SEAMEO CENTRES POLICY RESEARCH NETWORK (CPRN) SUMMIT 2025

Building Bridges to a Sustainable Future: Inclusive Collaboration and Innovation in Education, Science, and Culture

DIGITAL NATIVES AND THE AI DILEMMA: POLICY PATHWAYS TO OVERCOME MISCONCEPTIONS AND SHAPE THE FUTURE OF LEARNING

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INTRODUCTION

"Artificial Intelligence (AI) has emerged as a transformative force in education, influencing teaching methodologies, student engagement, and project development" - Sanusi et al., 2022

AI TRANSFORMS EDUCATION
Enhances teaching, learning, and engagement.

AI CAPABILITIES
Enables learning, problem-solving, and decision-making.

ADAPTIVE LEARNING
Personalises instruction through AI platforms.

INTELLIGENCE TUTORING SERVICE
AI supports students via virtual tutors.

STUDENT INNOVATION
AI aids project development and idea generation.

AI IN CREATIVE LEARNING
Supports design and problem-solving across disciplines.

RESEARCH FRAMEWORK

DIGITAL NATIVES AND THE AI DILEMMA: POLICY PATHWAYS TO OVERCOME MISCONCEPTIONS AND SHAPE THE FUTURE OF LEARNING

RESEARCH PROBLEM

- Widespread **misconceptions about AI's capabilities**
- Lead to **missed opportunities** for innovation in learning.

PURPOSE OF THE STUDY

- Examine how students **explore the potential of AI** in developing creative innovations for SDGs.
- Identify students' **perceptions, understanding, and experiences** related to AI use.

RESEARCH OBJECTIVES

- Investigate how students **engage with AI technologies** in addressing creative innovations aligned with SDGs.
- Assess the **potential of AI integration in learning** among students.
- Identify **misconceptions related to AI** in educational contexts.

SIGNIFICANCE OF THE STUDY

- Focuses on how students **engage with AI learning**.
- Contributes to the **sustainable learning** practices.
- Offers **evidence-based recommendations** to support responsible AI integration.

LITERATURE REVIEW | DEFINING ARTIFICIAL INTELLIGENCE AND ITS EDUCATIONAL IMPLICATIONS

ARTIFICIAL INTELLIGENCE IN EDUCATIONAL

Definition & Core Technologies

- AI refers to the simulation of human intelligence through learning, reasoning, and self-improvement.
- Key technologies: Machine Learning (ML), Natural Language Processing (NLP), and Neural Networks. (*Gruetzemacher & Whittlestone, 2022; Sanusi et al., 2022; Taboada et al., 2023*)

Purpose of AI Education

- Aims to provide foundational AI knowledge and prepare students for technological advancement (*Lee & Kwon, 2024*)

AI in K–12 Education

- Emphasises early AI literacy, ethics, and hands-on learning. (*Lee & Kwon, 2024*)
- Enhances computational thinking and problem-solving skills. (*Ng et al., 2023*)

AI & Sustainable Development Goals (SDGs)

- **AI integration supports:**
  - SDG 4 – Quality Education: Personalized, inclusive, and data-driven learning solutions.
  - SDG 3 – Good Health and Well-Being: Mental health and wellness support through AI tools.
  - SDG 11 – Sustainable Cities and Communities: Smart, inclusive educational infrastructure.
  - SDG 13 – Climate Action: Environmental education via intelligent content and analytics.
- **Aligns with global and regional agendas:**
  - UN SDGs, UNESCO Education 2030 Agenda, and SEAMEO Strategic Plan 2021–2030. (*UN, 2015; UNESCO, 2015, 2021, 2022; SEAMEO, 2023; OECD, 2021; World Economic Forum, 2020*)
- **AI empowers learners, educators, and policymakers to enhance education systems and promote equitable access. (*UN, 2020*)**

LITERATURE REVIEW

AI IN EDUCATION: ENHANCING LEARNING EXPERIENCES

Personalised Learning through AI

- AI-powered adaptive platforms customize instructional content based on individual learning patterns and progress.
- Improves knowledge retention and supports self-directed learning. (*Tan et al., 2022*)

Real-Time Performance Monitoring

- AI provides immediate feedback and identifies learning gaps.
- Supports educators in adjusting teaching strategies for targeted interventions. (*Bond et al., 2024*)

