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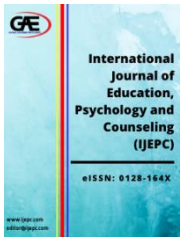

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CONSTRUCTION OF AN INFORMATION LITERACY CULTIVATION MODEL BASED ON DEEP LEARNING AND APPLICATION IN EDUCATIONAL MANAGEMENT

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Abstract:

With the rapid development of information technology, information literacy has become an essential competency in modern educational systems. This study constructs an information literacy cultivation model based on deep learning, exploring the application of deep learning in information literacy education and its significance for educational management. The model integrates the six stages of deep learning (attention and reception, recall, connection, critical construction, transfer and application, and evaluation and reflection) with the three core elements of information literacy (information attitude, information knowledge, and information skills), proposing a systematic educational pathway. The model demonstrates how deep learning facilitates the cultivation of information literacy, providing educational managers with theoretical foundations and practical guidance for implementing information literacy education. The findings indicate a close interaction between deep learning and information literacy cultivation, suggesting that educational managers can optimize educational strategies through this model to enhance learners' information literacy. Future research can further validate the model's applicability in different educational settings and explore its potential in cross-cultural educational management.

Keywords:

Information Literacy; Deep Learning; Educational Management, Learning Models

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Introduction

In the digital age, information literacy has become a fundamental competency for learners to effectively navigate and process vast amounts of information. First conceptualized by Paul Zurkowski in 1974, information literacy encompasses the skills and techniques required to use information tools and primary sources to solve problems (Kurbanoglu, 2013). Over time, the definition of information literacy has evolved, with the American Library Association (ALA) expanding it to include the ability to recognize when information is needed and how to locate, evaluate, and use it effectively (Nisha & Varghese, 2021). The importance of information literacy in education has been recognized globally, with frameworks and models developed in countries such as the United States, the United Kingdom, and Australia to promote its integration into educational systems.

In parallel, the emergence of deep learning, a subset of machine learning, has revolutionized various fields, from image processing to speech recognition. Its application in education has drawn significant interest, with researchers exploring how deep learning can enhance critical thinking, problem-solving, and knowledge transfer. While deep learning has traditionally been applied to technical fields (Janiesch et al., 2021; Khan & Yairi, 2018), its potential to enhance information literacy has begun to gain attention. However, research on constructing a systematic framework for educational administrators to support the application of deep learning in acquiring information literacy remains limited. Therefore, this study aims to fill this gap by constructing an information literacy acquisition model based on deep learning principles, highlighting the connection between these two domains. The proposed model not only provides a theoretical foundation for understanding the relationship between deep learning and information literacy but also offers practical guidance for educational administrators and learners in information-rich environments.

Literature Review

Research on Information Literacy

Research on information literacy begins in 1974 when Paul Zurkowski, then president of the Information Industry Association of the United States, first introduces the concept. Zurkowski defines information-literate individuals as those who "acquire the skills and techniques necessary to use a variety of information tools and primary sources to create information solutions to problems" (Kurbanoglu, 2013). This early definition provides a technical and skill-based perspective on information literacy. A more comprehensive definition follows in 1989 by the American Library Association, describing an information-literate individual as someone who "recognizes when information is needed and has the ability to locate, evaluate, and effectively use the required information" (Nisha & Varghese, 2021). This definition not only highlights the skills required for information literacy but also emphasizes the importance of information awareness and outlines the process of applying information to problem-solving. Among various models explaining this process, the Big6 Model of Information Problem-Solving stands out. It identifies six critical steps: "task definition, information-seeking strategies, location and access, use of information, synthesis, and evaluation"(Ma et al., 2021). Despite progress in defining information literacy and its application, much of the existing research focuses on conceptualizing "what" information literacy is and "how" it can be applied. However, for information literacy to create real impact in education, structural and in-depth analysis remains essential. The United States leads the way in this area, with the American Association of School Librarians (AASL) establishing the Presidential Committee on

