].

The rapid technological advancements and evolving job market of 2025 underscore the critical importance of lifelong learning and innovation in education. The proposed Intelligence Wisdom Repository Management Platform (I-WRMP) aims to address these challenges by fostering continuous skill development and promoting innovative learning methodologies. The integration of artificial intelligence (AI), automation, and robotics is reshaping industries, necessitating continuous adaptation and skill acquisition. Lifelong learning enables individuals to stay current with these technological changes, ensuring their relevance in the workforce. The Globalization in an interconnected world, professionals must develop a broad skill set and cultural awareness to effectively collaborate across diverse backgrounds. Lifelong learning facilitates the development of cross-cultural communication skills and a global mindset, enhancing competitiveness [4].

Building the This intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation, Digital Knowledge Warehouse System refers to an information system developed for use as a learning innovation warehouse for teachers in schools under local administrative organizations in Chachoengsao Province, Thailand. The learning management system is an online knowledge resource warehouse that is a tool to support and promote the learning process [3]. There are teachers who are learning management models who are excellent in teaching and transferring knowledge of the community and the local area. There are model teachers who transfer knowledge to teachers and students to create online learning skills. The system can answer the needs of lifelong learning that is not just a system for teaching and learning. It can allow teachers and students to learn about teaching content integrated with local communities and access innovative learning education with the online platform. This allows access to communities and creating networks of educational institutions with local communities to be sustainable [5].

I-WRMP leverages artificial intelligence (AI) technologies to create adaptive, personalized learning environments. These systems capable of analysing user interactions, predicting needs, and recommending relevant content to support learning objectives. The intelligence component in I-WRMP distinguishes it from traditional WRMP by incorporating machine learning algorithms, data analytics, and predictive modeling to create a robust, learner-centered platform. This advancement aligns with the goal of promoting lifelong learning skills, such as critical thinking, problem-solving, and the ability to adapt to new information. Such skills are vital in the modern era, where rapid technological advancements demand continuous skill enhancement and adaptability.

The integration of intelligence into knowledge management processes also facilitates a deeper understanding of how users engage with information, promoting a more targeted and effective learning experience. For instance, an I-WRMP can identify patterns in user behavior to optimize content delivery and foster more interactive and engaging learning modules. This adaptive approach is particularly beneficial for adult learners who often require flexible learning schedules and personalized learning paths to align with their professional and personal commitments. The use of

systematic reviews in this context is crucial for assessing the effectiveness and scope of I-WRMP in supporting lifelong learning, providing a comprehensive synthesis of existing research findings.

The I-WRMP system in the study of documents and research related to the development of a digital knowledge repository system to promote lifelong learning skills based on innovation and new lifestyles in Chachoengsao Province, it was found that the knowledge repository management system can be divided into 3 modules: 1) Knowledge storage module, 3) Knowledge sharing module, and 3) Knowledge dissemination module, which are developed using programming and database development in the form of a digital knowledge repository, which can promote and support teaching and learning to further develop learners to have lifelong learning competencies, consisting of 3 skills: 1. Learning skills, 2. Thinking skills, and 3. Information technology and communication skills, effectively through digital technology. It can promote and support teaching and learning that complement the main media learned in the regular classroom (On-site) to supplementary media in the form of interactive media in the form of online classrooms (Video Interactive on Demand) to develop teachers to pass on to learners. In the future, it can allow the public who are interested in developing and enhancing their learning skills to have lifelong learning skills effectively through digital technology.

2. RESEARCH METHOD

2.1 Research Objectives

1. To analyze Systematic reviews and Meta Analyses and the bibliometrics analysis of research related to promoting lifelong learning skills and learning innovation with Intelligence Wisdom Repository Management platform (I-WRMP)
2. To develop I-WRMP to promote lifelong learning skills and learning innovation with gamification fostering computational innovators and creative thinking in teacher education.
3. To assess the lifelong learning skills of users of I-WRMP with design thinking fostering computational innovators learning ecosystem in teacher education.

2.2 Population and sample

1. The population used I-WRMP in the research comprises teachers and educational personnel in schools under local administrative organizations in Chachoengsao Province, Thailand.
2. The sample group of 113 teachers and educational personnel from local administrative schools in Chachoengsao Province, using a purposive sampling method.

2.3 Variables

1. The independent variable is the Intelligence Wisdom Repository Management platform (I-WRMP)
2. The dependent variable is to promoting lifelong learning skills and learning innovation.

3. Related works

Reference [6] The process of designing a knowledge management information system to support knowledge creation through a cloud environment for higher education institutions is divided into 3 parts: 1) Knowledge Management System, consisting of 1.1) Knowledge Storage System and 1.2) Knowledge Retrieval System, used to collect data from various sources and store them in a database. To use for retrieving information for creation and processing into usable information 2) Knowledge Creation Support System, consisting of 2.1) Knowledge Creation System 2.2) Knowledge Sharing System and 2.3) Knowledge Reuse System, used to link knowledge from existing data and information to be easily accessible such as documents, manuals or electronic media that can be forwarded and shared to other groups of people and 3) Knowledge Creation System through Cloud Environment (Knowledge as a Service), consisting of 3.1) Knowledge Publish System 3.2) Knowledge Distribution System and 3.3) Knowledge Transfer & Utilization System is the part that utilizes application software services (SaaS) with the aim of increasing efficiency in knowledge creation, allowing users to publish, distribute and transfer the created knowledge through a system structure that can be accessed anywhere, anytime, and supports all devices.

Reference [7] Knowledge Management in Software Engineering: Concepts, Research, and Methodology Selection The research objectives are to consider empirical study methods for knowledge management in software engineering and answer the research questions according to 3 issues: What are the main knowledge management concepts considered. The main search for knowledge management is software engineering and what research methods are used in this area. The instruments used for data collection were 29 research articles on empirical studies and 39 reports summarizing lessons learned. The data collection was divided into 5 phases: 1) research planning,

2) research diagnosis, 3) primary study selection, 4) quality assessment and classification, and 5) synthesis. The research results found that 1) the main knowledge management concept, where studies on knowledge management in software engineering are related to the characteristics of behavior and technology of knowledge management, along with studies reporting concepts under the characteristics of behavior and technology, there is a slight overlap, and some research has a target on economy, space, and mapping for knowledge management. 2) The main search for knowledge management in software engineering, where the search is divided and has a slight overlap, and the main search is a review of several research papers and several schools, which is necessary. In order not to specify explicit knowledge but also include tacit knowledge, and 3) the research methodology used in this area is mostly the report on the application of knowledge management in the software engineering industry, it is the report on the review of knowledge that is not studied in a scientific way, and the report that is a case study has more than half of the empirical study, including the researcher's search has returned to the study.

