



Beyond AI-Driven Learning

Teacher Agency in AI-Supported Pedagogy

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Introduction

Generative AI boosts lesson preparation efficiency and creativity, but over-reliance risks eroding teacher authority. Educators must critically adapt AI recommendations to preserve their pedagogical control, autonomy, and decision-making power.

Policy Framework

Integration is actively driven by national initiatives like the Malaysia Education Blueprint (2013–2025) to foster digital literacy and tech-enhanced learning.

Emerging Practice

In-service teachers are increasingly adopting Generative AI and chatbots for lesson preparation, content creation, and instructional support.

Reflection Question

How cultural, institutional, and contextual factors influence how Malaysian teachers exercise pedagogical decision-making authority when integrating AI.





THE PROMISE: WORKPLACE EFFICIENCY

- **Generative AI** acts as a powerful co-pilot, generating lesson outlines, materials, and worksheets in minutes.
- Drastically **reduces administrative burdens**, cutting preparation times by 40% to 50% for busy educators.
- **Sparks classroom creativity** by proposing diverse learning activities and teaching ideas.



Statement of the problem

The GenAI Dilemma: Transforming Prep Work While Risking Teacher Control

Generative AI boosts lesson preparation efficiency and creativity, but over-reliance risks eroding teacher authority. Educators must critically adapt AI recommendations to preserve their pedagogical control, autonomy, and decision-making power.



THE RISK: AUTONOMY EROSION

Excessive automation risks shifting instructional authority away from human teachers to **pre-programmed algorithms**.

- **AI outputs** can be generalized or inaccurate, requiring deep professional screening and context matching.
- Over-reliance may **dull critical reflection**, encouraging passive acceptance of AI recommendations.

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Research Design Overview

A two-phase sequential explanatory mixed-methods design integrating quantitative statistical rigor with qualitative contextual depth.

Phase 1: Quantitative

Online Teacher Survey

Examined baseline levels of teachers' AI utilization, teacher agency dimensions, and key pedagogical outcomes across school contexts.

Quantitative Survey Sample

In-service teachers across Malaysian schools

Instrument Structure: 4 sections (Demographics, AI-supported Teaching Activities, Teacher Agency, Teaching Outcomes).

Item Types: Multi-choice & 5-point Likert scale items evaluating classroom practice.

Phase 2: Qualitative

Semi-Structured Interviews

Triangulated quantitative data to provide deeper explanations of classroom decision-making, teacher autonomy, and contextual friction.

Qualitative Interview

Purposively selected survey respondents

Diverse Roles: Academic teachers, Heads of Department, and School Administrators.

Geographic Stratification: Urban, suburban, and rural educational contexts across Malaysia



Malaysia Lens

Teachers Maintain High Professional Agency Despite Moderate AI Use

Although educators report moderate AI adoption, qualitative findings corroborate that they maintain robust professional agency by positioning AI strictly as an assistive instructional tool rather than a replacement. Consequently, while learning outcomes show positive gains, teachers emphasize that continuous professional development and clear pedagogical guidance are vital to unlocking AI's full educational impact.

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2.88 / 5.0

AI UTILIZATION

MODERATE LEVEL

Teachers are in an experimental phase of adoption. They use AI for routine preparation tasks but resist fully integrating it into Core instruction due to ethical and validity concerns.



3.85 / 5.0

TEACHER AGENCY

HIGH LEVEL

Educators retain a powerful sense of classroom autonomy. Rather than obeying technology, they actively arbitrate when, where, and how AI recommendations should be implemented.