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Information Literacy in 1987. This committee focuses on the information literacy development of students and teachers, as well as the creation of educational models for improving information literacy (Sample, 2020). By 1998, the AASL, in collaboration with the Association for Educational Communications and Technology (AECT), releases the Information Literacy Standards for Student Learning aimed at K-12 education, followed by additional standards for high school education and pedagogy (Chen, 2023). The United Kingdom begins research into information literacy in 1997, culminating in the publication of the Seven Pillars of Information Literacy report in 1999, which provides a detailed exploration of the concept and its associated element (Taylor & Jaeger, 2022). Countries such as Australia and New Zealand also develop national models, standards, and frameworks tailored to their specific needs (Barr et al., 2020). In the 21st century, information literacy gains increasing global attention. In 2005, UNESCO and the International Federation of Library Associations (IFLA) issue the “Alexandria Proclamation”, which affirms the central role of information literacy in lifelong learning, further emphasizing its critical importance (Nisha & Varghese, 2021). Recent research also highlights the direct link between university students' information literacy and the cultivation of sustainable and innovative talent for the future (Sun et al., 2022). Information literacy encompasses foundational knowledge and skills related to information and technology, as well as the ability to utilize these tools for learning, collaboration, communication, and problem-solving (Kennedy & Gruber, 2020; Kim et al., 2022; Ojobor et al., 2021; Udoh & ONafor, 2022). In 2022, China’s Ministry of Education, along with three other governmental agencies, issues the “2022 Key Points for Enhancing Digital Literacy and Skills of the Entire Population”, aims to improve both the digital and information literacy of students(Lei, 2024). Information literacy is now widely recognized as a key competency for college students, enabling them to meet social demands and fostering self-directed, lifelong learning. The examination of diverse behaviors related to information literacy offers significant insights into educational mechanisms, providing a pathway for predictive analysis of learning outcomes. Therefore, the cultivation and enhancement of information literacy remain critical priorities for nations worldwide.

Research on Deep Learning

Deep learning (DL) is primarily based on artificial neural networks, which are computing systems that simulate the biological neural networks found in animal brains (Ahmed et al., 2023). DL can employ supervised, unsupervised, or semi-supervised representation learning(Schmidhuber, 2015). In 1976, Ference Marton and Roger Saijo introduced and elaborated on the concepts of deep learning and surface learning in their work, "The Distinction between Outcomes and Processes of Learning" (Li et al., 2022). In 2004, the American Educational Communication and Technology Association (AECT) emphasized the important role of deep learning in educational technology, gradually attracting the attention of scholars both domestically and internationally(Januszewski, 2008). In 2006, Hinton and his student Salakhutdinov published the paper "Reducing the Dimensionality of Data with Neural Networks" in “Science”, addressing the limitations of earlier neural networks and achieving significant results, which once again brought deep learning into the spotlight (Salakhutdinov & Hinton, 2009).

As a product of emerging technologies like machine learning and big data, deep learning has played an increasingly significant role in areas such as image processing, speech recognition, and audio-visual processing(Noda et al., 2015), later gradually expanding into

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education(Perrotta & Selwyn, 2020). In 2012, the U.S. National Research Council (NRC) defined deep learning from an educational perspective as "a learning process that enables students to apply what they have learned in one context to new learning situations (i.e., transfer)" (Weng et al., 2023) . Currently, several researchers have begun to focus on the important role that deep learning plays in enhancing information literacy. For instance, Tian et al. discussed how deep learning influences the digital literacy of higher education students (Tian et al., 2023) Some scholars have explored how deep learning can be used to promote information literacy education for librarians in response to current societal needs (Coates, 2021) Additionally, Chen et al. developed a multi-task deep learning model aimed at predicting citizens' digital literacy levels and, through this model, enhancing their information literacy (Chen et al., 2023).

However, research on building an information literacy acquisition model based on deep learning remains limited, and no systematic framework has yet been established. Therefore, this study aims to explore the relationship between deep learning and information literacy, with the goal of constructing an information literacy acquisition model. This model seeks to clarify and visualize the pathways for acquiring and developing information literacy, making the process more intuitive and accessible.

Research Methodology

This study employs two primary research methods: literature review and textual analysis. The literature review synthesizes key definitions and developments in the fields of information literacy and deep learning. By examining existing models of information literacy, such as the Big6 Model, and reviewing critical studies on deep learning, this research identifies the core components of both concepts and the intersections between them. The textual analysis further explores the integration of deep learning characteristics into the information literacy acquisition process.

The study focuses on analyzing the retention and transfer processes central to deep learning, as well as the key characteristics that define this learning approach, including situational context, meaningful learning, interactivity, and transfer ability. By combining these elements with the established components of information literacy—information attitude, information knowledge, and information skills—the study constructs a model that clarifies how deep learning can facilitate the acquisition of information literacy. This model is tested through theoretical application, providing insights into how learners can develop essential information skills in real-world, problem-solving contexts.

