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International Journal of Recent Advances in Engineering and Technology

ISSN: 2347-2812

Volume 14 Issue 02, 2025

Acadlinker : Design and Evaluation a Skill-Based Student Network with a Touch of AI

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Peer Review Information

Submission: 11 Sept 2025

Revision: 10 Oct 2025

Acceptance: 22 Oct 2025

Keywords

Academic Networking Platform, Skill-based learning,Personalized learning, Collaborative learning, AI- powered study tools, Educational technology platform, Privacy & Security Measures, Real-Time Notifications, Group Formation & Collaboration.

Abstract

Acadlinker is a web-based application that facilitates academic networking among students across different colleges within the same university. The platform allows users to create detailed profiles showcasing their academic and skill-based information, connect with peers through friend requests, and engage in secure chats with file and code-sharing capabilities. It further supports group formation for projects and study sessions, along with the option to share posts containing documents or media files accessible to friends. The system integrates real-time notifications for friend requests, group invitations, and post interactions, while offering a skill-based friend-finder feature to encourage meaning ful academic collaboration. Acadlinker provides a secure, academic-focused environment designed to foster collaboration, networking, and skill development among students.

Introduction:

Skills-based education today faces critical challenges, such as an overreliance on theoretical knowledge and limited opportunities for real-world skill application. There is often a disconnect between academic curricula and the practical competencies demanded by the workforce, leaving students underprepared for career success. Acadlinker responds to these challenges by creating a skill-based student network enhanced with AI, enabling personalized learning pathways, adaptive feedback, and peer collaboration. Grounded in social constructivism, the platform uses AI as a virtual peer that facilitates interaction, scaffolds learning, and fosters meaningful skill development in a collaborative environment. This paper aims to design and evaluate the effectiveness of Acadlinker in bridging educational gaps, enhancing engagement, and improving skill acquisition through intelligent networking and AI-assisted learning supports. The objective is to demonstrate how AI-integrated student networks can transform traditional skill-based education into a more connected, personalized, and impactful experience

Literature Survey:

S.No	Paper Title	Authors	Year	Problem Solved	Technique Used	Future Scope
1	Promoting University Students Self-Regulated Learning Skills on E-Learning Platforms Using Educational Data Mining	Eric Araka, Ruth Wario, Elizaphan Maina	2025	Limited av enues for peer collaboration In higher education.	Web-based platform with skill-matching, messaging, groups, and file sharing.	Academic net-working with collaboration, summariza-tion, and personal-ized chatbot support.
2	Analysis of Student En-gagement Towards Learn- ing Materials in LMS: A Case Study	Zarina M. Noh, Norhidayah M. Yatim, Wira H. M. Saad	2024	Unclear stu- dent engage- ment patterns with LMS materials.	Case study on Moodle, showing re-sources had higher engage-ment than activities.	Apply to dif-ferent courses, add multime- dia, predictive analytics for learning success.
3	EduGraph: Hypergraph Neural Recom- mender	M. Li et al.	2024	MOOCs ig- nore learning paths	Hypergraph neural model	Skill-aware pathways in universities
4	Knowledge Graphs for LLM Explana- tions	H. Abu-Rasheed et al.	2024	Black-box learning recs	Education KGs ground-ing LLMs	Explainable skill-path advisors
5	Semantic Sum-marization of Knowledge Graphs	H. Yu et al.	2024	Poor retrieval of fragmented data	Semantic summariza- tion	Skill-centric learning se-quences

6	GraphCA: Counterfac- tual Graph Augmentation	X. Wang et al.	2023	Spurious pat- terns in KT	Counterfactual graph aug- mentation	Multimodal learning, tutoring
7	Peer Learning – An Interactive and Collabora- tive E-Learning Application for College Students	H. A. P. M. Sirithunga, B. G. S Deshan, P. H. D Sigera.	2022	Students face difficulties in collabora- tive learning due to the COVID-19 pandemic and economic crisis.	Web-based application enabling interactive learning and knowledge sharing.	A platform fostering peer learning, col- laboration, and guided educational support.
8	A Complete Chatbot based Architecture for answering user's Course- related queries in MOOC platforms	Sparsh Amarnani, Neel Bha- gat, Hritwik Ekade	2022	Lack of inter- activity and personalized support in ex- isting MOOC platforms.	hatbot ar- chitecture trained on course ma- terials using advanced NLP models.	Intelligent chatbot for answering queries and enhancing instruc- tor– learner interaction.
9	CMKT: Con- cept Map Knowledge Tracing	Y. Lu et al.	2022	Poor inter- pretability in KT	Concept maps & skill graphs	Classroom deployment, cross- domain
10	Designing an Interactive Online Learn- ing Platform to Support a Practical Subject During COVID-19 Outbreak	Peerumporn Jiranan- tanagorn, Konlayut Tip- payakulpiroj, Panuwat Saikaew	2021	Practical sub- jects (e.g., programming) hard to shift online during COVID-19.	Built pro- totype plat- form with study/review, exercises, progress tracking, and portfolios.	Broaden for more subjects, larger-scale evaluation, add advanced features.