3.57 / 5.0

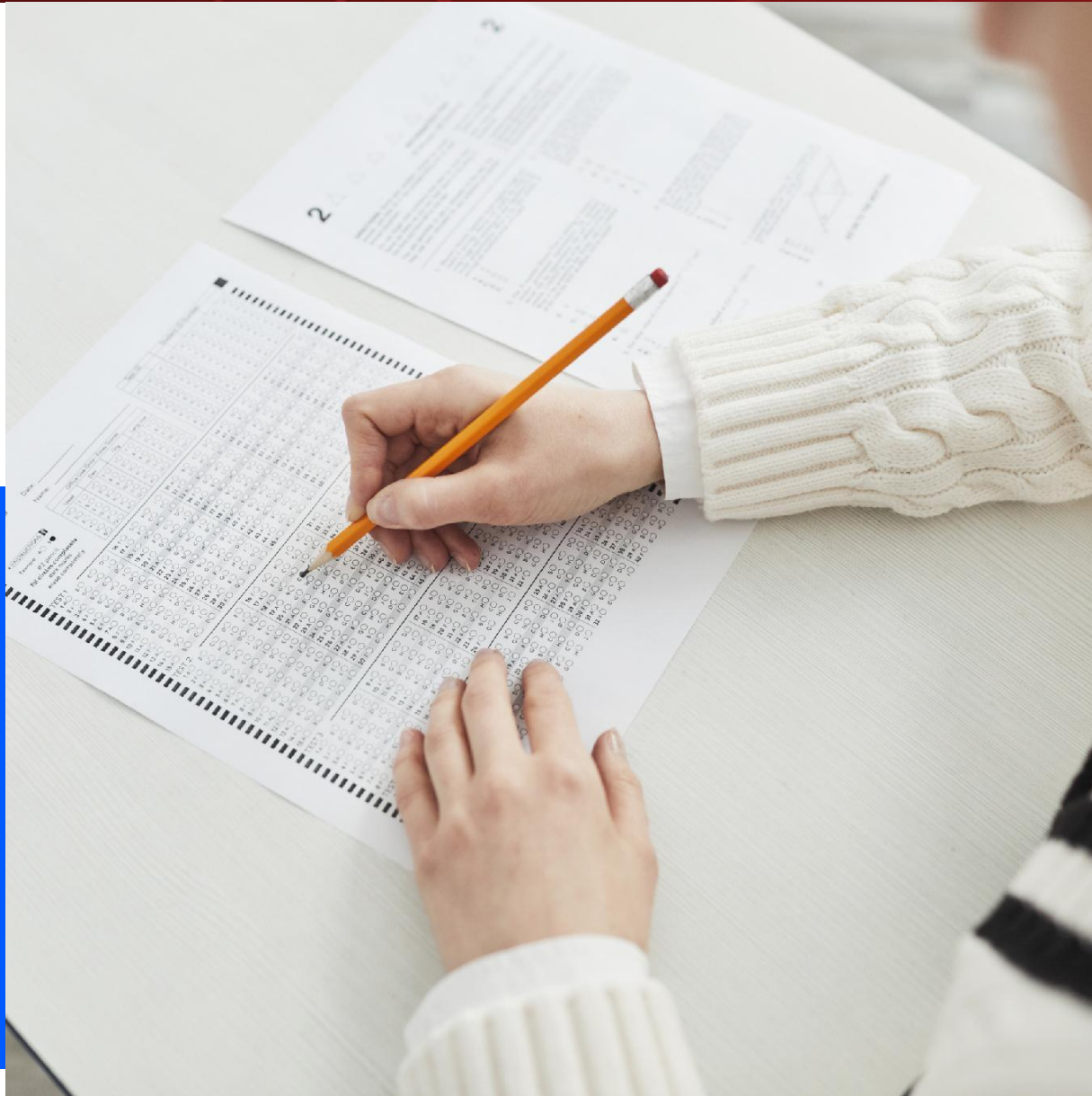
TEACHING OUTCOMES

MODERATE LEVEL

The perceived benefit is positive but not yet optimized. Although lesson preparation is drastically simplified, curriculum alignment challenges prevent full outcome optimization.

Malaysian Perspective

AI Streamlines Content Prep but Remains Blocked in Grading and Feedback

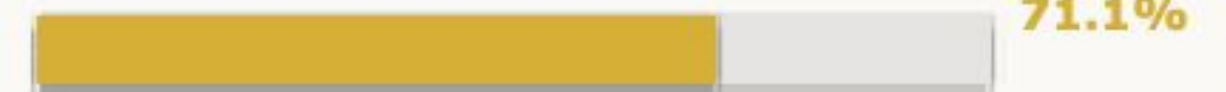


THE PROFESSIONAL BOUNDARY

"Assessment requires emotional judgement and human consideration. I avoid using AI to grade students' essays because AI does not understand my students' actual learning abilities."

— Senior Educators (P2, P8)