Characteristics of Deep Learning

Through an integrative analysis of definitions of deep learning by scholars from allover the world, it is found that deep learning primarily comprises two processes: retention and transfer. Learners first need to acquire new knowledge (retention), and then apply that knowledge to new contexts to facilitate problem-solving (transfer). During this process, deep learning mainly exhibits the following characteristics:

Situational Context

Deep learning occurs within real problem contexts, focusing on specific knowledge points or issues for in-depth learning and reflection, ultimately "serving" real-world problems.

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Furthermore, the results of deep learning must manifest and receive feedback through real situations, promoting the continuation of deep learning activities.

Meaningful Learning

Deep learning requires learners to engage in learning based on "understanding" and to possess a "critical" awareness, differentiating it from superficial, mechanical learning. Typically, methods such as group learning, collaborative learning, and self-directed inquiry are employed to provide learners with more autonomy and initiative, thus fostering meaningful learning experiences.

Interactivity

Knowledge is formed through the internalization of information. New information received by learners can only lead to new knowledge when it conflicts with their existing cognitive structures. The interaction between the two promotes conflict resolution, which is a key aspect of deep learning. Additionally, the deep learning process requires leveraging knowledge, ideas, methods, and tools from other disciplines, rather than being confined to a single subject or methodology.

Transferability

The ultimate goal of deep learning is to enable learners to acquire the ability to solve authentic and complex problems. While processes like knowledge construction facilitate knowledge acquisition, simply retaining new knowledge within the learner's cognitive structure does not directly solve problems. Learners must possess the capability to transfer their knowledge, applying it in other similar or different contexts to achieve the ultimate goal of problem-solving.

Connection Between Information Literacy and Deep Learning

Deep learning is a crucial pathway for acquiring information literacy, and the acquisition of information literacy, in turn, promotes the advancement of deep learning. The relationship between the two is characterized by multiple similarities, with a mutually causal and coordinated effect.

Commonality in Learning Objectives

In terms of learning objectives, both deep learning and information literacy are rooted in the context of the information and knowledge economy, aiming to cultivate learners' abilities to creatively solve complex, unfamiliar problems. They seek to equip learners with skills necessary for adapting to future societal developments, thereby promoting lifelong learning goals. The cultivation of literacy is a subtle process; learners must master appropriate methods to achieve its formation, relying on complex and flexible deep learning rather than simple, mechanical surface learning.

Similarities in Learning Methods

From the perspective of learning methods, the acquisition of information literacy often relies on collaborative learning, group activities, and self-directed inquiry methods, focusing on real problem contexts to address practical and complex issues. These fully engages learners as active participants and directly or indirectly enhances their levels of information literacy. This approach aligns closely with the methods employed in deep learning, both of which facilitate meaningful learning experiences.

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Connection in Learning Outcome Evaluation

In terms of evaluating learning outcomes, both the cultivation of information literacy and the effectiveness of deep learning are processes that accumulate over time. Their success cannot be achieved in a short period but through continuous learning and life experiences, gradually transitioning from quantitative changes to qualitative improvements. Therefore, evaluation methods should shift from traditional outcome-based assessments to process-oriented or stage-based assessments, respecting the developmental patterns of learners while providing teachers with sufficient autonomy to design evaluations that support learners' growth.

In summary, both information literacy and deep learning emphasize the interaction between different types of knowledge and elements to acquire new knowledge. They also facilitate the transfer and application of new knowledge across different contexts, ultimately contributing to problem-solving.

Information Literacy Acquisition Model Based on Deep Learning

After thoroughly exploring the relationship between information literacy and deep learning, and combining the key characteristics of deep learning, this study constructs an Information Literacy Acquisition Model based on deep learning. This model aims to enhance the acquisition of information literacy skills through an iterative process of engagement, critical thinking, and practical application, aligned with the principles of deep learning. The process of acquiring information literacy is closely analogous to the process of problem-solving, where learners progressively move from initial exposure to information to its deeper integration, critical application, and reflective evaluation.