Reference [8] The development of a knowledge management system using knowledge engineering techniques on a cloud to promote teaching experience for undergraduate students found that the developed system consisted of knowledge engineering components: 1) knowledge search, 2) knowledge storage, and 3) knowledge application. The knowledge management system components consisted of 4 modules: 1) knowledge search module, 2) knowledge storage module, 3) knowledge sharing module, and 4) knowledge dissemination module. From this research, it was found that the system was most efficient. The results of system use were very efficient. The results of experience exchange had the highest total value. The results of promoting teaching experience were at the highest level. The results of experience exchange and the promotion of teaching experience were positively related at a very high level.

The I-WRMP system in the study of documents and research related to the development of a digital knowledge repository system to promote lifelong learning skills based on innovation and new lifestyles in Chachoengsao Province, it was found that the knowledge repository management system can be divided into 3 modules: 1) Knowledge storage module, 3) Knowledge sharing module, and 3) Knowledge dissemination module, which are developed using programming and database development in the form of a digital knowledge repository, which can promote and support teaching and learning to further develop learners to have lifelong learning competencies, consisting of 3 skills: 1. Learning skills, 2. Thinking skills, and 3. Information technology and communication skills, effectively through digital technology. It can promote and support teaching and learning that complement the main media learned in the regular classroom (On-site) to supplementary media in the form of interactive media in the form of online classrooms (Video Interactive on Demand) to develop teachers to pass on to learners. In the future, it can allow the public who are interested in developing and enhancing their learning skills to have lifelong learning skills effectively through digital technology.

3.1 Proposed Methodology

The research method was divided into 3 phases according to the research objective.

Phase 1. Synthesis of systemic intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation synthesizing data from studying 30 documents, textbooks, academic articles, and research articles both domestically and internationally, related to concepts and theories, by analyzing and synthesizing data obtained from the study in the form of document analysis.

Phase 2: System development I-WRMP, follow the software development process (system development life cycle: SDLC) with step 1 analysis phase consisting of used case diagram analysis, activity diagram analysis and sequence diagram analysis. step 2 system design phase consisting of system architecture design, database design and user interface design. step 3 system testing phase consists of software testing to check tools/methods of correctness, completeness, safety and quality of the system. which incorporates the concept of architecture development (Conceptual Framework).

Phase 3: An assessment of the Academic achievement of learners in the I-WRMP system and assessment of user satisfaction.

3.2 Experimental Results and Discussions

Phase 1**:** Results of composition synthesis for managing knowledge related to digital wisdom repository to promote lifelong learning skills. From the synthesis of the components of the digital wisdom repository system, it can be concluded that there are 3 synthesized components: 1. User Management System 2. Knowledge Management System 3. Learning Management System, as detailed system using the synthetic results table as shown in

Table I, and synthesis bibliographic from I-WRMP queries in scopus database shown in Figure I.

Phase 2: The Architecture of the I-WRMP system to promote lifelong learning skills and learning innovation could be divided into 3 parts: 1. People involved in the I-WRMP system, 2. The architecture of the I-WRMP system, 3. Cloud computing as The learning ecosystem model of to shown in Figure II, and the Architecture to shown in Figure III.

Phase 3: The assessment of the Academic achievement of learner's measurement of students' knowledge before training and training achievement after training of learners trained with digital knowledge repository system trained with I-WRMP system model and assessment of the satisfaction level of teachers using the I-WRMP system.

Table I: Component of I-WRMP system

Composition of the Digital knowledge repository system	[9] Garcia, Amescua, Sanchez-Segura	[10] Platz and Van Biljon	[11] Flynn, Shi, Fischer, and Friedman	[12] Hassan, Shah, and Khan	[13] Maria, Angel, and Francisco	[14] Amescua, Bermon, Garcia	**synthesis Results**
1. User Management System	✓	✓		✓		✓	✓
2. Knowledge Management System	✓	✓	✓	✓	✓	✓	✓
Composition of the Digital knowledge repository system	[9] Garcia, Amescua, Sanchez-Segura	[10] Platz and Van Biljon	[11] Flynn, Shi, Fischer, and Friedman	[12] Hassan, Shah, and Khan	[13] Maria, Angel, and Francisco	[14] Amescua, Bermon, Garcia	**synthesis Results**
3. Retrieve and Results System		✓			✓		
4. Data Change Management System	✓		✓			✓	
5. Learning Management system		✓	✓	✓	✓	✓	✓

The bibliographic map in Figure 1, generated from queries on "I-WRMP" in the Scopus database, illustrates the interconnectedness of various themes and concepts related to interactive learning platforms, computational thinking, and creative thinking. Each node represents a specific topic or keyword, while the lines between nodes show the strength of co-occurrence and relationships among these concepts in literature.

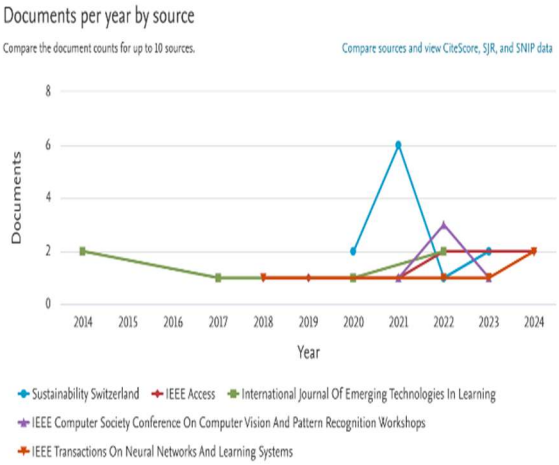

Figure 1: *The Documents per year by source of I-WRMP to promote lifelong learning skills*

Figure 1 details the distribution of documents published annually, categorized by their source types, such as journals and conference proceedings, focusing on research about Knowledge Management Systems (I-WRMP) promoting lifelong learning skills. This figure is significant in understanding how different academic platforms have contributed to the body of literature over the years. It shows the volume of publications within journals compared to conferences, revealing patterns in the dissemination of research findings in this field.

Connecting this to Figure 1, which outlines the systematic review process using PRISMA, Figure 1 helps illustrate the nature of sources that passed through the selection filters. While Figure 1 shows the total number of documents initially screened and progressively narrowed down to relevant studies, Figure 1 adds depth by indicating where these publications were predominantly found. For instance, a higher number of publications in journals versus conference proceedings could suggest a strong peer-reviewed foundation for the studies included in the final analysis. This alignment reinforces the credibility of the literature synthesis and provides a clearer picture of the primary avenues through which research on I-WRMP and lifelong learning skills has been shared.