Research Gap

Despite the rise of educational technologies, there remains a lack of dedicated academic networking platforms tailored specifically for intra-university student collaboration. Existing platforms like social media and learning management systems do not support skill-based peer matching, secure resource exchange, or collaborative project management. Research on AI-enhanced academic networks is limited, particularly in the context of personalized learning and peer-to-peer skill development. Few studies explore how such platforms can effectively bridge the gap between theoretical learning and practical skill application. Additionally, there is a need to investigate secure and user-friendly systems that foster real-time, meaningful academic interactions among students. Acadlinker addresses this unexplored space by integrating AI and networking to enhance collaborative and personalized learning.

Problem Statement

Students from different colleges within the same university often struggle to find peers for collaborative study and academic projects. Existing social media platforms are not designed for education-focused networking and lack features like skill-based connections and group collaboration. Acadlinker addresses this gap by offering a secure, student-centric platform that enables students to connect, form groups, share resources, and collaborate effectively. It focuses on academic networking, skill development, and meaningful interactions to foster better learning and teamwork**.**

Conclusion

Acadlinker is an academic networking platform

designed to help university students find peers for collaborative study and projects. Unlike traditional social media, it features an education-focused approach emphasizing skill development over rote learning. By using AI, Acadlinker provides personalized experiences through intelligent peer matching, adaptive learning, and targeted feedback, connecting students with complementary skills and academic goals. Key features include real-time chat with file/code sharing, group creation, and AI-based resource recommendations, all within a secure, mobile-friendly environment. Ultimately, Acadlinker offers a dynamic solution for networking, skill- building, and collaborative learning

References

Eric Araka; Robert Oboko; Elizaphan Maina; Rhoda Gitonga(2022) : Using Educational Data Mining Techniques to Identify Profiles in Self-Regulated Learning: An Empirical Evaluation

Zarina M. Noh; Norhidayah M. Yatim; Wira H. M. Saad(2024) : Analysis of Student Engagement Towards Learning Materials in LMS: A Case StudyAuthors

H. A. P. M. Sirithunga; B. G. S. Deshan; P. H. D. Sigera(2022): Peer Learning – An Interactive and Collaborative E-Learning Application for College Students.

Eric Araka; Robert Oboko; Elizaphan Maina; Rhoda K. Gitonga(2021): A Conceptual Educational Data Mining Model for Supporting Self-Regulated Learning in Online Learning Environments

Nalawade, V. S., Jagtap, T. G., Jamdar, P. B., Kadam, S. I., & Kenjale, R. S. (2023). Voice-Enabled Traffic Sign Recognition and Alert System using ML: A Review.

Sparsh Amarnani, Neel Bha- gat, Hritwik Ekade(2022): A Complete Chatbot based Architecture

for answering user's Course- related queries in MOOC platforms

Lee & Yeung (2019) — *Knowledge Query Network: How Knowledge Interacts with Skills*
Neural network model mapping student knowledge and skill vectors with interpretability via probabilistic skill similarity. arXiv

Minn et al. (2021) — *Interpretable Knowledge Tracing: Simple and Efficient Student Modeling with Causal Relations*
Uses Tree-Augmented Naive Bayes for interpretable student skill mastery and performance forecasting. arXiv

Bai & Stede (2023) — *A Survey of Current Machine Learning Approaches to Student Free-Text Evaluation for Intelligent Tutoring*
Comprehensive review of ML/DL methods for automatically assessing student free-text responses. SpringerLink

Albreiki, Zaki & Alashwal — *A Systematic Literature Review of Student Performance Prediction Using Machine Learning Techniques*
Survey of ML models for predicting student performance. MDPI

Benteux & Chichekian (2022) — *The Potential of Learning With (and Not From) Artificial Intelligence in Education*
Explores shifts toward students learning alongside AI, rather than just from it. Frontiers

Wang & Liu (2021) — *Using Artificial Intelligence-Based Collaborative Teaching in Media Learning*
Discusses AI-enabled collaborative teaching strategies. Frontiers

Nalawade, V. S., Sanjay, B. N., Nanasaheb, M. P., Vikram, S. V., & Khandeshwar, P. T. (2024). Survey on Phishing Attack Prevention Techniques Across Multiple Applications: Current Strategies, Challenges, and Future Trends. *International Journal of Electrical, Electronics and Computer Systems*, *13*(2), 29-35.