Therefore, this paper draws on the general process proposed by Zhang et al. (2017), which emphasizes promoting problem-solving through deep learning, to create an information literacy acquisition model. The framework integrates the six core stages of deep learning: attention and reception, recall, connection, critical construction, transfer and application, and evaluation and reflection. These stages represent a structured pathway that allows learners to actively engage with new information, construct meaning, apply their learning to solve real-world problems, and reflect on their learning to improve continuously.

The model’s core stages are combined with the three fundamental elements of information literacy: information attitude, information knowledge, and information skills. These elements play a vital role in guiding the learner through the learning process. The model begins with the attention and reception of new knowledge, advances through recalling existing knowledge, establishing connections between new and old knowledge, progressing to critical construction of meaning, and ultimately leads to knowledge transfer and application in new contexts. The final stages of evaluation and reflection enable learners to refine their learning processes and enhance their information literacy skills. Figure 1 illustrates the key stages of this acquisition model and their interactions.

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Stages of the Information Literacy Acquisition Model

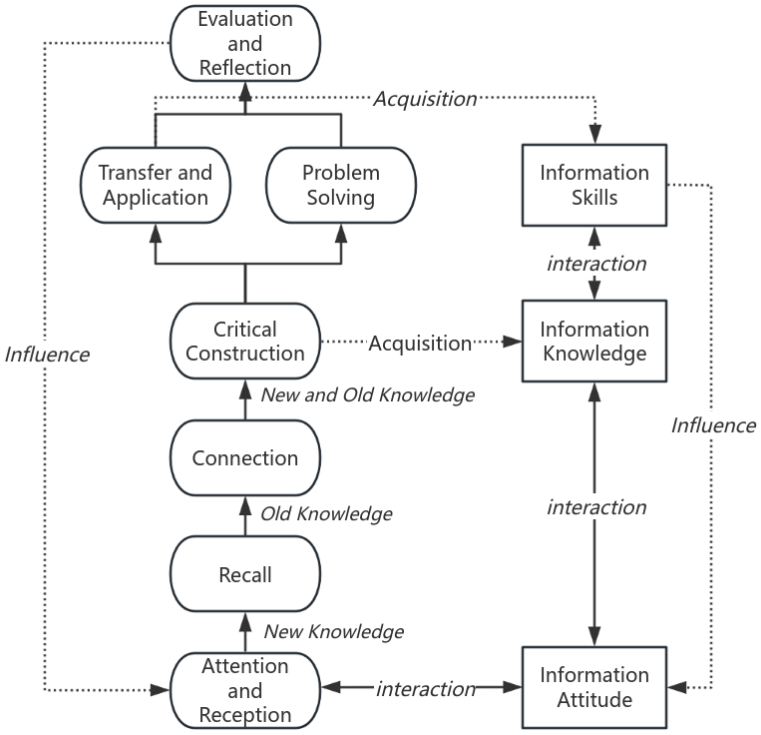

Figure 1: Information Literacy Acquisition Model

Attention and Reception

The initial phase of the model begins with the development of an information attitude, a component that significantly influences how learners approach and engage with the learning process. Information attitude includes the learner's cognitive inclinations, emotional responses, and behavioral tendencies towards learning. It acts as a crucial motivator, setting the stage for further engagement and deep learning.

The attention and reception phase marks the starting point for receiving new information, where learners actively tune into the learning content. The effectiveness of this stage depends largely on the learner's ability to focus, as well as the initial enthusiasm or interest they have in the subject matter. For deep learning to occur, it is important that learners are not just passively receiving information but are attentive and open to new ideas. Establishing a positive information attitude is essential, as it helps learners maintain curiosity and encourages the exploration of unfamiliar concepts.

Recall of Existing Knowledge

After receiving new information, the learner's next task is to engage in recall. This phase involves retrieving prior knowledge and experiences to create connections with the newly received information. It serves as a bridge between the learner's existing cognitive framework and the new material they are trying to understand.

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Recall involves searching through one's mental archive to activate relevant prior knowledge. This is where information knowledge comes into play. By leveraging their existing knowledge, learners contextualize and interpret the new information, facilitating better understanding. This process is important for activating critical thinking, as learners begin to link new ideas with their past learning, thus forming a deeper, more integrated understanding of the subject.

Connection of New and Old Knowledge

Building on recall, the next stage involves connecting new knowledge with existing cognitive structures. This step is essential for transforming individual pieces of information into a coherent and meaningful whole. When learners connect the new material with their prior knowledge, they integrate new information into their knowledge network. This connection enables them to understand the broader context and see the relevance of the new knowledge to their learning goals.

