Dalberg

Project Albus

Harnessing AI for Higher Education: Global Insights and Malaysia's Emerging Initiatives

August 07, 2024

Project Albus is a distinguished digital transformation initiative, undertaken by Dalberg, in collaboration with Google for Education, to rigorously evaluate and demonstrate the educational benefits and scalability of Google's tools in pilot schools across the APAC region, supported by eminent academics and stakeholders. In a bid to determine such benefits and scalability, our team undertakes extensive research to broadly understand the potential of leveraging technology, including artificial intelligence, to improve teaching and learning outcomes.

As a part of this research brief, we have studied the existing evidence on the scope of leveraging AI to improve learning outcomes in higher education and the subsequent need for AI-literacy, along with the existing policy landscape aimed at promoting AI-usage and capacity-building in higher education classrooms specifically in Malaysia.

There exists strong evidence indicating that using AI technologies can significantly improve the overall quality of teaching and learning in higher education institutions in developed economies, especially the United States. Though such evidence of such cases remains in early stages in Malaysia, there exists significant potential in leveraging the learnings from the Western counterparts to improve higher education outcomes.

Use Case	Impact	Evidence	Relevance to Malaysia
Creating more interactive, and collaborative learning experiences	Enhancing engagement and satisfaction of students	**Location:** United States **Example:** In 2022, Arizona State University introduced a VR-based biology course, resulting in 9% higher lab grades i.e. a median lab grade of 96% compared to 87% in conventional courses. Additionally, students highly enjoyed the learning experience, rating it 4.4, on a scale of 5[1].	**Degree:** Medium **Rationale**:Given the multilingual and multicultural diversity in Malaysia, collaborative AI platforms can foster a more inclusive learning environment. However, given the current level of resource availability with the universities, it might be difficult to set up VR labs.
Offering more accurate, and speedier resolution of student queries	Personalising the learning process Saving students' and teachers' time on the resolution of queries	**Location:** United States **Example:** Georgia Institute of Technology used an AI-powered teaching assistant "Jill Watson" to address ~10K student messages per semester for a master's-level AI class, with a 97% success rate. Impressively, most of the 300 students were unaware that Jill was not a human,	**Degree:** High **Rationale**:Large class sizes and limited strength of the faculty in Malaysian universities tend to delay resolution of queries.Thus, AI-powered teaching assistants can serve as crucial tools to address the significant number of student queries.

[1] ASU News, VR biology lab experience leads to student success, 2022

		underscoring the AI's effectiveness and seamless integration into the educational environment[2].	
Increasing student agency by enhancing access to information	Improving efficiency and increased learning outcomes for students	**Location:** Australia **Example:** University of Adelaide uses an AI-powered chat assistance - AskAdelaide - which answers questions related to course materials, providing students with information on lecture notes, relevant academic papers and articles, and assignment guidelines. Students using 'AskAdelaide' frequently have reported a 20% improvement in assignment submission punctuality and a 15% increase in overall academic performance[3].	**Degree:** High **Rationale**: Given the vast diversity among students and the varying levels of academic performance, AI-tools can assist those struggling with the existing curriculum to get up to speed with their peers by improving their agency to define their own learning paths..
Grading assessment and providing real-time feedback	Ensuring consistent, unbiased evaluations of the students' performance Save teachers' time	**Location:** United States **Example:** At the Ithaca College in New York, professors are incorporating AI into their grading process by using tools like ChatGPT to evaluate and suggest improvements for student essays[4].	**Degree:** High **Rationale**: Large number of student-bases at times end up overburdening the limited number of faculty members, causing delays in grading and hampering the quality of assessment. Thus, AI grading tools can be significantly helpful, especially for introductory engineering courses featuring large class sizes.
Predicting students' longer-term academic performance to identify the need for intervention	Reducing student drop-out rates	**Location:** United States **Example:** The Ivy Tech Community College in Indiana developed an AI algorithm to predict students' final grades with 60%-70% accuracy by week two of the semester. This early prediction allowed 3,000 students to receive the necessary interventions to pass their classes[5].	**Degree:** High **Potential use case**: Malaysia faces a high student dropout rate, i.e. 12%[6], higher than the regional average. Such high dropout necessitates early prediction, and subsequently intervention to improve student retention.
Streamlining	Saving	**Location:** United States	**Degree:** High

