

Proceeding of International University Carnival on E-Learning



INTERNATIONAL UNIVERSITY CARNIVAL ON E-LEARNING

*“ Embracing AI for
Innovative Learning and
Inclusive Education ”*

Chief Editor
Loh Ser Lee

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Nur Zareen Zulkarnain
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Editorial & Production Team

Chief Editor

Loh Ser Lee

Editors

Nur Zareen binti Zulkarnain

Safiza Suhana binti Kamal Baharin

Gan Chin Kim

Graphic Designer

Aziza binti Md Buang

Technical Support Unit

Muhammad Razan Aimi bin Ruzaiman

Muhamad Azmi bin Zainal

Nur Athirah Husna binti Radzuan

Ani binti Jaffri

Zulaiha binti Md Ali

Asmadi bin Md Daud

Mohd Fahrulrazi bin Saji

Abdul Azim bin Azahari

Preface

We are pleased to present the e-Proceedings of the International University Carnival on E-Learning 2025 (IUCEL2025), organised by the Centre for Open and Distance Learning (CODL), Universiti Teknikal Malaysia Melaka (UTeM), in collaboration with the Ministry of Higher Education Malaysia (MoHE). The event was supported by the Department of Higher Education, MoHE, and the Public University e-Learning Council (MEIPTA).

Held on 13 November 2025, IUCEL2025 brought together 196 e-learning innovators from 26 institutions. All presenters were invited to submit extended abstracts in August 2025. After a thorough evaluation and peer-review process completed in September 2025, a total of 160 articles were accepted for inclusion in this publication. The papers compiled here represent diverse perspectives and practices aligned with the event's theme, *“Embracing AI for Innovative Learning and Inclusive Education.”*

We extend our sincere appreciation to all authors for their valuable contributions, as well as to the panel of reviewers for their time and expertise. Special acknowledgement is also extended to the Patron of IUCEL2025, Professor Datuk Ts. Dr. Massila binti Kamalrudin, and Chairman, Professor Ir. Dr. Gan Chin Kim, for their leadership and guidance throughout the preparation of this event.

We also express our heartfelt gratitude to the CODL and UTeM team members whose dedication made this publication possible. We hope that the research and ideas presented in this e-proceedings will serve as a meaningful reference for educators, researchers, and practitioners committed to advancing e-learning innovation.

Editors

IUCEL2025 E-Proceedings

Foreword

As Patron of the International University Carnival on E-Learning 2025 (IUCEL2025), I am pleased to present this e-proceedings, which reflects Universiti Teknikal Malaysia Melaka's (UTeM) continued commitment to advancing innovation in digital learning. In collaboration with the Ministry of Higher Education Malaysia (MoHE), IUCEL2025 stands as a testament to our aspiration to nurture a progressive and inclusive educational ecosystem enriched by emerging technologies.

The theme, *“Embracing AI for Innovative Learning and Inclusive Education,”* captures the spirit of transformation shaping higher education today. Artificial intelligence, when applied thoughtfully, has the capacity to broaden access, personalise learning experiences, and strengthen teaching effectiveness across diverse disciplines. IUCEL2025 offered a valuable avenue for educators, researchers, and practitioners to reflect on these opportunities and share meaningful insights that will guide the future of e-learning in Malaysia and beyond.



I would like to express my appreciation to all contributors who have shared their work in this publication. My gratitude also goes to the organising committee members, especially those from Centre for Open and Distance Learning (CODL), for their dedication in ensuring the success of IUCEL2025.

I hope that this e-proceedings will serve as a useful resource and inspire continued exploration, collaboration, and innovation in the pursuit of excellence in teaching and learning.

PROFESSOR DATUK TS. DR. MASSILA BINTI KAMALRUDIN

Vice-Chancellor

Universiti Teknikal Malaysia Melaka (UTeM)

Patron, IUCEL2025

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A NEW FRONTIER: HOW THE NFC STUDENTS CARD SYSTEM INTEGRATE IN EDUCATION LEARNING

Dayang Kartini Binti Abang Ibrahim^{1*}, Fatin Ardani Binti Zamri² & Muhd Syahazizamir Bin Sahmat²

¹Faculty of Cognitive Sciences & Human Development, UNIMAS, Kota Samarahan, Sarawak