The process of connection also requires the ability to see relationships between different concepts and to synthesize information from multiple sources. By linking new information to familiar concepts, learners deepen their understanding and make the material more personally relevant. The connection stage is a key component of the critical construction of knowledge, where learners actively seek to create mental maps that explain how new information fits into their broader knowledge base.

Critical Construction

The critical construction phase involves deepening the learner's engagement with the material through analysis, evaluation, and reconstruction. Rather than passively accepting new information, learners critically assess the validity, applicability, and implications of the new material.

This is where learners use their information knowledge and apply critical thinking to assess the new information. Learners not only analyze the content but also evaluate its credibility and relevance, which is crucial for the construction of new knowledge systems. Critical construction promotes a deep understanding of the content, encouraging learners to consider multiple perspectives, identify biases, and form reasoned judgments about the material. The result is the development of a robust and flexible knowledge system that is adaptable to new contexts.

Transfer and Application

Once new knowledge is critically constructed, learners must move to the transfer and application phase. Here, they apply the knowledge gained to solve real-world problems. This stage represents the ultimate goal of deep learning—using acquired knowledge to address complex, unfamiliar challenges.

In this phase, learners transfer their information literacy skills into practical settings, where they can demonstrate the ability to navigate, interpret, and apply information effectively. Information skills become especially important, as learners need to know how to process and manipulate information to solve problems, make decisions, and innovate. This stage emphasizes the transferability of knowledge, ensuring that learners can adapt and apply their learning in diverse situations, thus reinforcing the utility and value of their acquired knowledge.

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Evaluation and Reflection

The final stage, evaluation and reflection, involves learners assessing their learning journey, reviewing the problem-solving process, and identifying areas for improvement. This phase serves as a critical tool for ongoing learning, as it provides an opportunity for learners to reflect on their successes, challenges, and the effectiveness of their problem-solving approaches.

Learners critically evaluate the quality of the knowledge they have acquired and its applicability in real-world contexts. They reflect on their information attitude, information knowledge, and information skills to identify areas where they may need further development. Reflection not only solidifies learning but also encourages continuous improvement by highlighting the need for adjustments in future learning endeavors. Through ongoing self-assessment and feedback, learners refine their learning strategies and enhance their ability to engage with new information effectively.

Enhancing Information Literacy Through Deep Learning

The integration of deep learning into the process of acquiring information literacy creates a dynamic and effective framework for learners. By navigating through the six stages of deep learning—attention and reception, recall, connection, critical construction, transfer and application, and evaluation and reflection—learners develop a comprehensive skill set that empowers them to process, evaluate, and apply information effectively in various contexts.

This model is strengthened by combining these stages with the three core components of information attitude, information knowledge, and information skills. The inclusion of these elements ensures that learners not only gain information literacy but also actively engage in their learning journey. This interactive, reflective, and iterative process helps learners refine their competencies continuously, preparing them to adapt and thrive in an increasingly complex and information-rich world.

Practical Application of the Model in Different Contexts

The successful application of this model enables learners to become proficient at navigating complex information landscapes, critically engaging with diverse sources of information, and applying their knowledge to solve real-world problems. These capabilities are crucial for success in both educational and professional environments, where the ability to manage and leverage information effectively is essential. For instance, consider a classroom setting where students are tasked with researching a current event, such as climate change. At the attention and reception stage, students develop a positive information attitude as they become receptive to the information provided by their teacher, peers, and digital platforms. By engaging in meaningful learning experiences, such as discussions or brainstorming sessions, they begin to process information and gain an initial understanding of the topic.

In the recall stage, students access their previous knowledge about environmental science or related issues, allowing them to contextualize new information. At this point, they start recalling concepts from earlier courses or personal experiences, which helps them deepen their understanding and establish a solid foundation for the next stage. When students move to the connection stage, they connect new ideas about climate change with their existing cognitive frameworks, integrating various sources, such as academic papers, news articles, and documentaries. This helps them create a more comprehensive view of the issue, linking scientific data with social and political contexts.

