



TECHNOLOGY AND INFORMATION SYSTEM

SECTION 6 GROUP 4

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OVERVIEW OF NALI EVENT

On November 5, 2023, we were tasked with preparing a report reviewing posters showcased at NALI 2023, organized by UTM and spanning two days on November 7 and 8. The event's primary objective was to promote innovative teaching and learning practices in education.

Our attendance on November 8 allowed us to engage with presenters from diverse backgrounds and countries, gaining valuable insights into education, particularly in the realm of ICT—an area specified by our lecturer for our assignment on ICT in teaching and learning systems.

After carefully examining numerous posters, we identified five that closely aligned with our assignment's focus. Subsequently, we conducted interviews with the respective presenters, delving deeper into the realm of ICT in teaching and learning.

Here are the posters chosen by us:

1. The first poster is about augmented reality application in educational technology. After interviewing the presenter, we were able to know more about ICT in teaching and learning process. Their thoughtful ideals had benefited us a lot.

UTM NALI 2023
NEW ACADEMIA LEARNING INNOVATION 2023
RESILIENCE EDUCATION FOR FUTURE-ORIENTED QUALITY GRADUATE

AUGMENTED REALITY APPLICATION IN EDUCATIONAL TECHNOLOGY SUBJECT FOR UNDERGRADUATE STUDENTS AT UTM

PROBLEM STATEMENT

- Undergraduate students struggle to visualize complex concepts in subjects (Azuma, 1997).
- Traditional teaching methods in undergraduate students fail to cater to individual learning styles (Kerawalla et al., 2006).
- Students often lack opportunities for hands-on experiences of theoretical concepts (Liarokapis et al., 2015).
- Undergraduate students often struggle to grasp abstract concepts and theories (Bacca et al., 2014).

OBJECTIVE

- Developing Augmented Reality application in Educational Technology subject for undergraduate students.
- Identifying the achievement level of undergraduate students for the subject Educational Technology by using the Augmented Reality application.
- Identifying the perception of undergraduate students for the subject Educational Technology by using the Augmented Reality application.

PRODUCT INNOVATION

Home Interface | AR Content Interface

SCAN ME | GET IT ON Google Play

APPLICABILITY

Elements of Educational Technology (Jurnal et al., 2011)

Elements of Educational Technology (Jurnal et al., 2011)

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Elements of Educational Technology (Jurnal et al., 2011)

NOVELTY

The EduTech-AR app employs Augmented Reality to transform undergraduate education at UTM. This cutting-edge AR application, driven by AR markers, offers an immersive and engaging learning experience, combining audio, visual, and video elements to foster immersive learning environment. This innovation enhances engagement, accommodates various learning styles, and deepens understanding of Educational Technology subjects.

CREATIVITY/ INNOVATIVENESS

- Enhances engagement with interactive visualizations.
- Fosters experiential and immersive learning.
- Supports complex concept comprehension.
- Adapts to diverse learning styles.

COMMERCIAL VALUE

IP Status : Submitted (UTM)

AWARD

Silver Award (IICE 2023)

RESULT / IMPACT

Analysis of Student's Level of Achievement

	Score Post-test Treatment Group	Score Post-test Control Group
Z	-4.636 ^a	
Asymp. Sig. (2-tailed)	0.001	

Table shows that it is clear that there are significance different between the achievement level of undergraduate students for control and treatment group after intervention when the significance value ($p < 0.05$). Thus, it disproves the null hypothesis.

Effectiveness towards the use of Augmented Reality Application

Statement	Score
Using EDUTECH-AR helps me to have individual learning styles	4.51
Using EDUTECH-AR application enable me to understand abstract concept	4.36
Using EDUTECH-AR helps me to understand topics in educational technology subject	4.31
The interaction with the EDUTECH-AR is understandable	4.20

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Asia Technological University Network (ATUN) (AUN)

Reflection:

Upon reviewing the poster on the Augmented Reality Application in Educational Technology for undergraduate students at UTM, I am intrigued by the innovative approach to address common challenges in teaching complex subjects. The problem statement clearly identifies issues such as the struggle to visualize concepts, limitations in traditional teaching methods, and the lack of hands-on experiences for theoretical concepts. These challenges resonate with the broader issues faced in education, particularly in the field of Educational Technology.