Ouyang & Jiao (2021) — *Student-AI Collaboration Model (SAC)*
Framework highlighting student-AI-teacher interactions, emphasizing student agency in learning. SpringerLink

Krause, Dalvi & Zaidi (2025) — *Generative AI in Education: Student Skills and Lecturer Roles*
Mixed-method study identifying key student competencies for effective GenAI use and lecturer strategies. arXiv

Nalawade, V. S., Aoute, Y. P., Dharurkar, A. S., & Gunavare, R. D. (2023). A Survey on Revolutionizing Document Security: A Comprehensive Deep Learning Approach For Signature Detection and Verification.

Zheng et al. (2024) — *Charting the Future of AI in Project-Based Learning: A Co-Design Exploration with Students*
Co-design study exploring students' AI usage in project-based learning and assessment. arXiv

Wikipedia: Social Learning Network — *Social Learning Network (SLN)*
Conceptual overview of networks where learners both teach and learn collaboratively—foundation for skill-based peer networks. Wikipedia

Lin, Y., Chen, H., Xia, W., Lin, F., Wang, Z., & Liu, Y. (2023/24). *A Comprehensive Survey on Deep Learning Techniques in Educational Data Mining.* Covers DL models in knowledge tracing, performance prediction, behavior detection, personalized recommendation. **Astrophysics Data System.**

Nalawade, V. S., Jadhav, O. D., Jadhav, R. M., Kargal, S. R., & Panhalkar, N. S. (2023). A Survey

On Creating Digital Health Ecosystem with Lifewellness Portal Including Hospital and Insurance Company with Cloud Computing and Artificial Intelligence.

Romero, C., & Ventura, S. (2024). *Educational Data Mining and Learning Analytics: An Updated Survey.* Reviews trends, tools, datasets, and analytics methods in EDM and LA over the past decade. **Emergent Mind.**

Kalita, E., Oyelere, S. S., Gaftandzhieva, S., et al. (2025). *Educational Data Mining: A 10-Year Review.* Looks at multimodal analytics, explainability, and AI in education over the past ten years. **SpringerLink.**

Nalawade, V. S., Shinde, S. S., Takmoge, P. D., Shirsat, S. P., & Wagh, S. B. (2025). Result Paper On "Mobile Theft-Prevention System". *International Journal on Advanced Computer Theory and Engineering*, *14*(1), 457-464.

Mustafa Yağcı et al. (2022). *Prediction of Students' Academic Performance Using Machine Learning Algorithms.* Comparing ML models (RF, SVM, etc.) for predicting final exam grades using midterm data. **SpringerOpen.**

Songlin Xu & Xinyu Zhang (2023). *Leveraging Generative Artificial Intelligence to Simulate Student Learning Behavior.* LLM-based virtual student simulations to probe learning outcomes and engagement patterns. **arXiv.**

Thanveer Shaik, Xiaohui Tao, Christopher Dann, Haoran Xie, Yan Li & Linda Galligan (2023). *Sentiment Analysis and Opinion Mining on Educational Data: A Survey.* Insights on using NLP methods to capture student sentiment from feedback for pedagogy and evaluation. **arXiv.**

Kim, H. K., Roknaldin, A., Nayak, S. P., Zhang, X., Twyman, M., Hwang, A. H., & Lu, S. (2024). *Empowering Computer-Supported Collaborative Learning with ChatGPT: Investigating Effects on Student Interactions.* Analyses how integrating ChatGPT shifts interaction patterns in collaborative settings. **ASEE Strategy.**

Nalawade, V. S., Sharad, S. S., Dhananjay, T. P., Popat, S. S., & Baban, W. S. (2024). A Comprehensive Survey on Mobile Theft Prevention Systems: Innovations and Approaches for Enhanced Security. *International Journal of Electrical, Electronics and Computer Systems*, *13*(2), 56-61.

Claire Li, Xiangping Du & Perry Xiao (2024). *Revolutionising Education: Leveraging AI to Boost Student Engagement through Constructivist and Social Collaborative Learning – A Study of Perusall.* Empirical work showing improved engagement & performance via peer annotations + social reading tools. **AISel.**

Frontiers (2025). *From Experience to Engagement: A Mixed Methods Exploration of Learning Environments using Artificial Intelligence and Extended Reality.* Compares traditional, AI, XR, and AI-XR environments on cognitive, emotional, behavioral, social engagement among high school students. **Frontiers.**

ScienceDirect (Oct 2024). *Effects of an AI-supported approach to peer feedback on university EFL students' feedback quality and writing ability.* Shows AI-chatbot augmented peer review improves both feedback quality and student writing. **ScienceDirect.**