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In the critical construction stage, students evaluate the credibility of the sources they have used, assess the validity of the claims made in different articles, and critically analyze conflicting viewpoints. This stage encourages critical thinking, where students not only accept information at face value but question assumptions, biases, and gaps in knowledge. As students progress to the transfer and application stage, they apply their newly acquired knowledge to solve problems or propose solutions. For example, students might collaborate on creating a project that suggests strategies to reduce carbon footprints in their local community. Here, they use their information skills to process, synthesize, and apply their knowledge in a practical context. Finally, during the evaluation and reflection stage, students assess the effectiveness of their solutions, discuss what worked or didn't, and refine their strategies based on feedback. They reflect on their learning process, improving their information attitude and adjusting their information knowledge and information skills for future research tasks.

Model Application Across Educational Settings

The information literacy acquisition model can be applied across various educational settings, such as:

Classroom Teaching: Instructors can design lessons that align with the six stages of deep learning. For example, a history teacher might guide students through the stages of analyzing historical events, encouraging students to connect new insights with prior knowledge, critically evaluate sources, and apply their understanding to form coherent arguments.

Online Learning: Online platforms can utilize the model to create adaptive learning experiences. For instance, an e-learning platform might present learners with interactive modules that guide them through deep learning processes—such as watching a video on artificial intelligence (AI), recalling related concepts like algorithms, connecting new information with previous knowledge on machine learning, and applying the knowledge to solve problems in a simulated environment.

Professional Training: Organizations can use this model to enhance employees' information literacy. For instance, in a workplace setting, employees might go through a training program where they develop an information attitude towards data security, recall their existing knowledge of privacy laws, connect this to new industry standards, critically evaluate different security measures, and apply these strategies in their day-to-day tasks. Employees can then evaluate the effectiveness of these practices and refine their approaches over time.

Limitations and Future Directions

While this study presents a comprehensive model for cultivating information literacy based on deep learning, there are several limitations that must be addressed in future research. First, the model has been primarily explored from a theoretical perspective, and empirical studies are needed to validate its practical effectiveness. Future research could focus on applying this model in different educational contexts, such as primary, secondary, and higher education, as well as in online and blended learning environments. By testing the model in diverse settings, researchers can assess its adaptability and determine its impact on learners' information literacy. Second, while the model integrates deep learning and information literacy, it does not fully address potential barriers to implementation. Factors such as learners' prior knowledge, differences in teaching resources, and access to technology may affect the model's effectiveness. Future research could explore how these factors influence the application of the

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model and provide insights into how to overcome such challenges. Another promising direction for future research is exploring the role of emerging technologies in optimizing the model. Advances in artificial intelligence, big data, and learning analytics could provide new ways to personalize the learning process and enhance learning outcomes. These technologies could help tailor educational strategies to individual learners' needs, making the model more flexible and impactful. Furthermore, cross-cultural studies could provide valuable insights into how the model can be adapted to different cultural and educational systems. By examining how information literacy is developed in various cultural contexts, researchers can assess the broader applicability and scalability of the model across diverse educational environments.

Conclusion

This study successfully constructs an information literacy acquisition model based on deep learning, integrating the six stages of deep learning with the three core elements of information literacy. This model provides a systematic educational pathway for learners, illustrating how deep learning can foster the acquisition and enhancement of information literacy. The model emphasizes the importance of integrating deep learning processes with the development of information literacy, offering educational administrators a practical framework for enhancing learning outcomes in modern educational settings. The findings demonstrate a strong connection between the stages of deep learning and the core elements of information literacy. This suggests that the model can effectively help learners improve their information literacy by following a structured learning approach. For educational administrators, the model provides a strategic tool for developing curriculum and training programs that align with the needs of the digital age. The model holds significant theoretical value and offers practical guidance for educational management in diverse settings such as classroom teaching, online learning, and professional development. By adapting the model to different educational contexts, educational administrators can help learners gradually enhance their information literacy and navigate increasingly complex, information-rich environments. In conclusion, this study contributes to the theoretical and practical understanding of information literacy cultivation in the digital age. Although the model requires further empirical validation and refinement, it provides a promising framework for educators and administrators to enhance learners' information literacy and prepare them for the challenges of the digital world.

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References

Ahmed, S. F., Alam, M. S. B., Hassan, M., Rozbu, M. R., Ishtiak, T., Rafa, N., Mofijur, M., Shawkat Ali, A., & Gandomi, A. H. (2023). Deep learning modelling techniques: current progress, applications, advantages, and challenges. Artificial Intelligence Review, 56(11), 13521-13617.