Figure 1 illustrates the number of documents published annually from 2014 to 2024 across various academic sources focusing on Knowledge Management Systems (I-WRMP) to promote lifelong learning skills. The sources compared include Sustainability (Switzerland), IEEE Access, International Journal of Emerging Technologies in Learning, IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops, and IEEE Transactions on Neural Networks and Learning Systems [15].

The figure highlights notable trends over the years, with a significant increase in publications from Sustainability (Switzerland) peaking around 2021-2022, indicating a surge of interest in I-WRMP research within the context of sustainable development and lifelong learning. IEEE Access also shows consistent contributions, suggesting its role as a key platform for disseminating research related to the integration of KMS and intelligent systems. The rise in publications from the International Journal of Emerging Technologies in Learning reflects growing interest in innovative and emerging educational technologies [16].

Diversity in sources points to an interdisciplinary approach, integrating knowledge from engineering, technology, education, and sustainability. The data emphasize that I-WRMP research is supported by a wide range of academic journals and conferences, with peaks corresponding to periods of increased research activity and technological advancements. This trend signifies the expanding academic focus on using I-WRMP to support adaptive and continuous learning strategies essential for both personal and professional development.

Overall, the varying contributions from different sources highlight the role of cross-disciplinary journals and conferences in promoting research that enhances the adaptability and functionality of I-WRMP to facilitate lifelong learning.

3.2 The Systematic reviews and Meta-Analyses (PRISMA) and the bibliometrics analysis of I-WRMP

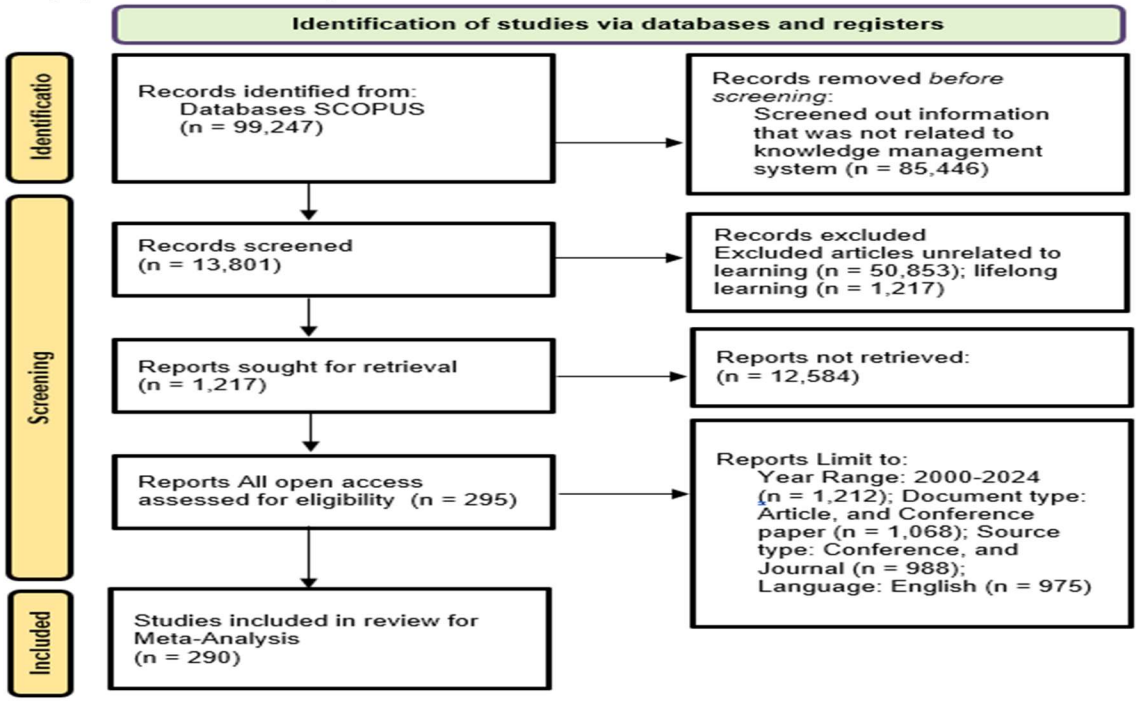

Figure 2: The Systematic reviews and Meta-Analyses (PRISMA) of I-WRMP

Figure 2 provides a comprehensive overview of the PRISMA flow diagram for the systematic review of studies related to Intelligence Knowledge Management Systems (I-WRMP) that promote lifelong learning skills. The identification phase began with an extensive search in the SCOPUS database, yielding 99,247 records. Following initial screening, 85,446 records were excluded as they were not directly related to knowledge management systems. The remaining 13,801 records underwent further screening, with

articles unrelated to learning or lifelong learning, totaling 50,853, being removed. Reports assessed for eligibility numbered 295, with 1,217 articles excluded for not meeting the criteria specific to lifelong learning. Of the 1,217 reports sought for retrieval, 12,584 were not retrieved, leaving 1,212 records within the year range of 2000–2024. The final screening included 1,068 documents identified as articles or conference papers and 975 reports written in English. The inclusion phase concluded with 290 studies meeting the criteria for a meta-analysis, providing an evidence base for understanding how I-WRMP facilitates lifelong learning. This meticulous approach ensured a focused and quality synthesis of relevant literature.

The largest segment, accounting for 34.1%, is Computer Science, indicating that a substantial portion of research focuses on the technological and computational aspects of WRMP. This is followed by Social Sciences at 14.8%, suggesting significant interest in the societal and educational implications of using KMS for lifelong learning. Engineering also plays a notable role, comprising 14.3% of the publications, which may include the development and application of engineering solutions to optimize WRMP functionality.

Other relevant areas include Business Management (8.5%), which highlights the strategic use of WRMP in corporate and professional settings, and Decision Sciences (5.2%), reflecting research on decision-making processes supported by intelligent systems. Smaller contributions come from Mathematics (4.3%), Arts and Humanities (3.3%), Environmental Science (3.1%), and Energy (2.6%), which may involve specialized applications of KMS for knowledge dissemination in these fields. A combined 8.1% falls into the 'Other' category, indicating a broad range of additional disciplines contributing research on WRMP for lifelong learning.

This subject-area distribution underscores the comprehensive approach to studying WRMP, blending technological, educational, managerial, and applied sciences perspectives. It also complements the findings from Figure 1, where the PRISMA process ensured the inclusion of diverse studies that met the review criteria. The dominance of Computer Science and related technological fields reflects the critical role of digital tools in enhancing knowledge management and promoting lifelong learning skills in modern education and professional environments.