ADAPTIVE LEARNING AND PERSONALISED INSTRUCTION

INTELLIGENT TUTORING SYSTEMS (ITS) & AI-POWERED LEARNING ASSISTANTS

AI Tutors in Higher Education

- Offer personalised guidance, automated explanations, and instant academic support.
- Promote self-paced and independent learning. (*Zawacki-Richter et al., 2019*)

Emotionally Responsive Learning

- AI in simulation-based environments can adapt based on students' emotional cues.
- Increases motivation and engagement through dynamic instruction. (*Dai & Ke, 2022*)

AI + Virtual Reality (VR) Integration

- Creates immersive, hands-on educational experiences.
- Enhances environmental awareness and encourages advocacy among students. (*Cao & Jian, 2024*)

Experiential Learning Impact

- AI-enhanced environments support interactive simulations and experimental design.
- Promotes deeper comprehension and real-world application of knowledge.

LITERATURE REVIEW | AI-POWERED PROTOTYPING AND RAPID DEVELOPMENT

AI-DRIVEN PROTOTYPING & STUDENT INNOVATION

AI in Early Education & Prototyping

- AI-powered tools speed up the development of functional prototypes for student projects.
- Su and Zhong (2022) introduced an AI curriculum for early education, encouraging students to build AI-based projects and explore various programming models.
- Early exposure to AI programming prepares students for future tech advancements

Hands-On Learning with AI

- Lu and Fan (2023) developed a weather prediction project for high schoolers, showcasing how AI supports practical learning and data analysis.
- Real-world applications of AI promote deeper engagement and skill development.

Transforming Learning Experiences

- Personalised instruction
- Innovative tutoring
- Interactive simulations
- Support for project-based learning

CHALLENGES AND FUTURE DIRECTIONS

Ethical and Practical Considerations

- Ethical concerns
- AI misconceptions
- Bias in AI systems
- Data privacy and the digital divide (*OECD, 2023*)

Need for AI Literacy Programmes

- Educators and students need structured learning pathways to develop skills for an AI-integrated future.
- Building AI literacy is crucial to ensure responsible and effective use of AI in education.

Conclusion

- As AI evolves, its impact on education and student innovation will continue to grow, redefining how knowledge is created, shared, and applied.

METHODOLOGY OF THE STUDY

Study Focus

Examines students' engagement with AI in problem-solving.

Project Context

Based on the KU AIdeation Challenge 2024.

Research Design

Uses a quantitative, cross-sectional survey approach.