Barr, N., Lord, B., Flanagan, B., & Carter, R. (2020). Developing a framework to improve information and digital literacy in a bachelor of paramedic science entry-to-practice program. College and Research Libraries, 81(6), 945-980.

Chen, C.-C. (2023). Information Literacy in the Digital Age. In Information Literacy Education of Higher Education in Asian Countries (pp. 1-17). Springer.

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IJEPC
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Chen, X., Chen, Z., Lin, L., Yan, H., Huang, Z., & Huang, Z. (2023). A Deep Learning-Based National Digital Literacy Assessment Framework Utilizing Mobile Big Data and Survey Data. IEEE Access.

Coates, K. (2021). Information Literacy re-imagined: Deep Learning practice.

Janiesch, C., Zschech, P., & Heinrich, K. (2021). Machine learning and deep learning. Electronic Markets, 31(3), 685-695.

Januszewski, A. (2008). Educational technology: A definition with commentary. Routledge.

Kennedy, H. R., & Gruber, A. M. H. (2020). Critical thinking in a service-learning course: Impacts of information literacy instruction. Communication in Information Literacy, 14(2), 182.

Khan, S., & Yairi, T. (2018). A review on the application of deep learning in system health management. Mechanical Systems and Signal Processing, 107, 241-265.

Kim, N. J., Vicentini, C. R., & Belland, B. R. (2022). Influence of scaffolding on information literacy and argumentation skills in virtual field trips and problem-based learning for scientific problem solving. International Journal of Science and Mathematics Education, 20(2), 215-236.

Kurbanoglu, S. (2013). An analysis of concept of information literacy. Media and information literacy for knowledge societies, 1-42.

Lei, B. (2024). Expectations and Coping Strategies of Digital Literacy Improvement of Shaanxi University Teachers in the Context of. Journal of Human Resource Development, 6(1), 75-84.

Li, B., Burke, J., & Plunkett, M. (2022). Deep or surface learning?: Perceptions of Chinese international and local students in Australian universities. Issues in Educational Research, 32(1), 149-181.

Ma, T.-J., Lin, M.-L., & Ma, T.-C. (2021). A school library program based on information literacy: A case study of national experimental high school at hsinchu science park. IASL Annual Conference Proceedings,

Nisha, N., & Varghese, R. R. (2021). Literature on information literacy: A review. DESIDOC Journal of Library & Information Technology, 41(4).

Noda, K., Yamaguchi, Y., Nakadai, K., Okuno, H. G., & Ogata, T. (2015). Audio-visual speech recognition using deep learning. Applied intelligence, 42, 722-737.

Ojobor, R. C., Babarinde, E., & Ezeh, G. S. (2021). Assessing the Impact of Collaboration in Improving Students' Information Literacy Skills in the Digital Environment. Global Review of Library and Information Science (GERIS), 17(2).

Perrotta, C., & Selwyn, N. (2020). Deep learning goes to school: Toward a relational understanding of AI in education. Learning, Media and Technology, 45(3), 251-269.

Salakhutdinov, R., & Hinton, G. (2009). Deep boltzmann machines. Artificial intelligence and statistics,

Sample, A. (2020). Historical development of definitions of information literacy: A literature review of selected resources. The journal of academic librarianship, 46(2), 102116.

Schmidhuber, J. (2015). Deep learning. Scholarpedia, 10(11), 32832.

Sun, C., Liu, J. a., Razmerita, L., Xu, Y., & Qi, J. (2022). Higher education to support sustainable development: The influence of information literacy and online learning process on Chinese postgraduates' innovation performance. Sustainability, 14(13), 7789.

Taylor, N. G., & Jaeger, P. T. (2022). Foundations of information literacy. American Library Association.

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DOI 10.35631/IJEPC.1058060
Tian, X., Park, K. H., & Liu, Q. (2023). Deep Learning Influences on Higher Education Students' Digital Literacy: The Meditating Role of Higher-order Thinking. International Journal of Engineering Pedagogy, 13(6).

Udoh, I. U., & ONafor, V. (2022). Information literacy and digital literacy sNills of 21st century Library and Information Science professionals. Smart libraries and information management in digital environment, 2.

Weng, C., Chen, C., & Ai, X. (2023). A pedagogical study on promoting students' deep learning through design-based learning. International journal of technology and design education, 33(4), 1653-1674.