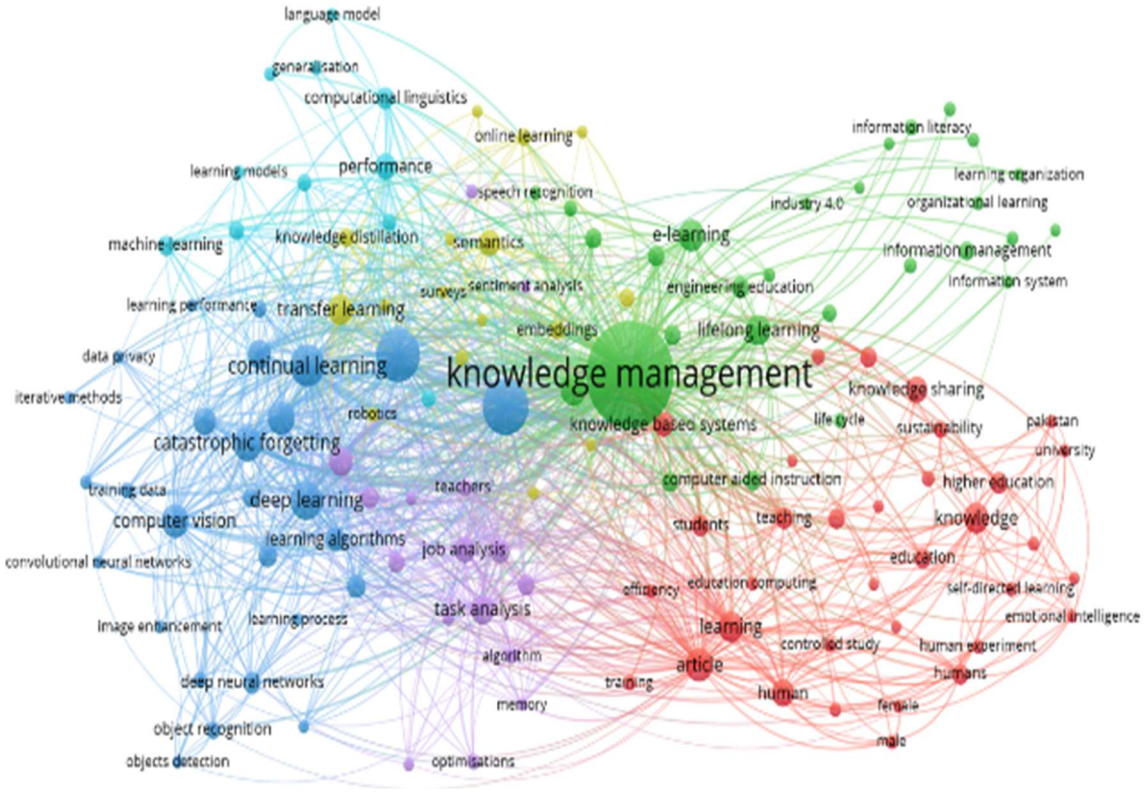

Figure 3: The bibliometrics analysis of research related to I-WRMP.

Figure 3 provides a bibliometric network visualization illustrating the co-occurrence of keywords in research related to Intelligence Knowledge Management Systems (I-WRMP) for promoting lifelong learning skills. This network map shows interconnected clusters, each representing thematic areas in the research domain. The keyword "knowledge management" stands out as the most prominent node, connected to various associated terms such as "learning," "artificial intelligence," "machine learning," and "information sharing," reflecting its central role in the research landscape. Other notable clusters include topics related to technology integration, collaborative learning, data analytics, and adaptive learning systems.

The bibliometric analysis in Figure 3 offers insight into the thematic structure and emerging trends within the field. It demonstrates how different research themes, such as computational linguistics, data visualization, and cognitive learning, are interrelated and contribute to the broader understanding of I-WRMP. This aligns with the findings from Figure 1, where the PRISMA process underscored the systematic identification and selection of relevant studies that focus on key components of I-WRMP and lifelong learning. The extensive interconnectedness seen in Figure 2 highlights the interdisciplinary nature of the field, showing how various technological and educational concepts converge to support the development and implementation of intelligent knowledge systems.

The visualization emphasizes that while "knowledge management" is the focal point, the surrounding clusters reflect the complexity and depth of research contributions. This interconnected network illustrates the multifaceted approaches researchers have taken, incorporating technological innovations and pedagogical strategies to advance lifelong learning skills. The bibliometric findings provide a foundation for understanding the landscape and potential future research directions in developing and optimizing I-WRMP for enhanced educational and professional outcomes.

The importance of artificial intelligence (AI) in the development and optimization of I-WRMP is evident in the bibliometric analysis depicted in Figure 6. The network highlights AI as a key term intricately connected to "knowledge management," reinforcing its pivotal role in shaping modern learning systems. AI's integration into WRMP enables systems to analyze vast amounts of data, adapt to user behavior, and provide personalized learning pathways that align with individual needs and learning styles. This capacity for intelligent adaptability is essential for fostering lifelong learning skills such as critical thinking and problem-solving. The connections shown in Figure 3, linking AI to various other keywords like "machine learning," "information sharing," and "cognitive learning," underscore AI's versatility and transformative power in enhancing the knowledge management process. The analysis affirms that leveraging AI within WRMP is not only a technological advancement but a necessary evolution to support the continuous, self-directed learning that defines lifelong education. This highlights the pressing need for further research and development to explore how AI can be maximized to build more effective, efficient, and engaging I-WRMP that support learners across different educational and professional contexts [17].

The Analysis of the suitability of the I-WRMP, by using descriptive statistics such as Mean and Standard Division, setting criteria for assessing suitability as Rating Scale Model, which has the criteria for determining the weight of the assessment into 5 levels according to the Linkert's Scale. with the following to shown in Figure 2.

5 represents the most suitable
4 represents very suitable
3 represents moderate suitable
2 represents less suitable
1 represents the least suitable

The Interpretation criteria to categorize the average score of suitability of the experts, there are scoring criteria for each level as follows:

Table 2. The Results Meaning of value

Mean frequency value	Meaning of values
4.50-5.00	represents to the most suitable
3.50-4.49	represents that is very suitable
2.50-3.49	represents moderate suitable
1.50-2.49	represents less suitable
1.00-1.49	represents the least suitable

The Conceptual of the learning ecosystem model of I-WRMP system consisted of the main modules and sub modules as shown in Table 3.