The objectives outlined in the poster, specifically the development of an Augmented Reality application and the assessment of its impact on students' achievement levels, demonstrate a commitment to enhancing the learning experience. The inclusion of elements such as the home interface and AR content interface indicates a thoughtful consideration of user experience, which is crucial for successful implementation.

The applicability section underscores the integration of educational technology, augmented reality, and project-based learning. This interdisciplinary approach is commendable as it not only leverages cutting-edge technology but also aligns with modern pedagogical principles. The novel EduTech-AR app, driven by AR markers, promises an immersive and engaging learning environment that caters to diverse learning styles, providing a solution to the identified problems.

The anticipated impact, as indicated by the results section, suggests a significant difference in the achievement levels of students who have used the AR application compared to those who have not. The rejection of the null hypothesis implies that the Augmented Reality intervention has a positive effect on the understanding of Educational Technology subjects among undergraduate students.


In the broader context of ICT in education, this poster underscores the transformative potential of technology to address long standing issues in teaching and learning. The EduTech-AR app represents a forward-looking approach that embraces the benefits of augmented reality to create a more dynamic and effective educational experience. As we move further into the digital age, such initiatives become increasingly relevant, showcasing the importance of adapting teaching methodologies to meet the evolving needs of students.

2. The second poster introduces Artificial Intelligence through the student-centric activity "AI Byte Wars." Engaging with the presenter and exploring the augmented reality applications in educational technology poster deepened our understanding of ICT's role in teaching and learning. The insights shared highlighted innovative ideals in integrating augmented reality into education, offering practical applications for both teachers and learners. The presenter's invaluable expertise provided a comprehensive perspective on technology's transformative potential in education, enriching our understanding of this dynamic landscape.



NEW ACADEMIA LEARNING INNOVATION 2023

RESILIENCE EDUCATION FOR FUTURE-ORIENTED QUALITY GRADUATE



AI BYTE WARS: INTRODUCING ARTIFICIAL INTELLIGENCE THROUGH STUDENT-CENTRIC CLASSROOM DEBATES

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ABSTRACT

AI Byte Wars is a **student-centric classroom debate** activity held during the first class of the BIT1113 Artificial Intelligence (AI) course each semester, presenting an **innovative approach** to introduce students to AI. Divided into **supporting and opposing teams**, students are tasked with **finding points** substantiating their positions. Subsequently, a few students will be selected to engage in the debate, while the remaining act as **citizen juries**, responsible for **voting** on the winning team. By fostering an open, explorative atmosphere, this effective approach allows educators to **gauge prior knowledge**, **nurture critical thinking**, and ensure an **engaging learning atmosphere**.

OBJECTIVES

1. To create a student-centric activity focused on introducing AI
2. To provide an unforgettable active learning experience to students
3. To nurture students with future-ready skills

NOVELTY

- Introduces students to AI through an **innovative use of debates**.
- **Assesses pre-existing knowledge** while **actively engaging** students.
- Unlike traditional approaches, AI Byte Wars **encourages students to share opinions**.
- Serves as an **ice-breaking activity**, particularly beneficial in the first year of the course.
- The novelty extends to **cross-disciplinary applicability**, adaptable to other courses.

CREATIVITY

- It **incorporates game elements** like **competition, points, time pressure, social pressure, and acknowledgment**.
- The activity utilizes **Mentimeter** for smooth facilitation.
- Mentimeter serves as both a presentation tool and a voting tool.
- Students use Mentimeter to **vote for the debate winner and the best debater**.

INNOVATIVENESS

- Previously, students had a task in the first tutorial session to **find AI-related information and write a report**.
- This task was **unengaging**, **lacked encouragement of critical thinking and soft skills**, and was considered dull.
- Introduced in the first semester of 2022/2023 to **enhance active learning** through thinking, discussing, investigating, and creating.
- The debate activity creates a **positive first impression** and an **unforgettable experience** for students, **increasing anticipation** for class attendance.