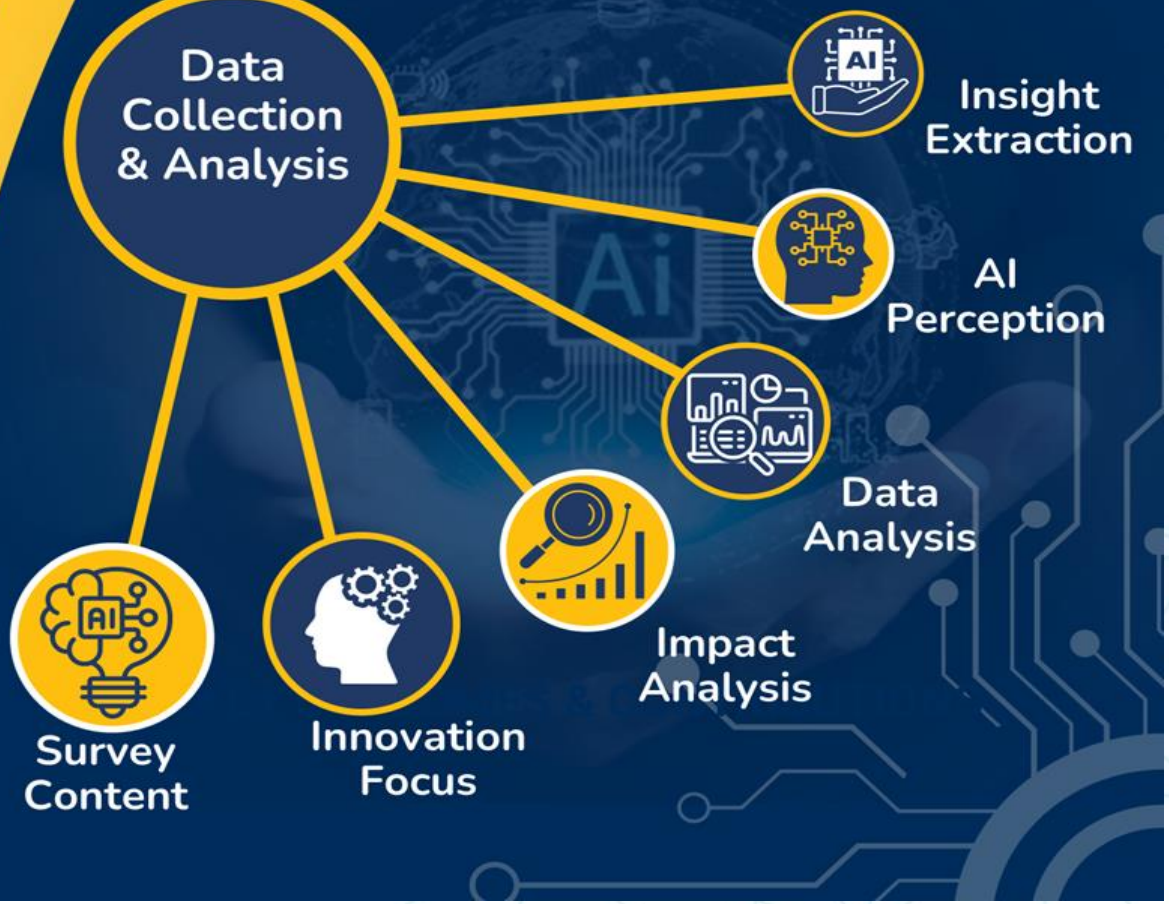
Data Collection & Analysis

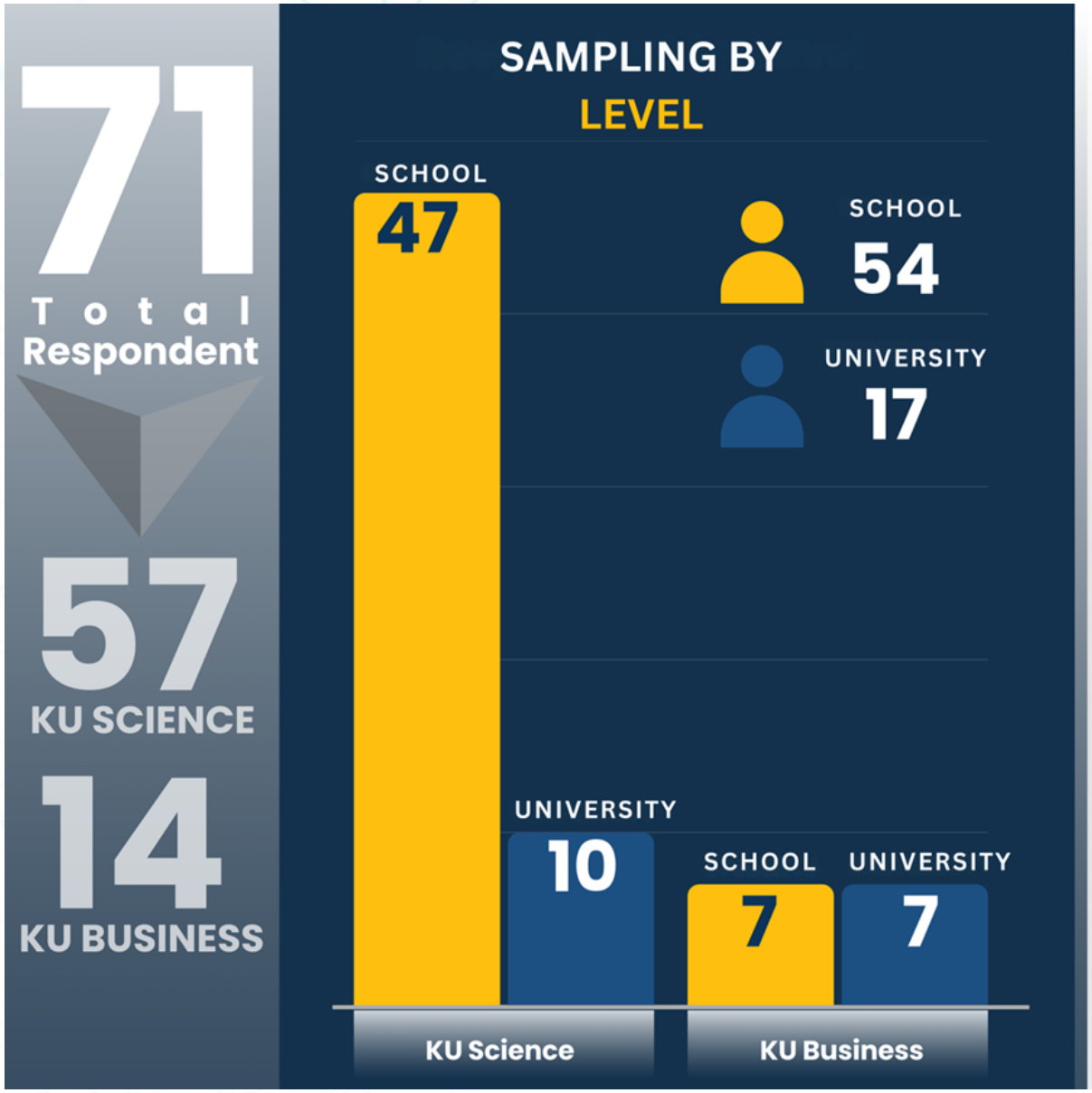
Utilises structured surveys and thematic analysis.