Table 3. The Module of the Architecture of the Intelligent Career Prediction System

Main Modules	Sub Modules	Characteristics
1. User Management System	1.1 Permission	The setting access rights to the system and access internal data
	1.2 User Management	Adding user data, editing user data, deleting user data and searching user data
2. Knowledge Management System	2.1 Selection Prediction Methods	The filling in data used to create knowledge, videos, and various media related to lifelong learning skills by core teachers in each school
	2.2 Knowledge Storage	The storing and recording knowledge data related to lifelong learning skills using a digital knowledge repository system that core teachers at each school create and develop learning media
3. Learning Management System	3.1 Course Management System	Managing subjects in the digital knowledge repository system or electronic learning, so that users can access it anywhere, anytime, supporting all devices via the Internet network
	3.2 Content Management System	The learners to explore access knowledge, and share knowledge
	3.3 Test and Evaluation System	The students to come and do the test to evaluate the results of the application of knowledge which will have a process
	3.4 Course Tools System	The teachers and students communicate with each other through various tools in the digital knowledge management system

The model of the digital knowledge repository learning ecosystem has components in the data import process (Data Process Management) consisting of steps as shown in Figure 5.

1. Input Data imported data is the data of the system users, consisting of data of the core teachers, scholars, students, and the public.

2. Data management process will be the data management in the part of screening the data of users who have the right to access the digital knowledge repository system, which must be approved by the system administrator.

3. The evaluation of the results used in learning of the digital knowledge repository in this process is the testing process after learning in the digital knowledge repository system, so that students can evaluate their own abilities in learning in the digital knowledge repository system.

Phase 3: The results of the evaluation of the certification System architecture evaluation results and satisfaction assessment results in the learning ecosystem design model as shown in Figure 4.

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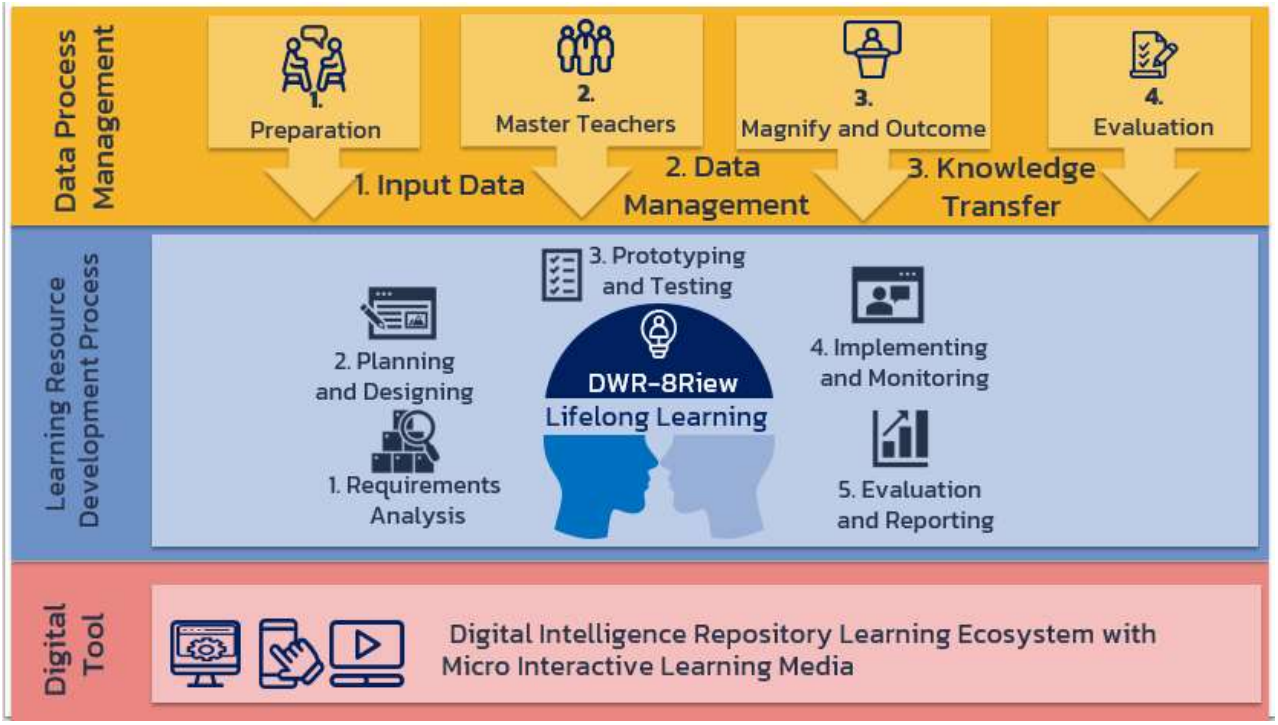

Figure 4. The Conceptual learning ecosystem model of intelligence wisdom repository management platform (I-WRMP)

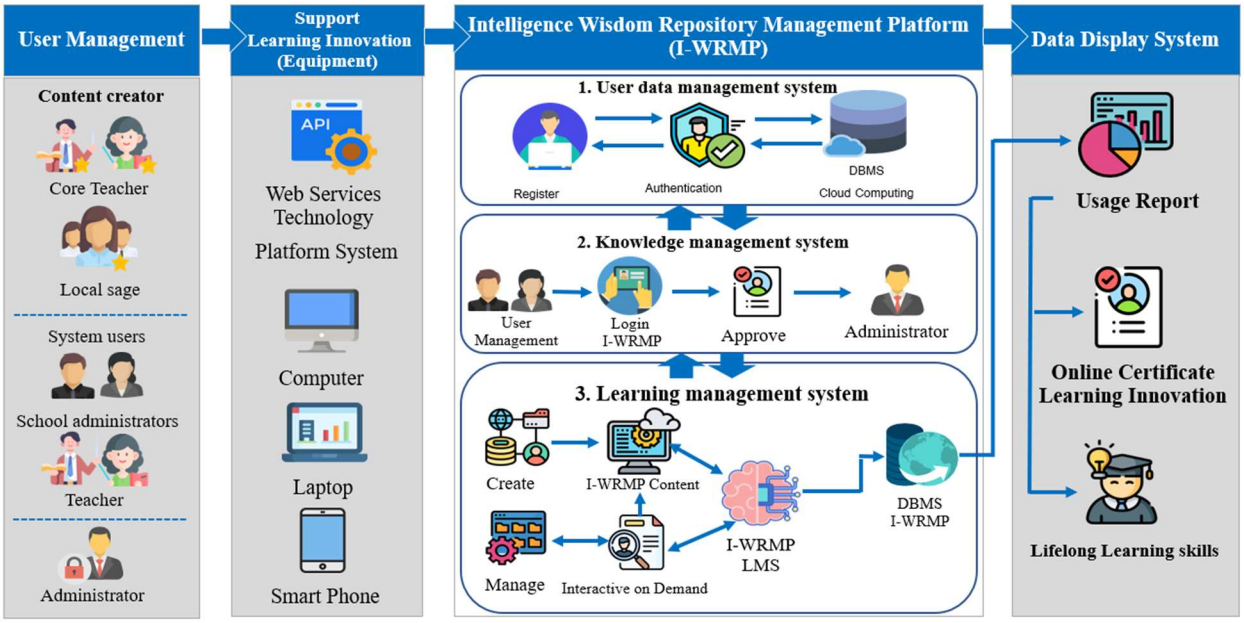

Figure 5. The architecture of the intelligence wisdom repository management platform (I-WRMP)