Figure 2: Debate activity flow

APPLICABILITY

- AI Byte Wars is well-aligned with the NALI Framework

NALI FRAMEWORK

- Innovative Approaches
- Student-centered Learning
- Diverse modes and materials

AI BYTE WARS

- Offers from the traditional pen-and-paper method
- Heavily student-centered with student-managed debate sessions
- Incorporates active learning, cooperative learning, problem-solving, critical thinking, and lifelong learning

Figure 3: Alignment to NALI Framework

IMPACT TO STUDENTS

Table 1: Findings for average mean and standard deviation for both semesters (N=82)

Question	Mean	SD
Q1. I felt that I could achieve the goal of the activity	5.72	1.31
Q2. I know exactly what / how to response to the question asked	5.40	1.41
Q3. I felt excited to voice out my opinion on the topic	5.35	1.49
Q4. I was absorbed in the discussion that I don't realise the time	5.24	1.38
Q5. The activity helped me in understanding AI better	5.36	1.24
Q6. I prefer learning through this activity compared to traditional methods	6.21	1.12

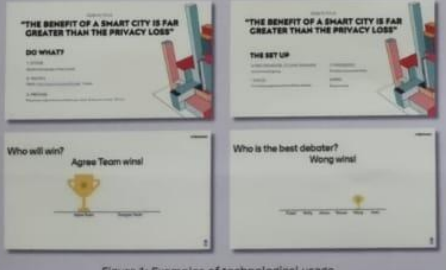


Figure 1: Examples of technological usage




Figure 4: AI Byte Wars in action

Students' Reflections

"A great method of teaching & learning! Hoping to always have these fun activities in all my studies. **Never get bored though!**"

"I enjoyed the game while learning AI. It encourages me to study."

"The truth is I'm always waiting and excited for class AI activity"

"Class has been very fun and it does not feel time consuming so far"

"The activity is fun and increase our thinking capacity as well as our understandings"

COMMERCIALIZATION POTENTIAL

AI Byte Wars has the potential to be commercialized as a **web-based platform**, **adaptable** for diverse debates, **scalable** across various courses, and **eligible for copyright** protection.

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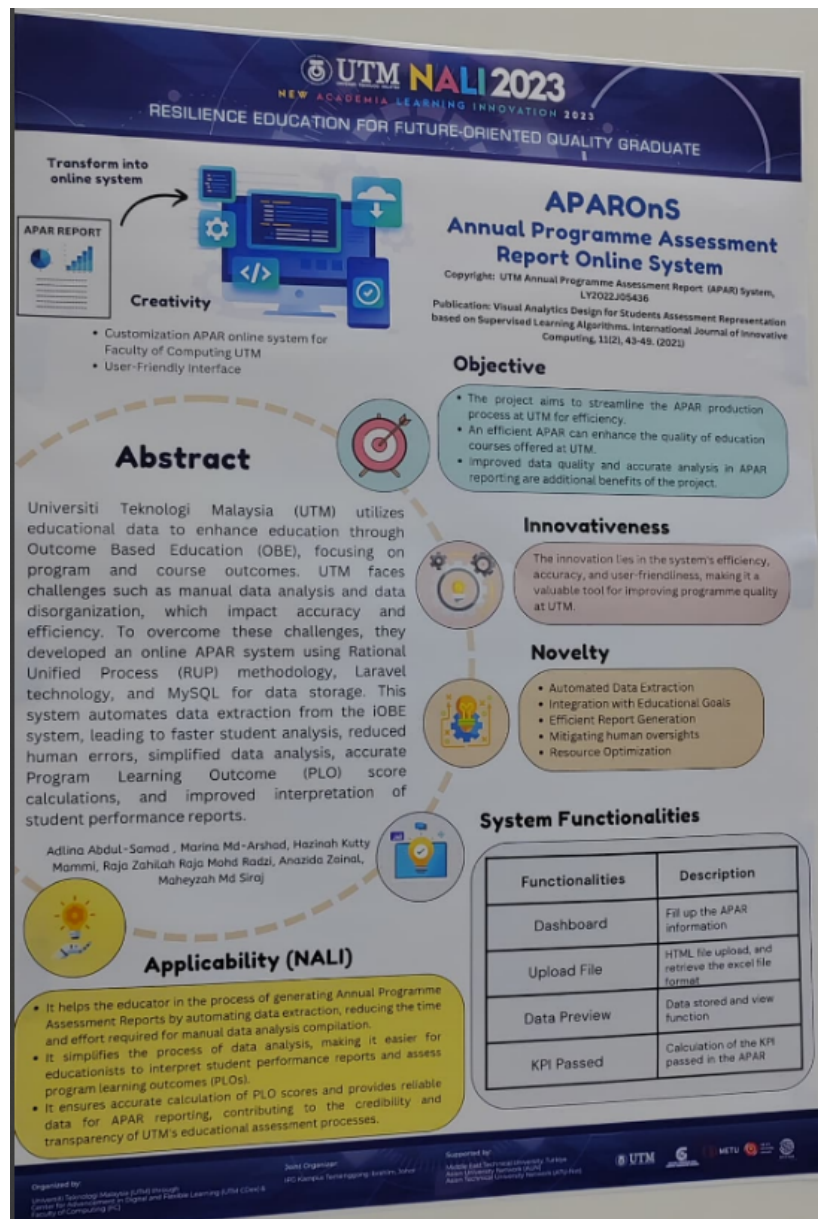
Reflection:

As I delve into the details of the AI Byte Wars poster, I can't help but be intrigued by the innovative approach it takes to introduce Artificial Intelligence. The student-centric nature of this classroom debate activity, held at the onset of the BITI 1113 course, immediately captures my attention. The division of students into supporting and opposing teams, tasked with substantiating their positions, is a testament to the dynamic and interactive learning experience envisioned. This strategy not only sets the stage for an engaging semester but also serves as an effective means of gauging students' existing knowledge and nurturing critical thinking skills from day one.

The stated objectives of the poster underscore a thoughtful design aimed at enhancing the learning journey. The commitment to creating a student-centric activity aligned with modern educational trends resonates with me as it addresses the call for more interactive and engaging methods in technical education. The emphasis on an unforgettable active learning experience suggests a dedication to making the acquisition of AI knowledge a memorable endeavor. Additionally, the goal to nurture future-ready skills, including critical thinking, positions AI Byte Wars as a pivotal component in students' broader skill development, preparing them for the demands of a rapidly evolving technological landscape.

The creativity and innovativeness of AI Byte Wars make it stand out as more than just a typical educational activity. The infusion of game elements, such as competition, time pressure, and acknowledgment, injects a sense of excitement and challenge into the learning process. The utilization of Mentimeter as both a presentation and voting tool demonstrates a seamless integration of technology, providing a glimpse into the forward-thinking nature of the initiative. This departure from traditional methods, as highlighted in the innovativeness section, speaks to a responsiveness to student engagement concerns and a commitment to continuously refining the learning process. Overall, AI Byte Wars appears to be a beacon of effective and inventive pedagogy, promising a dynamic and anticipatory learning experience.

3. The third poster centers on augmented reality's application in educational technology. Conversing with the presenter offered valuable insights into integrating Information and Communication Technology (ICT) in teaching and learning. Their thoughtful ideas greatly enhance our understanding of the subject, proving immensely beneficial.



In reviewing the abstract on the development of the online Annual Programme Assessment Report (APAR) system at Universiti Teknologi Malaysia (UTM), I am impressed by the strategic application of technology to streamline and enhance the educational assessment process. Challenges faced by UTM, such as manual data analysis and poor organization, are common issues among academic institutions globally. The project adopts the Rational Unified Process (RUP) methodology, Laravel technology, and MySQL data storage, reflecting a comprehensive systematic approach to address these issues.

The outlined objectives in the abstract align with broader goals of improving educational quality, emphasizing the importance of efficiency in developing Annual Programme Assessment Reports (APARs). The emphasis on accurate calculation of Program Learning Outcomes (PLO) scores and providing reliable data for reports contributes to enhancing the credibility and transparency of UTM's educational assessment practices.