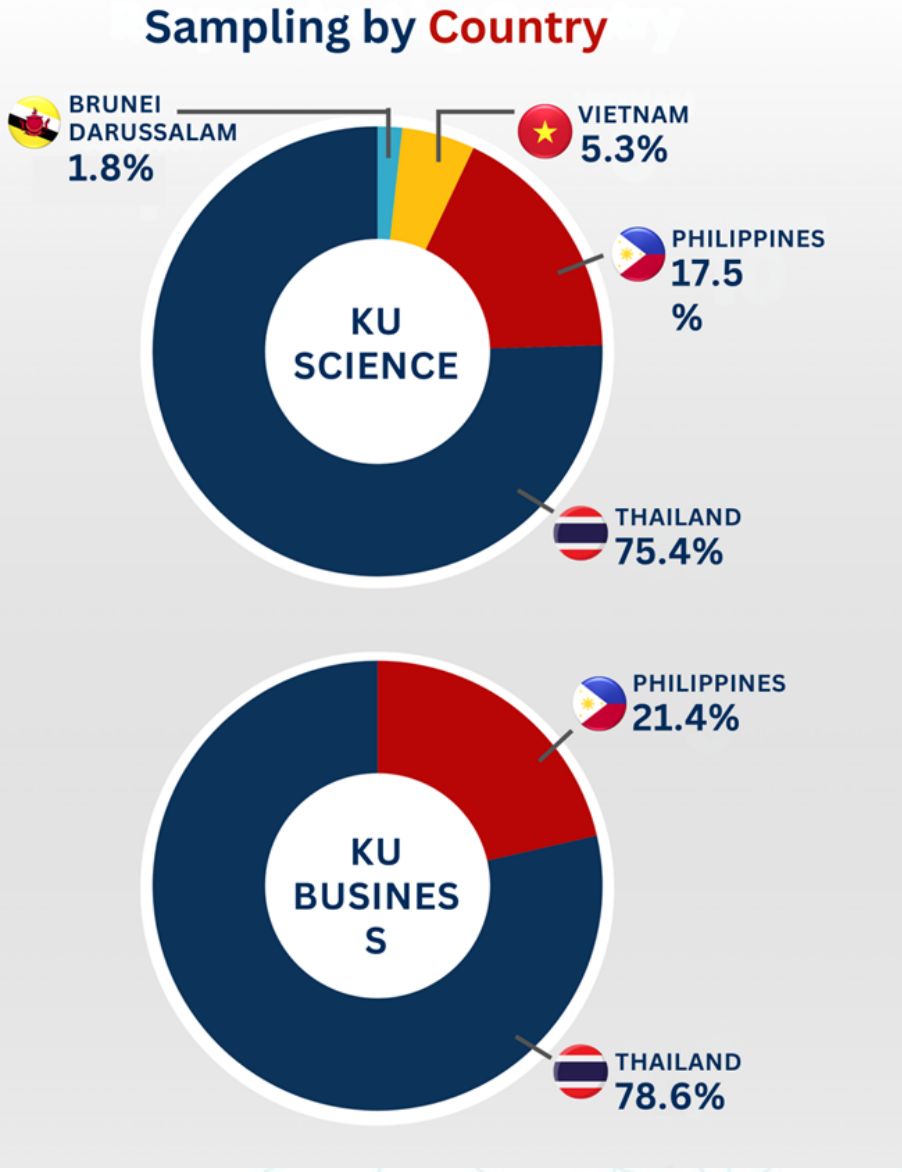
Sampling Method

Stratified sampling ensures AI exposure among participants.