Table 4. Assessment Results of the suitability of the architecture of the I-WRMP

Details of the model	Assessment results		Suitability level	Level
	$\bar{X}$	S.D.		
The architecture of Suitability I-WRMP from the synthesis of documents and research by qualified persons in general				
1. Conceptual framework for I-WRMP management process to promote lifelong learning skills				
1.1 Scope of I-WRMP Management System	4.83	0.38	Most suitable	1
1.2 Knowledge Management Process	4.75	0.46	Most suitable	3
1.3 Knowledge verification process	4.77	0.42	Most suitable	2
1.4 Conceptual framework for I-WRMP to promote lifelong learning skills	4.72	0.46	Most suitable	4
Total	**4.77**	**0.43**	**Most suitable**	
2. Scope of the knowledge repository management system				
2.1 User data Management System	4.55	0.54	Most suitable	3
2.2 Knowledge Management System	4.63	0.52	Most suitable	2
2.3 Learning Management System	4.80	0.41	Most suitable	1
Total	**4.66**	**0.49**	**Most suitable**	
3.Suitability of the scope of the I-WRMP management in terms of user data management system				
3.1 Set Permission usage rights	4.60	0.53	Most suitable	3
3.2 User Management System	4.58	0.54	Most suitable	4
3.3 Knowledge Creation System	4.75	0.46	Most suitable	2
3.4 Knowledge Storage System	4.80	0.41	Most suitable	1
	4.68	**0.49**	**Most suitable**	
Overall evaluation results	**4.70**	**0.47**	**Most suitable**	

Table 5. Results of knowledge measurement before training and learning achievement after training of students

Score	n	Full score	$\bar{X}$	S.D.	t	df	sig
Pre-test score	150	15	10.53	3.08	7.21**	34	0.00
Post-test score	150	15	13.50	1.58			

**p <.01

Table 4 , the results of the evaluation of the system architecture found that it is highest in the conceptual framework for I-WRMP management process to promote lifelong learning skills, ($\bar{X}$) = 4.70, S.D.= 0.47).

From Table 5, The results of the knowledge measurement of the learners measured before training and the training achievement measured after training of the trainees found that the achievement after training increased, namely, the learners who trained in the digital knowledge warehouse system had a mean score after learning of 13.50, a standard deviation of 1.58, and a mean score before learning of 10.53, a standard deviation of 3.08. This indicates that the results of the pre-learning score and the learning achievement of the post-learning score with the digital knowledge warehouse system trained in the form of a digital knowledge warehouse system to promote lifelong learning skills based on innovation and a new way of life in Chachoengsao Province were significantly different at the 0.01 level.

Key Observations:

Incorporating lifelong learning in your research aligns the platform's goals with broader educational trends, positioning the I-WRMP as a resource that can meet the needs of various learners and educators for several reasons:

1. Adaptability in a Fast-Changing World: Lifelong learning ensures that individuals continuously update their skills and knowledge in response to evolving technologies and societal needs. This adaptability is vital for remaining competitive in modern job markets and personal development.

2. Promotion of Continuous Education: The I-WRMP platform focuses on fostering continuous learning opportunities. By promoting lifelong learning, the platform encourages users to engage with educational content at any stage of life, helping

them stay current in their fields or explore new areas of knowledge.

3. Enhancement of Learning Innovation: Lifelong learning supports the creation and dissemination of new learning strategies, methodologies, and tools. The repository you are developing aims to cultivate innovative learning by providing resources that empower users to approach problems with creative and critical thinking skills.

4. Development of Self-Directed Learning Skills: A core element of lifelong learning is the ability to self-direct one's educational journey. The I-WRMP could provide learners with tools to access knowledge independently, encouraging self-motivation and autonomous growth.

5. Promotion of a Knowledge-Based Society: In the broader context, lifelong learning contributes to building a society that values and invests in education across all age groups, facilitating the spread of knowledge and skills crucial for societal advancement.

3. RESULTS

Assessing the suitability of the intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation. The center of Therefore, for the efficiency of the use of the I-WRMP system, teachers must understand the concept of teaching content, objectives, duration, activities of the I-WRMP system, and learning management media, as well as the measurement and evaluation of the use of the digital knowledge repository system in order to design the teaching process and activities that are most appropriate for the characteristics and context of the learners. To design activities for using the digital knowledge repository system that are appropriate for the learners, the time management of each step of the digital knowledge repository system should be considered in each step for the implementation of the digital knowledge repository system activities to proceed in order. If the allocation of time and activities are inconsistent, the goals of using the digital knowledge repository system will not be achieved, affecting the atmosphere of using the digital knowledge repository system, and the results of using the digital knowledge repository system of the trainees [18].

1. The learning management community model within the school should be used to support learning management in the digital knowledge repository system to develop lifelong learning skills. It is an opportunity to develop teachers through the process of the professional learning community of teachers between subject groups to integrate knowledge together so that the design of learning activities can be done in line with the objectives, consistent with the subject groups, and learning management is more effective.

2. Teachers use the learning management approach as a base in the digital knowledge repository system to adjust to the teaching management in their subjects and transfer it to the learners. To enable learners to develop thinking skills, problem solving, and activities both inside and outside the classroom to support lifelong learning.

This study demonstrates significant strengths, particularly in its comprehensive approach to integrating I-WRMP for education with gamification to enhance creative thinking and computational skills among educators. The use of an interactive learning platform has proven effective in fostering learner engagement and promoting interdisciplinary knowledge application, as evidenced by high levels of satisfaction and improved learning outcomes. However, certain limitations should be acknowledged, such as the relatively small sample size and the study's focus on a specific geographic and institutional context, which may limit the generalizability of the findings. Future research should aim to extend the study to a broader demographic and include diverse educational settings to strengthen the robustness and applicability of the results.

