The impact of digital pedagogy on knowledge sharing of learners in Higher Education: A multi-level analysis

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Introduction

- **Justification:**

The COVID-19 pandemic has accelerated the need for digital pedagogy in Higher Education (Blewett, 2016).

Universities must embrace digital pedagogy as a mainstream teaching approach.

Knowledge sharing among learners is crucial for engagement and academic performance.

- **Objective**

This research aims to explore key trends, identify behavior mechanisms, and develop a comprehensive framework for knowledge sharing in online learning.

Literature Review

- Nonaka's theory of organizational knowledge creation and the concept of **ba** play a central role in understanding knowledge sharing dynamics.

- Knowledge sharing involves infrastructure construction and communication within a group (Cheng et al., 2009; Ipe, 2003; Seonghee & Boryung, 2008).

- Tacit knowledge is shared through face-to-face interaction, while explicit knowledge is shared through IT platforms (Hansen et al., 1999; Nonaka, 1994).

- Digital technologies provide virtual spaces for socialization and knowledge pooling (Earl, 2001; Gupta, 2000; S. Kim & Lee, 2006; Selamat et al., 2006).

- Ba, as a shared space, is essential for knowledge creation (Chen & Huang, 2007; Nonaka et al., 2000; Salis & Williams, 2010).

- Face-to-face and mediated interactions are vital for knowledge sharing, requiring consideration of individual and structural determinants (Chen & Huang, 2007).

Methodology

- Four-step methodology inspired by systematic reviews is employed (Davarzani et al., 2016; Fahimnia et al., 2015).

- **Step 1**: Define search terms and keywords using focus groups.
- **Step 2**: Conduct an initial search and screening of articles using Scopus.
- **Step 3**: Perform data statistics to analyze publishing trends (1997-2023).
- **Step 4**: Analyze data using bibliometric and network analysis tools like VOSviewer.

Methodology

Bibliometric Analysis

- Explore the trends of academic publications from 1997 to 2023.

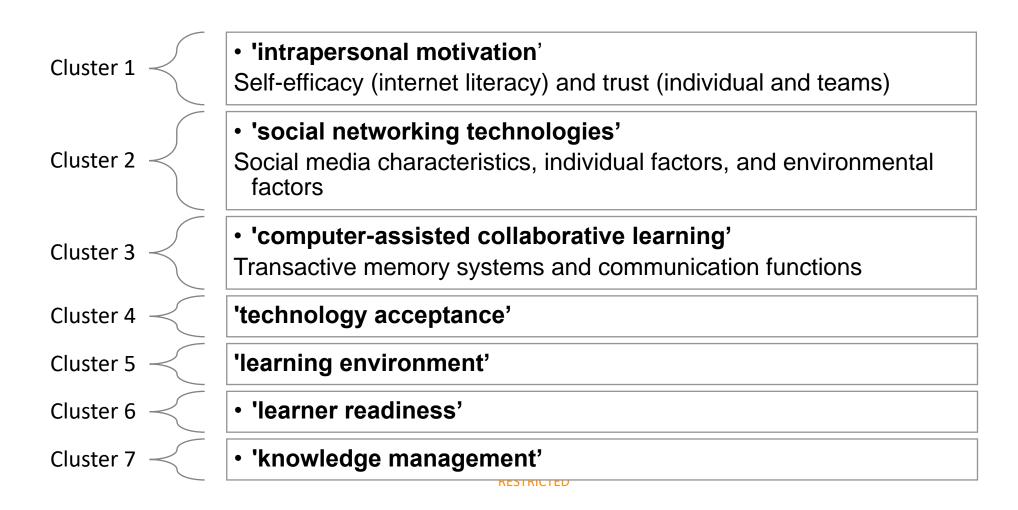- Insights into author and country influence in the field of digital pedagogy and knowledge sharing.

Methodology

Network Analysis

- Co-occurrence analysis to uncover underlying themes and correlations among keywords (Ravikumar et al., 2015; Stegmann & Grohmann, 2003).

- VOSviewer used for mapping the keyword co-occurrence network and determining significance and influence (Waltman et al., 2020).

- A sample of 172 articles yielded 556 keywords, and seven literature clusters based on dominant keywords. The sizes of the clusters ranged from 17 keywords to 9 keywords.

Results and Discussion

Research streams

- Keywords co-occurrence analysis identified seven literature clusters.