RESEARCH APPROACH



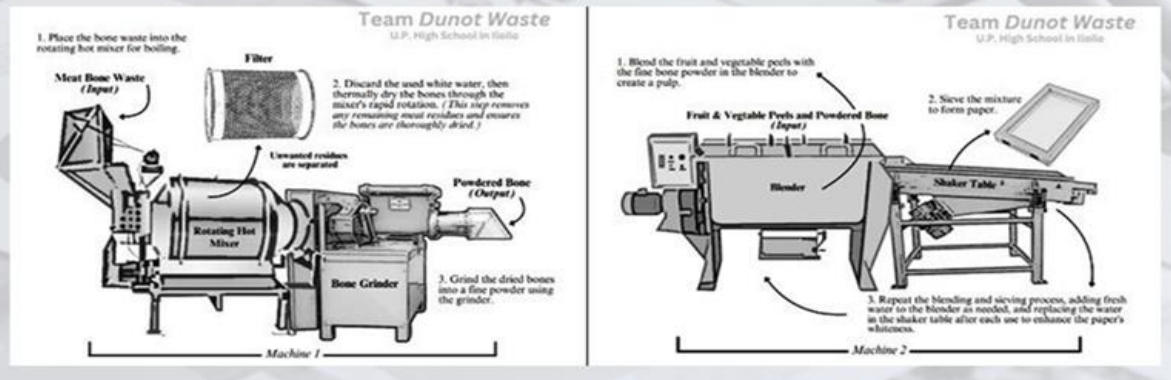

71
Total Respondent
57
KU SCIENCE
14
KU BUSINESS
SAMPLING BY LEVEL
SCHOOL
47
UNIVERSITY
10
SCHOOL
7
UNIVERSITY
7
KU Science
KU Business
SCHOOL
54
UNIVERSITY
17


Sampling by Country
BRUNEI DARUSSALAM
1.8%
VIETNAM
5.3%
PHILIPPINES
17.5 %
KU SCIENCE
THAILAND
75.4%
PHILIPPINES
21.4%
KU BUSINESS
THAILAND
78.6%

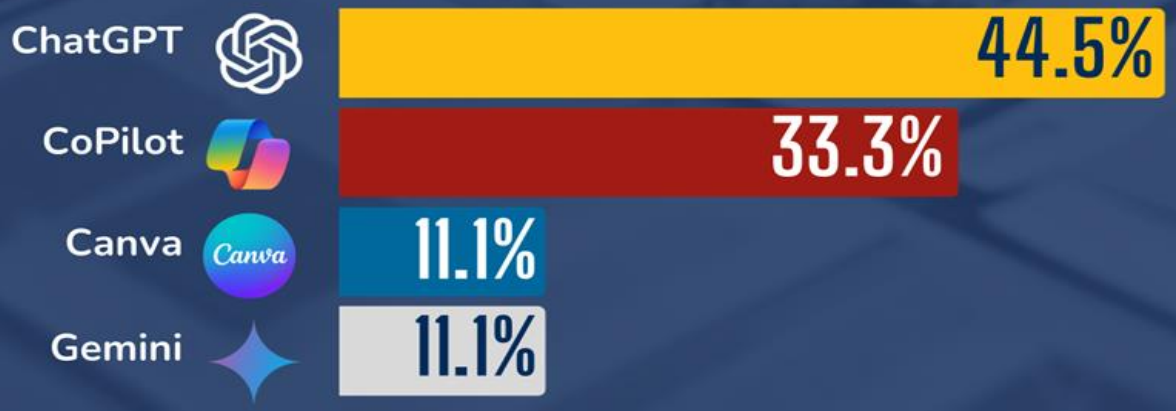
RESEARCH FINDINGS | SUPPORT & INNOVATION PROJECT ASSISTANCE

Students use AI to develop creative solutions to real-world problems, supporting SDGs like clean water, zero hunger, education, and climate action.