The importance of artificial intelligence (AI) in the development and optimization of I-WRMP is evident in the bibliometric analysis depicted in Figure 6. The network highlights AI as a key term intricately connected to "knowledge management," reinforcing its pivotal role in shaping modern learning systems. AI's integration into KMS enables systems to analyze vast amounts of data, adapt to user behavior, and provide personalized learning pathways that align with individual needs and learning styles. This capacity for intelligent adaptability is essential for fostering lifelong learning skills such as critical thinking and problem-solving. The connections shown in Figure 6, linking AI to various other keywords like "machine learning," "information sharing," and "cognitive learning," underscore AI's versatility and transformative power in enhancing the knowledge management process. The analysis affirms that leveraging AI within WRMP is not only a technological advancement but a necessary evolution to support the continuous, self-directed learning that defines lifelong education. This highlights the pressing need for further research and

development to explore how AI can be maximized to build more effective, efficient, and engaging I-WRMP that support learners across different educational and professional contexts [19].

4. DISCUSSION

This research is documentary research, Research on the intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation from the study, analysis, synthesis of documents and related research, including interviews, evaluation, certification of results, as well as leading to system development and implementation of the developed system for testing with a sample group to assess lifelong learning skills, the discussion points of the results can be summarized according to the research objectives, with details as follows:

A. The process of managing the architecture of the digital knowledge repository system to promote lifelong learning skills based on innovation and a new way of life in Chachoengsao Province is divided into 3 parts: 1) Digital knowledge repository management system is divided into 3 subsystems: 1) User Management System, 2) Knowledge Management System, and 3) Learning Management System, in line with research of [20]

B. The research results found that the architecture of the intelligence wisdom repository management platform (I-WRMP) can be divided into 4 components: 1) Device Service is a service for users. 2) Application Service is a service for accessing I-WRMP via browsers. 3) System module service I-WRMP is a service for using the digital knowledge repository system to promote lifelong learning skills, which is connected to the module service section (Module Service), which is consistent with the research of Researcher [21] The researcher studied documents, textbooks, and academic articles. And both local and international research articles related to Object Oriented Analysis and Design, along with the application of the digital knowledge repository management process according to the research objective of item 1, to design the I-WRMP. Then, the researcher presented the draft architectural design to 3 experts to assess and approve the appropriateness of the design results of the I-WRMP. It was found that overall, it was at the highest level of appropriateness (($\bar{X}$) = 4.80, S.D.= 0.41). The designed digital knowledge repository system to promote lifelong learning skills can be developed into a digital knowledge repository management system to promote lifelong learning skills based on innovation and a new way of life in Chachoengsao Province appropriately. and then analyzed and designed the system and information for further research work.

C. The researcher presented the revised conceptual framework of the intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation, along with data on the needs of using the digital knowledge repository management system, the knowledge level, and the skill level of teachers and students in schools under local administrative organizations in Chachoengsao Province, to 3 experts to evaluate and certify the appropriateness of the digital knowledge repository management process for lifelong learning. It was found that overall, it was at the highest level of appropriateness (($\bar{X}$) = 4.77, S.D.= 0.43). The digital knowledge repository management process to promote lifelong learning skills can be applied appropriately in practice.

D. This research has been approved by the Naresuan University (Thailand) Network of Research Ethics Committee, COA No. 0012/2023.

5. CONCLUSION

Assessing the suitability of the intelligence wisdom repository Management platform (I-WRMP) to promote lifelong learning skills and learning innovation. The center of Therefore, for the efficiency of the use of the I-WRMP system, teachers must understand the concept of teaching content, objectives, duration, activities of the I-WRMP system, and learning management media, as well as the measurement and evaluation of the use of the digital knowledge repository system in order to design the teaching process and activities that are most appropriate for the characteristics and context of the learners [22]. To design activities for using the digital knowledge repository system that are appropriate for the learners, the time management of each step of the digital knowledge repository system should be considered in each step for the implementation of the digital knowledge repository system activities to proceed in order. If the allocation of time and activities are inconsistent, the goals of using the digital knowledge repository system will not be achieved, affecting the atmosphere of using the digital knowledge repository system, and the results of using the digital knowledge repository system of the trainees.

1. The learning management community model within the school should be used to support learning management in the digital knowledge repository system to develop lifelong learning skills. It is an opportunity to develop teachers through the

process of the professional learning community of teachers between subject groups to integrate knowledge together so that the design of learning activities can be done in line with the objectives, consistent with the subject groups, and learning management is more effective [23].

2. Teachers use the learning management approach as a base in the digital knowledge repository system to adjust to the teaching management in their subjects and transfer it to the learners. To enable learners to develop thinking skills, problem solving, and activities both inside and outside the classroom to support lifelong learning.

This study contributes to the current body of literature by demonstrating how the integration of I-WRMP to promote lifelong learning skills and learning innovation for education with gamification within interactive learning platforms can significantly enhance creative thinking and computational skills, particularly in teacher education. Unlike previous studies that primarily focused on single aspects of educational innovation, this research underscores the comprehensive benefits of combining I-WRMP approaches with gamified learning processes. The results provide empirical evidence supporting the effectiveness of these integrated platforms in fostering not only knowledge acquisition but also engagement system and skill development. This advancement enriches the academic discourse by presenting a practical model that can be adapted for broader educational and industrial applications, thus bridging theoretical frameworks and real-world implementation [24].

5.1 Conclusion and Resolution of Research Questions

This research has effectively addressed the core questions and objectives outlined in the introduction, offering a comprehensive framework for the Intelligence Wisdom Repository Management Platform (I-WRMP) to promote lifelong learning skills and learning innovation. The findings highlight the importance of integrating advanced digital tools and methodologies into educational systems to meet the challenges of the modern era. Innovation in learning is achieved through I-WRMP. The integration of gamification, interactive content, and real-world problem-solving exercises enriches the learning experience. This innovation encourages both teachers and students to adopt creative approaches to education, aligning with global trends in educational technology. The platform has been designed with input from educators and administrators, ensuring it addresses real-world challenges faced by schools in Chachoengsao Province. By supporting professional development for teachers and self-directed learning for students, I-WRMP creates a sustainable and impactful educational ecosystem.

This study successfully addresses the questions posed in the introduction by demonstrating how intelligence wisdom repository Management platform (I-WRMP) promote lifelong learning skills and learning innovation with gamification and technology applying for education can effectively enhance creative thinking and computational skills in teacher education [25]. The research confirms that a structured, I-WRMP approach promotes deeper engagement and practical skill development, fulfilling the need for innovative educational strategies plans highlighted in literature. By implementing and evaluating the I-WRMP framework, this study provides a cohesive argument supporting the adoption of learning environments to prepare educators and learners for the challenges of a knowledge-driven economy. These findings offer a comprehensive understanding of how such frameworks can bridge theoretical insights and practical application, positioning them as essential tools for future educational and professional development [26].