Cluster 1
- **'intrapersonal motivation**'
Self-efficacy (internet literacy) and trust (individual and teams)

Cluster 2
- **'social networking technologies'**
Social media characteristics, individual factors, and environmental factors

Cluster 3
- **'computer-assisted collaborative learning'**
Transactive memory systems and communication functions

Cluster 4
'technology acceptance'

Cluster 5
'learning environment'

Cluster 6
- **'learner readiness'**

Cluster 7
- **'knowledge management'**

Results and Discussion

Publication trend

- The publication trend indicates slow growth until 1997, and then, accelerated in recent years

- Year 2022 has been the most productive year so far

Results and Discussion

Global contributions

- Author influence analysis reveals limit ed contribution from authors, with a few notable contributors

- Only 4% of authors contributed to more than one paper.

- Country influence analysis shows the involvement of leading and non-traditional countries, reflecting diverse perspectives

Top country performers: United States, Australia, and Malaysia.

❑ Top country performers: United States, Australia, and Malaysia.

❑European representation is increasing

❑Contributions have also come from Asian countries (Malaysia, China, Hong Kong, Taiwan, Saudi Arabia, India, and Bahrain)

❑African countries have yet to make significant contributions.

Results and Discussion

Limitations

- The study does not include non-academic publications and broader academic articles

Conclusion

Future research

- Exploration of the dynamics of interaction within the *virtual ba* concerning knowledge sharing and understanding the forces that shape knowledge sharing behavior in the virtual space.

- African scholars have the potential to contribute significantly to the field, given the continent's young and tech-savvy population and the tradition of oral storytelling

- Opportunity to incorporate non-academic publications and broader academic articles

References

Blewett, C. (2016). *From Traditional Pedagogy to Digital Pedagogy*. https://doi.org/10.1007/978-94-6300-896-9_16

Chen, C. J., & Huang, J. W. (2007). How organizational climate and structure affect knowledge management-The social interaction perspective. *International Journal of Information Management*, *27*(2). https://doi.org/10.1016/j.ijinfomgt.2006.11.001

Cheng, M., Ho, J. S., & Lau, P. M. (2009). Knowledge sharing in academic institutions : a study of multimedia university malaysia. *Electronic Journal of Knowledge Management*, *7*(3).

Chutia, R., & Devi, R. M. (2020). Strategies of Knowledge Sharing Among the Postgraduate Students of University of Science and Technology, Meghalaya: A Study. *Library Philosophy and Practice*, *2020*.

Davarzani, H., Fahimnia, B., Bell, M., & Sarkis, J. (2016). Greening ports and maritime logistics: A review. *Transportation Research Part D: Transport and Environment*, *48*. https://doi.org/10.1016/j.trd.2015.07.007

Díez-Pascual, A. M., García-Díaz, P., & Peña-Capilla, R. (2019). Experience in the use of social software to support student learning in university courses of science and engineering degrees. *Education Sciences*, *9*(1). https://doi.org/10.3390/educsci9010005

Earl, M. (2001). Knowledge management strategies: Toward a taxonomy. *Journal of Management Information Systems*, *18*(1). https://doi.org/10.1080/07421222.2001.11045670

Eid, M. I. M., & Al-Jabri, I. M. (2016). Social networking, knowledge sharing, and student learning: The case of university students. *Computers and Education*, *99*. https://doi.org/10.1016/j.compedu.2016.04.007

Ergün, E., & Avci, Ü. (2018). Knowledge sharing self-efficacy, motivation and sense of community as predictors of knowledge receiving and giving behaviors. *Educational Technology and Society*, *21*(3).

Fahimnia, B., Tang, C. S., Davarzani, H., & Sarkis, J. (2015). Quantitative models for managing supply chain risks: A review. In *European Journal of Operational Research* (Vol. 247, Issue 1). https://doi.org/10.1016/j.ejor.2015.04.034

Gupta, A. K. (2000). Knowledge Management's Social Dimension : Lessons From Nucor Steel. *MIT Sloan Management Review*, *42*(1).

References

Hosen, M., Ogbeibu, S., Giridharan, B., Cham, T. H., Lim, W. M., & Paul, J. (2021). Individual motivation and social media influence on student knowledge sharing and learning performance: Evidence from an emerging economy. *Computers and Education*, *172*. https://doi.org/10.1016/j.compedu.2021.104262

Ipe, M. (2003). Knowledge Sharing in Organizations: A Conceptual Framework. *Human Resource Development Review*, *2*(4). https://doi.org/10.1177/1534484303257985

Jami Pour, M., & Taheri, F. (2019). Personality traits and knowledge sharing behavior in social media: mediating role of trust and subjective well-being. *On the Horizon*, *27*(2). https://doi.org/10.1108/OTH-03-2019-0012

Kae, N. S., Chong, Y., & Hassan, H. (2017). Millennials' knowledge sharing behaviour via social media: The effects of reciprocity, extroversion and collaborative learning style. *International Journal of Economic Research*, *14*(14PartII).