The innovation of this project is noteworthy, particularly in the automation of data extraction, integration with educational objectives, and overall efficiency of report generation. The innovation lies in mitigating human errors through a systematic approach adopted during the development process. This not only reduces the possibility of errors but also optimizes resource utilization, demonstrating a forward-looking perspective in dealing with challenges associated with manual data handling.

Based on the described system functionalities, including a user-friendly APAR information input dashboard, file upload functionality, data preview feature, and Key Performance Indicator (KPI) calculations, these features collectively form a seamless and effective system, addressing the complexity of educational data management.

In summary, the abstract reflects a well-considered initiative by UTM to leverage technology for improving educational processes. The project focuses on efficiency, accuracy, and user-friendliness, positioning it as a valuable tool for educators and administrators, ultimately contributing to the improvement of UTM's course quality. Given that educational institutions worldwide face similar challenges, insights from this project may serve as a model for other institutions seeking to optimize their assessment and reporting processes.

4. The fourth booth that we visited was about Implementation of Integrated Project and Online Collaborative Learning for Computing Courses during Emergency Remote (ER) Teaching and Learning.

IUCEL 2021
INTERNATIONAL UNIVERSITY
CARIVALLON & LEARNING

UUM JPT DEPARTMENT OF INNOVATION & EDUCATION MEIPTA

Implementation of Integrated Project and Online Collaborative Learning for Computing Courses during Emergency Remote (ER) Teaching and Learning

ABSTRACT

This study shares our experiences in implementing an integrated project of two courses namely System Analysis and Design (SAD) and Database (DB), for Computer Science programmes in School of Computing, Universiti Teknologi Malaysia (UTM). This has been implemented for few years, however due to the COVID-19 pandemic, we need to redesign the integrated project implementation and assessment to ensure online collaborative learning was embedded for in both courses. This is important to achieve the technical and team-work skills in the intended course outcomes of both courses.

OBJECTIVES

- To deliver hands-on experience during the system development phases
students to gain the essential knowledge on system development
- To implement an integrated project by reviewing the course learning outcome
Both courses focused on the design phase of SDLC & DBLC
- To plan and utilize the use of online collaborative tools
to make sure the students were able to discuss in groups even they were in different locations

VALUE-ADDED

- Producing a full report on the proposed integrated system, but with **different elements** based on each course.
- Encourage teamwork and students can experience **online collaborative learning** using different tools

USEFULNESS

With the exposure to the real lifecycle of database system design with **guided instruction and frequent monitoring** by the lecturers via the **collaborative online tools**, students were able to communicate with their members in successfully implementing the project. This has also given them the opportunity to experience how to manage a project with **communication constraint** during the pandemic.

PROJECT TIMELINE

Phase	Activity	Tools
Phase 1	System Analysis & Design	Trello
Phase 2	Database Design	Microsoft Teams
Phase 3	System Development	Microsoft Teams
Phase 4	System Testing	Microsoft Teams
Phase 5	System Deployment	Microsoft Teams

Scanned with CamScanner

Reflection:

The described activities, including the integration of System Analysis and Design (SAD) and Database (DB) courses, implementation of an integrated project, and adaptation to online collaborative learning, appear to offer several benefits to students which is improving

teamwork skills. The collaborative nature of the project, especially in an online environment, helps students develop teamwork and communication skills. These skills are crucial in the workplace, where projects often involve collaboration among team members located in different places. Other than that, students are being exposed to Real World Application. The integrated project allows students to apply theoretical concepts from both courses to a real-world scenario. This practical application can deepen their understanding of system analysis, design, and database concepts.

These activities for sure have the potential to positively impact the outcomes of the System Analysis and Design (SAD) and Database (DB) courses in several ways. The first is the Development of Practical Skills in students. Through the integrated project, students have the opportunity to develop practical skills related to system development, database design, and collaborative teamwork. These skills are valuable assets in professional settings, where practical application is often as important as theoretical knowledge.

Students engaging in the described integrated project with an emphasis on online collaborative learning, are likely to gain several impactful learning experiences which is the preparation for professional environments. The combination of technical skills, teamwork, communication, adaptability, and project management learned through the integrated project prepares students for the demands of professional environments. They will be better equipped to contribute meaningfully to projects and teams in their future careers.