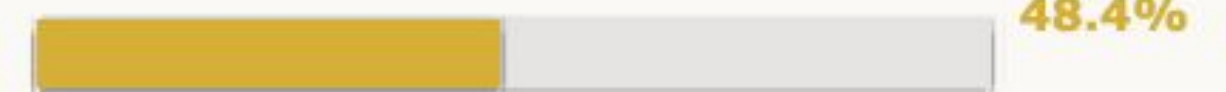
Developing teaching materials



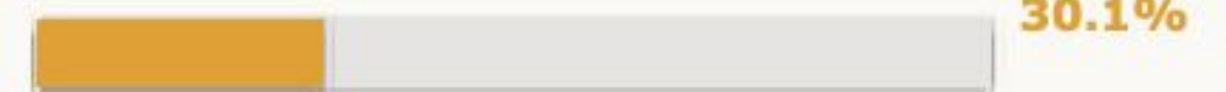
Designing learning activities



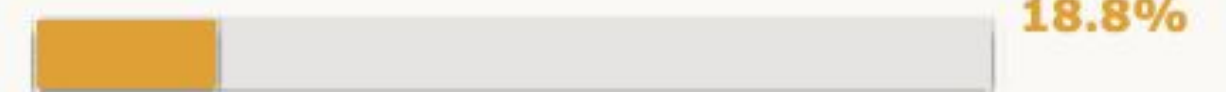
Lesson planning assistance



Classroom assessment design



Individualized student feedback





4.00 Mean Score

Prioritizing Original Plans when Conflict Arises

Teachers tend to prioritize their own original instructional plans and adjust AI suggestions accordingly rather than unquestioningly following technological directives.



3.93 Mean Score

Determining Learning Objectives before AI Engagement

Teachers continue to act as the central architects of pedagogy. Learning goals are established first; AI tools are integrated strictly to support those goals, not direct them.



3.73 Mean Score

Critical Adaptation for Planning and Material Design

AI outputs are used as references or raw starting points rather than finished blueprints. Teachers heavily customize planning content to fit structural school realities.



3.72 Mean Score

Reviewing and Modifying Content Prior to Classroom Use

Educators actively verify, contextualize, and filter AI-generated instructional content, ensuring strict alignment with educational standards and cultural backgrounds.

Malaysia Lens

Four Core Dimensions Reveal Consistently High Teacher Agency Across Practices

Purpose-Driven Use of AI

“Before opening the AI tool, I normally identify the topic and learning outcomes first. Otherwise, there is a tendency to get too many ideas from AI and lose focus on what I actually want the students to learn.”

Primary Teacher, P2, P4

Malaysia Lens

Teaching Outcomes in AI-Supported Pedagogy

Challenges in Aligning AI-Generated Content with Teaching Goals

The biggest issue is that AI does not always understand exactly what I want my students to achieve.

Sometimes the activity looks interesting, but it does not really match my learning objective, so I

Primary Teacher, P4, P5
Have to change it



3.80 High

Efficiency in Lesson Preparation

AI helps teachers save time and streamline lesson planning.

3.64 Moderate

Creativity in Learning Activities

AI supports idea generation and varied learning activities

3.26 Moderate

Alignment with Teaching Goals

Teachers still need to evaluate and adapt AI-generated content

How AI Empowers Teachers & Drives Classroom Success

A clear look at how AI adoption and educator autonomy work together to improve teaching



Empowerment

AI Strengthens Control

Rather than replacing educators, AI gives teachers more confidence and freedom in their instructional decisions.

$r = .481^{**}$ $p < .001$ (Moderate-Strong)

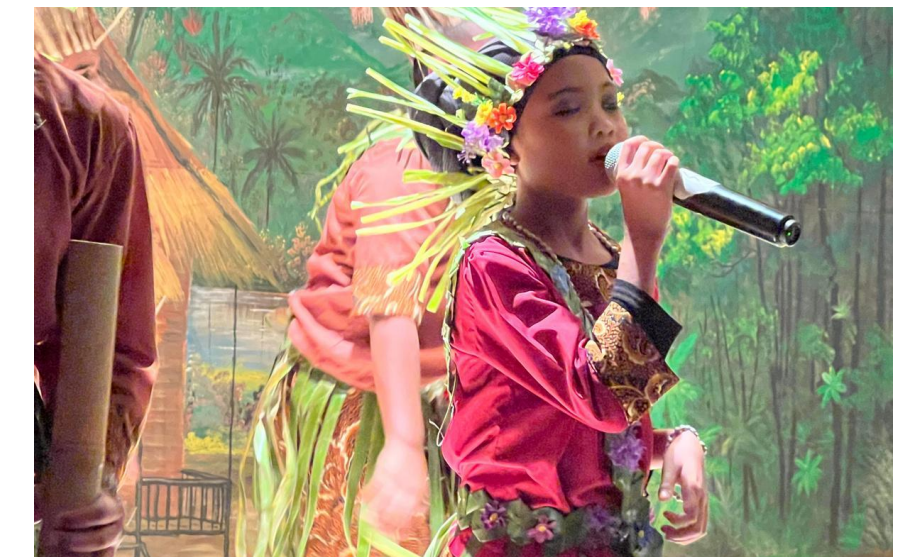


Strongest Impact

AI Boosts Teaching Results

Teachers using AI report greater lesson efficiency, richer instructional materials, and better day-to-day outcomes.