Participant's Innovation Sketches Using AI



Preferred AI Tools by Student



AI-BASED LEARNING PROJECT ASSISTANCE

RESEARCH FINDINGS | STUDENTS' INNOVATION & SOLUTION PROPOSALS

The KU AIdeation Challenge 2024 let students use AI to solve real-world issues tied to the SDGs, driven by local needs and personal experiences.

Student-Led Innovation with AI

- Students use AI creatively to address real-world challenges, showing initiative, innovation, and commitment to sustainable development.
- Projects demonstrate a strong link between emerging technologies and the Sustainable Development Goals (SDGs).

AI in Ideation and Verification

- AI tools were employed to verify the originality of project ideas.
- Facilitates:
  - Refinement of proposals
  - Generation of creative suggestions
  - Increased project impact

Overall Impacts

- AI empowers students to:
  - Engage in scientific inquiry
  - Make data-driven decisions
  - Contribute meaningfully to global issues
- Reinforces AI's transformative potential in education and sustainability.

RESEARCH FINDINGS | MISCONCEPTIONS OF AI IN EDUCATION

AI as a Universal Solution

- Many assumed AI could solve any issue without adapting to local contexts.
- Example: A food waste app failed due to ignoring cultural eating habits.
- Proposals often overlooked local infrastructure and digital readiness.
- Lack of stakeholder input led to impractical or unsustainable ideas.

Neglect of Human Oversight

- Some believed AI could function without human supervision.
- Example: AI sensors assumed to manage systems independently.
- Influenced by media portrayals of AI as fully autonomous.
- Ignoring human input risks ethical and safety issues.

Overestimation of AI Capabilities

- Students perceive AI as fully autonomous and capable of human-like reasoning.
- Example: Some participants expected AI to solve global issues independently.
- Overconfidence in AI leads to unrealistic expectations and misuse in educational contexts.
- Misunderstanding AI's limitations can hinder critical thinking and responsible usage.

Underestimating the Importance of Data Quality

- A few students overlook the role of high-quality, accurate data in AI performance.
- Example: Some participants assumed AI could produce correct solutions regardless of the data provided.
- Poor data leads to biased, inaccurate, or misleading AI outputs.

POLICY RECOMMENDATIONS FOR AI EDUCATION

Promote AI literacy, ethical policies, and equitable access while ensuring fairness, transparency, and responsible AI integration in education.

Implement AI Literacy & Awareness

AI Education
Address misconceptions through workshops, and integrate AI into curricula.

Public Engagement
Promote AI challenges, hackathons, and industry events.

Innovation Support
Fund research and AI incubation hubs.

Equitable Access
Provide AI resources and opportunities for all.

Establish Ethical AI Guidelines

Fair & Secure AI
Ensure transparency, accountability, and data privacy.

Inclusive AI
Prevent bias, support accessibility, and personalised learning.

Monitoring & Evaluation
Conduct regular audits and monitor AI effectiveness.

Feedback & Improvement
Implement feedback mechanisms for continuous AI refinement.

POLICY RECOMMENDATIONS FOR AI EDUCATION

The findings from this study align with UNESCO's framework, revealing gaps such as the lack of a human-centered mindset, limited ethical understanding of AI use, misconceptions about foundational AI concepts, and insufficient knowledge of systematic approaches to understanding AI.

UNESCO's AI Competency Framework for Students

Competency aspects	Progression levels		
	Understand	Apply	Create
• Human-centred mindset	• Human agency	• Human accountability	• Citizenship in the era of AI
• Ethics of AI	• Embodied ethics	• Safe and responsible use	• Ethics by design
• AI techniques and applications	• AI foundations	• Application skills	• Creating AI tools
• AI system design	• Problem scoping	• Architecture design	• Iteration and feedback loops

CONCLUSION

The AIdeation Challenge fosters AI innovation, addresses misconceptions, and promotes ethical, inclusive AI education through awareness, accessibility, and cross-sector collaboration.

Practical AI Application

Provides hands-on experience with real-world AI use.

AI Misconceptions

Gaps in digital literacy and awareness.

Education & Awareness

Calls for AI literacy, ethics, and responsible use.

Equitable Access

Advocates inclusive AI education for all students.

Future Collaboration

Encourages partnerships to advance AI integration.

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