5.2 Contributions and Justifications

The contributions of this study lie in the strategic integration of I-WRMP for education and interactive learning platform designed for teacher education. Justification for these choices stems from comprehensive literature supporting the enhancement of creative thinking and computational skills through interdisciplinary and engaging learning environments. The management of key influencing factors, such as learner engagement, interdisciplinary content, and the balance between gamified elements and pedagogical objectives, was carefully considered to ensure the platform's efficacy. The structured approach, validated by empirical data, demonstrates that these components collectively foster deeper learning and practical skill development. This integration aligns with educational frameworks emphasizing active, participatory learning and the preparation of educators who can cultivate innovative, problem-solving capabilities among students.

The insights from this study lay the groundwork for further exploration of AI-driven platforms in diverse educational settings. Expanding the scope of this research to include larger and more diverse populations could provide additional validation and refinement. Additionally, exploring the long-term impact of the I-WRMP on learners'

careers and personal growth will be critical to its continued development.

In conclusion, the I-WRMP not only addresses the research questions posed but also paves the way for a more innovative and inclusive educational paradigm. By fostering lifelong learning and adapting to the needs of digital-age learners, it represents a transformative step forward in education management.

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REFERENCES:

[1] E-government office "The Digital Government Development Plan of Thailand", 2023 - 2027. First Edition Bangkok: Bolliger & Company (Thailand), 2024.

[2] Quality Learning Foundation, "New Future Skills: What is Learning in the 21st Century?," 2014. [Online]. Available: http://www.qlf.or.th/Home/Contents/417 [Accessed: Sep. 1, 2024].

[3] Office of the National Strategy Committee Secretariat, Office the National Economic and Social Development Council, "National Strategy 2018 - 2037," 2nd ed. Bangkok, 2019.

[4] Eastern Economic Corridor Development Project. Action Plan for Education, Research and Technology Personnel Development. Retrieved from https://www.eeco.or.th. 2017.

[5] Ministry of Digital Economy and Society. Digital Economy and Society Development Plan. First edition, Bangkok, 2016.

[6] Anuphan, A., & Wannapirun, P. "The design of an information system for knowledge management to support knowledge creation through a cloud-based environment for higher education". In *Proceedings of the National e-Learning Conference 2013* (pp. 44-52), 2013.

[7] Amescua, Bermon, Garcia, and Sanchez-Segura) . "Knowledge repository to improve agile development processes learning". The Institution of Engineering and Technology. 4(6) : 434-444, 2010.

[8] Anuphan, A. "The development of a knowledge management system using knowledge engineering techniques in a cloud-based environment to promote professional teaching practice for undergraduate students" (Doctoral dissertation, King Mongkut's University of Technology North Bangkok), 2015.

[9] Garcia, Amescua, Sanchez- Segura, and Bermon. " Design guidelines for software processes knowledge repository development". Information and Software Technology. (53) : 834-850, 2011.

[10] Platz, Van, and Biljon. "Development of a First Version of a Maturity Matrix for ICT4D Knowledge Repositories" . IST- Africa Conference. (2016) : 1-10, 2016.

[11] Friedman. " Digital Knowledge Objects and Digital Knowledge Object Clusters: Unit Holding in a Learning Health System Knowledge Repository" . 49th Hawaii International Conference on System Sciences. 2016 : 3308-3317, 2016.

[12] Hassan, Shah, and Khan. " Fusion of Motivational Strategies with Recommender System Innovative Framework for Digital Repositories". International Conference on Computing, Electronic and Electrical Engineering (ICE Cube) : 1-5, 2016.

[13] Maria, Angel, and Francisco. "A repository of Learners' resources to improve the teamwork competence acquisition" Third International Conference on Technological Ecosystems for Enhancing Multiculturality : 173-180, 2015.

[14] Amescua, Bermon, Garcia, and Sanchez-Segura. "Knowledge repository to improve agile development processes learning. The Institution of Engineering and Technology". 4(6) : 434-444, 2010.

[15] Anupan, Nilsook, and Wannapiroon. " A Framework for a knowledge Management System in a Cloud Computing Environment Using a Knowledge Engineering Approach" .

International Journal of Knowledge Engineering. 1(2) : 146-149, 2015.

[16] Ahn, H. S., & Choi, Y. M.. "Analysis on the effects of the augmented reality-based STEAM program on education" Advanced Science and Technology Letters, 92, 125-130. 2015.

[17] Cerchione, and Esposito. " Using knowledge management systems: A taxonomy of SME strategies". International Journal of Information Management. 2017(37), 2017.

[18] A. Mizumoto. "Data-driven learning meets Generative AI: introducing the framework of metacognitive resource use, *Appl. Corpus Linguist.*, vol. 3, no. 3, p. 100074, 2023.

[19] Candy, P. C. "*The concept of lifelong learning"*. Australian Association for Adult and Community Education, 2000.

[20] Chatti, M. A., Muslim, A., & Schroeder, U. "Towards an integrative learning analytics framework", *Journal of Learning Analytics, 4*(2), 79-107. https://doi.org/10.18608/jla.2017.42.7, 2017.

[21] C. Poondej and T. Lerdpornkulrat. "The development of gamified learning activities to increase student engagement in learning," Aust. Educ. Comput., vol. 31, no. 2, 2016.

[22] C. W. Steen, K. Söderström, B. Stensrud. I. B. Nylund, and J. Siqveland, "The effectiveness of virtual reality training on knowledge, skills and attitudes of health care professionals and students in assessing and treating mental health disorders: a systematic review," *BMC Med. Educ.*, vol. 24, no. 1, pp. 1–13, 2024.

[23] N. Wannapiroon, S. Shawarangkoon, C. Chawarangkoon, and A. Kucharoenthavorn. "Next Normal Education, Hybrid Learning Model for Active Imagineering Learning to Enhance Digital Innovator Competency", *Int. J. Inf. Educ. Technol.*, vol. 13, no. 1, pp. 48–55, 2023.

[24] S. Dalib, B. Mohamad, M. U. Nadeem, H. Halim, and S. N. Ramlan. "Intercultural communication competence among migrant workers in Malaysia: a critical review and an agenda for future research," *Front. Commun.*, vol. 8, pp. 1–9, 2023.

[25] Garrison, D. R., & Anderson, T. *E-learning in the 21st century: A framework for research and practice*. Routledge, 2003.

[26] Y. K. Dwivedi et al. "Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy," *Int. J. Inf. Manage.*, vol. 66, no. July, p. 102542, 2022.