$r = .502^{**}$ $p < .001$ (Strongest link)



Foundation

Empowered Teachers Deliver

When educators feel in control of their teaching strategies, student achievement and classroom quality naturally rise.

$r = .314^{**}$ $p < .001$ (Positive link)



LOW AI USE: DIRECT

CONTROLLING AGENCY

- Individual teacher agency is the primary, unmitigated engine of classroom outcomes.
- Autonomy translates directly into performance, as decisions are designed, executed, and analyzed solely by the educator.
- Technology functions only as a peripheral tool, leaving traditional educational dynamics untouched.



HIGH AI USE: CO-ORCHESTRATED SHARED CONTROL

- The direct statistical link between individual teacher agency and classroom outcome weakens.
- Instructional control is partially reconfigured, shifting toward a collaborative, shared human-AI partnership.
- Agency is not lost; rather, the teacher transitions into an orchestrator who monitors and adapts automated suggestions.

Malaysia Perspectives

Moderation Analysis Reveals High AI Use Shifts Classrooms to 'Shared Control'

The Key Interaction Effect: $\beta = -0.24$ ($p < .001$)

Regression analysis reveals that AI utilization significantly moderates (curbs) the relationship between teacher agency and teaching outcomes, explaining an additional 5.02% of variance in outcomes ($F(3,252)=34.15$, $R^2=0.289$).



Teacher Agency & Pedagogical Control in AI Adoption

Educators Embrace AI for Workload Relief but Draw a Hard Line at Assessment

Theme 1

Instructional Support



- 40–50% prep time reduction reported
- Rapid drafting for worksheets and visuals
- Strict resistance to automated grading

Theme 2

Teacher Agency



- Prior learning objectives set independently
- Zero verbatim unedited asset adoption
- Active filtering of inaccurate outputs

Theme 3

Impact & Friction



- Substantial increase in lesson creativity
- Persistent curriculum alignment challenge
- Over-reliance risks passive thinking

WORKLOAD REDUCTION

"I frequently use ChatGPT and Canva AI to generate initial drafts of worksheets and group activity ideas. It saves a considerable amount of preparation time by almost forty to fifty percent."

School Administrator (P1, P5)

CRITICAL ADAPTATION

"I never use AI-generated materials exactly as they are. I always review them, modify the wording, and align everything with the national curriculum. AI sometimes produces content that is too general or even inaccurate."

Teacher (P7, P10)

THE DANGER OF PASSIVITY

"AI is extremely helpful, but if it becomes too dominant, teachers may gradually lose some of their independent decision-making because they begin following AI's patterns and become less motivated to think deeply."

Teacher & Admin (P2, P5)

REAL INSIGHTS FROM MALAYSIAN CLASSROOMS

AI in the Classroom: Co-Pilot, Not Autopilot

Teacher Insights

Pillar 1

Teacher Lead

- Goals First: Lessons planned before launching AI
- Full Control: Educators direct every teaching choice
- Smart Trial: Thoughtful testing without any rush

Pillar 2

Where AI Shines

- Fast Drafts: Instant worksheets and starter ideas
- Creative Spark: Novel prompts for classroom fun
- Human Grading: Real teachers grade student writing