²Faculty of Education, Language & Communication, UNIMAS, Kota Samarahan, Sarawak

*Corresponding author's email: aidkartini@unimas.my

Abstract

The NFC students card system guides the development of a learner-centered platform that promotes engagement and flexibility. This project aims to design and develop an innovative educational technology platform based on a comprehensive, NFC-enabled Smart Card system designed to serve as a singular, secure, and portable digital identity for students in environments that restrict the use of personal electronic devices. The increase of mobile technology presents both opportunities and challenges in educational settings, often necessitating the need for secure, distraction-free learning environments. This proposed framework addresses this need by leveraging Near-Field Communication (NFC) technology to create a self-contained, physical interface for critical student information and services, streamlining administrative processes and empowering students and staff. Ultimately, this project addresses the growing demand for flexible and tech-integrated education that prepares learners for personalized learning at their own progress, anytime and anywhere. Crucially, this system is designed to promote equitable and accessible learning by providing all students with uniform access to essential resources, regardless of their personal technological capacity or socioeconomic background. Its integrated design ensures flexible, scalable integration with existing school information systems and can be expanded to accommodate future technological advancements. The NFC Student Smart Card acts as a centralized repository for a wide array of student data, including academic performance records, personalized learning on subject playlists, registration history, entry qualifications, and class attendance logs. Beyond academic tracking, the card will also securely house records of disciplinary actions and welfare information, ensuring a holistic view of each student's journey. A key feature of the system is a restricted, school-only chat function that facilitates secure communication without requiring external devices. Interactions with the system are facilitated via NFC readers strategically placed throughout the school, such as at classroom entrances, library check-in points, and administrative offices. This allows for real-time data updates and secure information retrieval, creating a dynamic, yet private, educational ecosystem. This framework represents a significant step toward developing a robust and secure digital infrastructure that supports a focused, distraction-free learning environment while providing essential tools for modern academic management and student support. By ensuring universal access and simplifying the learning process for all, the Smart Card system helps to create a more inclusive and equitable educational experience.

Keywords: equitable, accessible learning, flexible, scalable integration

Background of Innovation and Design

The design of this system is deliberately minimalist, placing a premium on a whole user experience where a simple 'tap' is the primary interaction. This design choice is not only intuitive but also aligns with the pedagogical goal of reducing distractions. The system's integrated architecture is a key design feature, allowing it to be a flexible and scalable solution for various educational contexts. It can be easily integrated with a school's existing learning management systems and expanded with new NFC-enabled features as needed, from library checkouts to school canteen payments. This framework represents the core idea where the NFC card itself isn't the learning tool but it's the key to accessing learning resources. It allows for a more focused, in-person learning experience during the school day, while still providing digital access when and where it's appropriate

Description of Innovation and Design

During the school day, students are not required to use personal digital devices like phones or tablets. Instead, the card is used to interact with the school's digital infrastructure. The card itself does not have a screen or a keyboard. Its primary function is to be tapped or scanned on designated readers located throughout the school.

- **Attendance:** Students tap their card on a reader at the classroom entrance to automatically mark their attendance.
- **Library:** When checking out books, students simply tap their card on a reader to link the book to their personal account. This eliminates the need for manual records or barcodes.
- **Cafeteria/Canteen:** The card can be pre-loaded with credit, allowing students to tap it to pay for their meals. This creates a cashless and more efficient system.
- **Secure Access:** The card can be used to unlock doors to specific areas, such as a science lab or a computer room, ensuring only authorized students can enter.
- **Accessing a Personal Profile:** The card links a student to a secure, personalized online account. This account can only be accessed from designated, secure school computers or, if the school allows it, from a student's home computer.
- **Learning at Home:** When a student is at home, they can use their personal device (a computer, for example) to log in to the school's secure learning platform. The NFC card can be used as an optional two-factor authentication tool to log in to this portal, ensuring that only the authorized student can access their data.
- **Viewing Data:** Once logged in to the portal, the student can view their grades, attendance record, and homework assignments. They can also access digital learning materials, such as e-books or videos, that their teacher has assigned. This is where the actual 'learning' with digital content happens, but it's done in a controlled and secure environment.

Significance of Innovation and Design

The significance of innovation and design is that it creates a focused, equitable, and sustainable learning environment. As for teaching, the system's design automates administrative tasks like attendance and record-keeping, freeing up teachers to focus more on instruction and student interaction. The secure, school-only chat function provides a safe way for teachers and students to communicate without the distractions of external social media platforms. For learning, by replacing personal devices with a simple NFC card, the system directly addresses the problem of digital distractions, helping students stay more engaged in the classroom. The low-cost, universal nature of NFC technology ensures that every student has equal access to critical information and resources, promoting a truly equitable learning experience.

Impact of Innovation and Design towards Education

- **Personalised Learning:** While the card itself is not the personalized learning tool, it enables it. By securely housing data on academic performance and other records, the system provides a holistic view of each student's progress. This data allows teachers to identify individual needs and tailor their instruction. The ability to access personalized learning on subject playlists also directly supports this concept.
- **Enhanced Equity and Accessibility:** The low-cost nature of NFC technology ensures that every student has uniform access to essential resources, regardless of their personal technological capacity or socioeconomic background. It bridges the digital divide, making a 'smart' learning environment accessible to all.

Impact on Teachers and Administration

- **Data-Driven Decision Making:** By centralizing student data on a secure platform, teachers and administrators gain a holistic view of each student's academic and personal journey. This real-time data allows for early detection of potential issues, enabling proactive intervention and personalized support to help students succeed.

Commercialization Potential

This positions the product for use in:

- Schools (as a short size bite learning tools)
- Corporate L&D departments (for onboarding and upskilling)
- Government training agencies (e.g., TVET and lifelong learning initiatives)
- EdTech companies seeking plug-and-play microlearning architecture

Conclusion

The framework represents a transformative shift in how we design, deliver, and experience education in the modern era. By embracing the NFC card system, digital adaptability, and learner-centered pedagogy, the framework empowers both educators and learners to move beyond traditional methods and into a dynamic, flexible, and purposeful learning journey.

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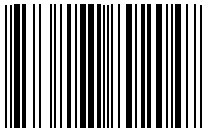
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