Kim, J., Lee, C., & Elias, T. (2015). Factors affecting information sharing in social networking sites amongst university students: Application of the knowledge-sharing model to social networking sites. *Online Information Review*, *39*(3). https://doi.org/10.1108/OIR-01-2015-0022

Kim, S., & Lee, H. (2006). The impact of organizational context and information technology on employee knowledge-sharing capabilities. *Public Administration Review*, *66*(3). https://doi.org/10.1111/j.1540-6210.2006.00595.x

Koranteng, F. N., Wiafe, I., & Kuada, E. (2019). An Empirical Study of the Relationship Between Social Networking Sites and Students' Engagement in Higher Education. *Journal of Educational Computing Research*, *57*(5). https://doi.org/10.1177/0735633118787528

Koskinen, K. U., Pihlanto, P., & Vanharanta, H. (2003). Tacit knowledge acquisition and sharing in a project work context. *International Journal of Project Management*, *21*(4). https://doi.org/10.1016/S0263-7863(02)00030-3

Mivehchi, L., & Rajabion, L. (2020). A framework for evaluating the impact of mobile games, technological innovation and collaborative learning on students' motivation. *Human Systems Management*, *39*(1). https://doi.org/10.3233/HSM-190543

Moghavvemi, S., Sharabati, M., Paramanathan, T., & Rahin, N. M. (2017). The impact of perceived enjoyment, perceived reciprocal benefits and knowledge power on students' knowledge sharing through Facebook. *International Journal of Management Education*, *15*(1). https://doi.org/10.1016/j.ijme.2016.11.002

Nonaka, I. (1994). A Dynamic Theory Knowledge of Organizational Creation. Organization Science, 5(1). https://doi.org/10.1287/orsc.5.1.14

Nonaka, I. (2009). A dynamic theory of organizational knowledge creation. In Knowledge, Groupware and the Internet. https://doi.org/10.1287/orsc.5.1.14

Nonaka, I., & Lewin, A. Y. (1994). A Dynamic Theory of Organizational Knowledge Creation Dynamic Theory Knowledge of Organizational Creation. International Journal of Technology Management, 5(1).

References

Nonaka, I., & Toyama, R. (2005). The theory of the knowledge-creating firm: Subjectivity, objectivity and synthesis. Industrial and Corporate Change, 14(3). https://doi.org/10.1093/icc/dth058

Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation. Long Range Planning, 33(1). https://doi.org/10.1016/S0024-6301(99)00115-6

Noroozi, O., Weinberger, A., Biemans, H. J. A., Mulder, M., & Chizari, M. (2013). Facilitating argumentative knowledge construction through a transactive discussion script in CSCL. Computers and Education, 61(1). https://doi.org/10.1016/j.compedu.2012.08.013

Razzaq, A., Samiha, Y. T., & Anshari, M. (2018). Smartphone habits and behaviors in supporting students self-efficacy. International Journal of Emerging Technologies in Learning, 13(2). https://doi.org/10.3991/ijet.v13i02.7685

Salis, S., & Williams, A. M. (2010). Knowledge sharing through face-to-face communication and labour productivity: Evidence from british workplaces. British Journal of Industrial Relations, 48(2). https://doi.org/10.1111/j.1467-8543.2009.00762.x

Selamat, M. H., Abdullah, R., & Paul, C. J. (2006). Knowledge management framework in a technology support environment. International Journal of Computer Science and Network Security, 6.

Selvarajah, U., & Ali, N. (2021). The intention of using Facebook by postgraduate students for knowledge sharing: An empirical study. International Journal of Management in Education, 15(1). https://doi.org/10.1504/IJMIE.2021.111812

Seonghee, K., & Boryung, J. (2008). An analysis of faculty perceptions: Attitudes toward knowledge sharing and collaboration in an academic institution. Library and Information Science Research, 30(4). https://doi.org/10.1016/j.lisr.2008.04.003

Waltman, L., Boyack, K. W., Colavizza, G., & van Eck, N. J. (2020). A principled methodology for comparing relatedness measures for clustering publications. Quantitative Science Studies, 1(2). https://doi.org/10.1162/qss_a_00035

Wang, W. T., & Lin, Y. L. (2021). Evaluating Factors Influencing Knowledge-Sharing Behavior of Students in Online Problem-Based Learning. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.691755

Wang, X., Zhang, R., Wang, X., Xu, D., & Tian, F. (2022). How Do Mobile Social Apps Matter for College Students' Satisfaction in Group-Based Learning? The Mediation of Collaborative Learning. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.795660