These activities with an emphasis on hands-on experience and online collaborative learning, have the potential to spark excitement and interest among students. It is because of the comprehensive exposure to the life cycle. Experiencing the full lifecycle of database system design provides students with a broader perspective on the entire process. This exposure can be exciting as students gain a comprehensive understanding of how different phases interconnect.

The NALI 2023 events surely provide many useful information to students that might helps them in a better teaching and learning way. Visiting events like NALI 2023 may expose students to industry experts, current trends, and the latest advancements in the field. This exposure can provide valuable insights beyond the course material, offering a broader perspective on relevant topics. Other than that, exposure to industry events and interactions with professionals can be motivating for students. Seeing the practical implications of their studies and understanding the potential impact of their future careers may inspire greater engagement with the course material.

5. The last poster introduces "Navigate X," an innovative maze game designed to meet diverse learning needs with a focus on students with attention deficit hyperactivity disorder (ADHD).



Reflection:

The Navigate X maze game is especially noteworthy for its ability to help pupils with attention deficit hyperactivity disorder (ADHD) among the many unique teaching tools created to meet the various learning demands of children . The dual-sided form of the game, which serves both peers and kids with special needs, demonstrates the inventiveness of the design. The innovation's distinctiveness resides in its conversion into an interactive instructional environment that bridges conventional and new paradigms.

One example of the design's inventiveness is the two-sided maze, which offers different degrees of difficulty. The game acknowledges diversity in learning methods and emphasizes inclusion by designing one side specifically for kids with ADHD and the other for normal

students. This adaption contributes to the achievement of the Sustainable Development Goals (SDGs) and fits in perfectly with the Universal Design for Learning (UDL) principles.

By including interactive features like ping pong ball balance and technologically aided language development, Navigate X transcends the traditional maze game. This dynamic method develops critical thinking, cooperation, and flexibility among students. In addition to being an educational tool, the maze game encourages virtues like ethics and resilience.

It has a significant positive effect on kids' learning, dismantling obstacles and fostering inclusion. Students learn alongside their peers through pair work activities, promoting ethical behavior and collaborative skills despite differences in learning profiles. This method of cooperative learning develops law-abiding, compassionate individuals who are able to make constructive contributions to their communities.

The maze game has great commercialization potential since it may be used in a variety of educational contexts including elementary schools and specialized learning centers. An A' in the Inclusive Education course and a presentation at the New Pedagogies for Deep Learning (NPDL) Showcase are just two examples of the accolades the invention has garnered.

To sum up, Navigate X is a revolutionary teaching tool that encourages inclusivity, teamwork, and positive values in addition to addressing the difficulties faced by students with ADHD. Its unique features and imaginative design make it an invaluable addition to a variety of learning environments.

Interview video : <https://youtu.be/Nrk2ljgYRW0?feature=shared>

Conclusion:

In conclusion, the exploration of posters at NALI 2023 has been a rich and enlightening experience, unveiling a tapestry of innovative approaches in education. Each poster presented a unique perspective, showcasing the diverse ways technology and pedagogy intersect to enhance teaching and learning. From augmented reality applications and AI-driven classroom debates to streamlined assessment systems and inclusive maze games, these initiatives exemplify the evolving landscape of education.

The depth of insights gained from engaging with presenters and delving into the nuances of each poster has broadened our understanding of Information and Communication Technology's role in education. The showcased projects reflect a commitment to addressing challenges, fostering critical thinking, and creating engaging learning environments. The integration of technology not only amplifies the educational experience but also prepares students for the demands of the future.

Furthermore, the adaptability and applicability of these initiatives across diverse educational contexts underline the universal impact of innovative teaching practices. As we navigate the

ever-evolving landscape of education, these posters serve as beacons of inspiration, offering glimpses into the transformative possibilities that arise when technology and pedagogy converge. NALI 2023 has provided a platform for educators and learners alike to share and celebrate advancements, ultimately contributing to the continual evolution of teaching and learning practices.