[2] EdTech, Successful AI Examples in Higher Education That Can Inspire Our Future, 2020
[3] The University of Adelaide, https://www.adelaide.edu.au/ask-adelaide/
[4] CNN, Teachers are using AI to grade essays. But some experts are raising ethical concerns, 2024
[5] Google, Ivy Tech develops machine learning algorithm to identify at-risk students and provide early intervention,
[6] Roslan et al, Prediction of Student Dropout in Malaysian's Private Higher Education Institute using Data Mining Application, 2023

administrative tasks	teachers' time on non-core teaching activities	**Example:** The Georgia State University launched an AI-enhanced chatbot 'Pounce' to help incoming students get started with their administrative setup. The students who used Pounce to receive texts about assignments, academic support, and course content were more likely to earn a B grade or higher. For first-generation immigrant students, it helped them earn final grades about 11 points higher than their peers[7].	**Potential use case**:Malaysian universities often face administrative inefficiencies due to manual processes. AI systems which automate addressing admin queries, scheduling, admission, etc. can create a more supportive and responsive environment for students and staff alike.

In the light of the potential in leveraging AI for improving learning outcomes among higher education students, the government of Malaysia has been proactively pursuing initiatives aimed at building the requisite AI hard and soft infrastructure.

For instance, to bridge the access to digital devices, a prerequisite for facilitating AI adoption, the government-linked investment companies (GLICs) and government-linked companies (GLCs), in partnership with the Ministry of Education (MOE), in 2021, joined forces in a USD 35M initiative to provide lower-income families with laptops, tablets and data connectivity for online learning, including for higher education purposes[8].

In addition to providing digital devices, the Government has been investing in developing relevant AI knowledge materials. For instance, in 2021, the Government of Malaysia launched the 'MyDIGITAL Initiative', i.e. an umbrella initiative aimed at transforming Malaysia into a digitally-driven, high-income nation and a regional leader in the digital economy by 2030. This initiative includes several key initiatives to promote the uptake of AI in higher education and integrate digital technologies into the educational system, including building a robust knowledge bank of teaching materials in e-format, e.g. videos, podcasts, workbooks, etc.for higher education[9].

Further, to facilitate practical application of AI tools in classrooms and to build ecosystem-wide momentum, the government is partnering with leading national institutions. the Ministry of Higher Education (MOHE), in partnership with Universiti Teknologi Malaysia (UTM), has launched the MY AI NEXUS programme designed to bring together AI experts, universities, industries, and relevant stakeholders to enhance AI readiness in Malaysia by ensuring coordination in education, development, and application of AI.

In addition to investing in its infrastructure, the government has also begun focussing on building the capacity of both educators and students.

Recently, the Ministry of Education (MOE) allocated ~USD 200K to enhance the AI competency of 500 selected teachers. Further, the MOE has also partnered with Apple Professional Learning Specialist Malaysia to train and certify 100,000 teachers as '*Apple Teachers*'. This program emphasises the integration of digital tools, including AI, into educational practices[10].

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[7] EdTech, Successful AI Examples in Higher Education That Can Inspire Our Future, 2020
[8] The Malaysian Reserve, GLICs, GLCs provide RM150m to enable digital learning for B40, 2024
[9] Government of Malaysia, MALAYSIA DIGITAL ECONOMY BLUEPRINT
[10] Vietnam Plus, Malaysia accelerates building of ecosystem for AI development, 2024

Further, the Ministry of Higher Education (MOHE) has launched the '*e-Latihan Platform*' which covers online AI training courses for students. Such platforms largely seek to supplement the existing AI-literacy platforms, i.e. the '*AI Untuk Rakyat*', aimed at promoting nationwide AI-literacy among the citizens.

Given the potential use cases and favourable policy push, there exists a strong value proposition in developing robust evidence on the impact of AI for improving learning outcomes in higher education institutions.