Pillar 3

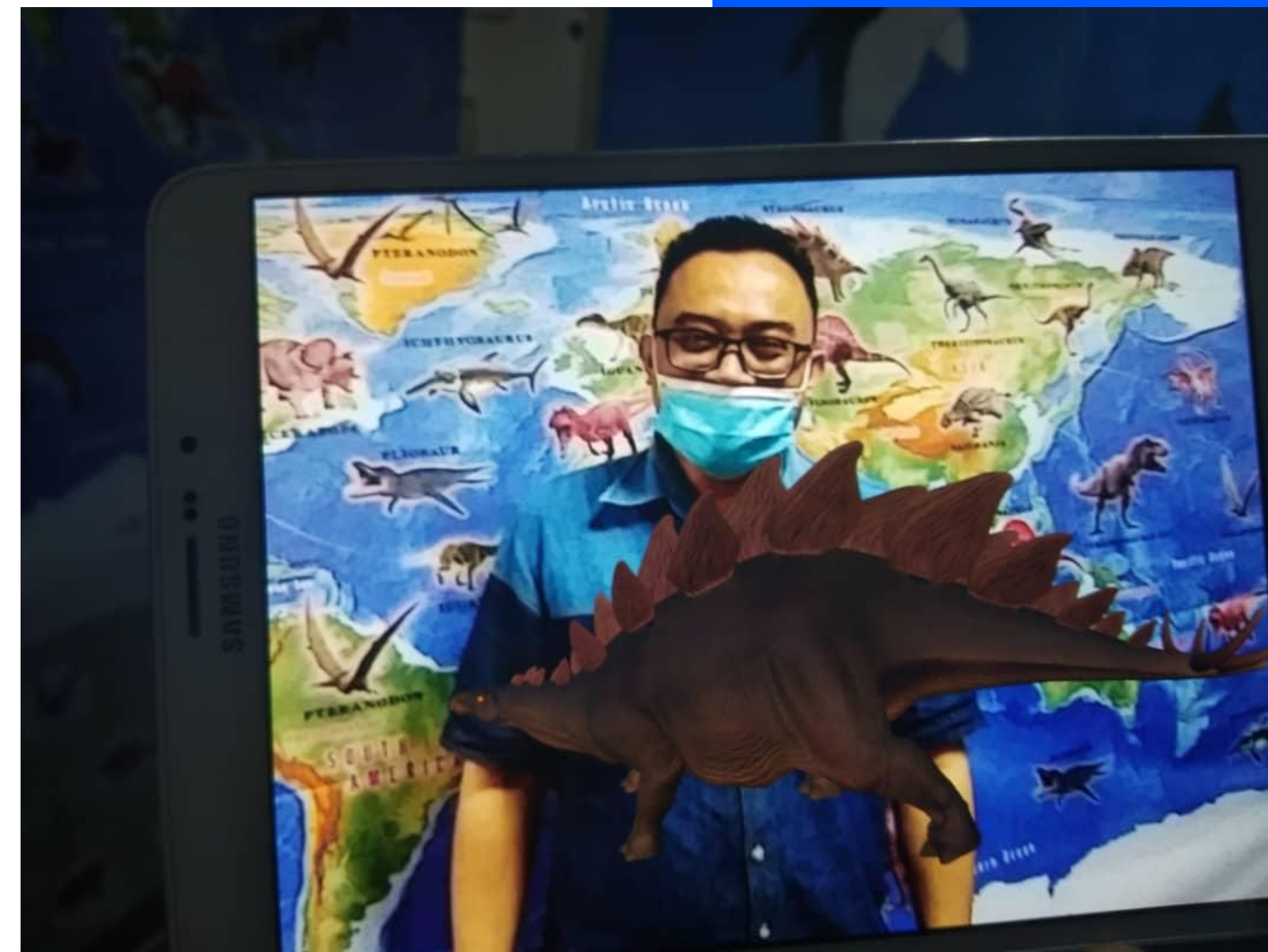
The Human Filter

- Time Saved: Cuts prep routines almost in half
- Local Touch: Content tuned for national syllabus
- Fact Checking: Catching mistakes before kids see them

Pillar 4

Stay in Balance

- Great Helper: An energetic assistant, not the boss
- Sharp Thinking: Avoiding autopilot over-reliance
- Real Empathy: Care that no algorithm can provide





01

Human-Centered Policies

Legislate AI as an Assistant,

Not an Authority

- Position teachers as the ultimate accountability holders and directors of classrooms.
- Establish strict limits against delegating critical evaluative tasks (grading, feedback) to AI.
- Formulate clear school policies outlining ethical use, student data privacy, and authorship.

INSIGHTS FROM MALAYSIAN



Three Strategic Priorities Ensure AI Empowers Rather Than Replaces Teachers

02

Evolution of CPD

From Technical Tool Use to Critical

Adaptation

- Shift professional development from basic AI prompts to critical evaluation training.
- Equip educators to spot algorithmic hallucinations and contextualize outputs.
- Build teacher confidence in modifying, selecting, and overriding AI recommendations.



03

Co-Orchestration Standards

Promote Collaborative Teacher-AI

Workflows

- Provide standards on balancing AI-driven efficiency with human pedagogical intuition.
- Encourage schools to implement systems where AI enriches lessons while teachers direct plans.
- Develop shared diagnostic tools to monitor when excessive AI use starts causing passivity.



Final Takeaway

Teachers Lead, AI Assists

Malaysian teachers thoughtfully adopt AI as a supportive classroom assistant while keeping strong professional control. They use generative tools to save preparation time and spark creative lesson ideas, but deliberately handle grading and student care themselves. Effective education uses AI as a helpful co-pilot, keeping human teachers firmly in charge.

Conclusion

Saves Daily Prep Time

Protects Human Assessment

Teachers Remain incharge

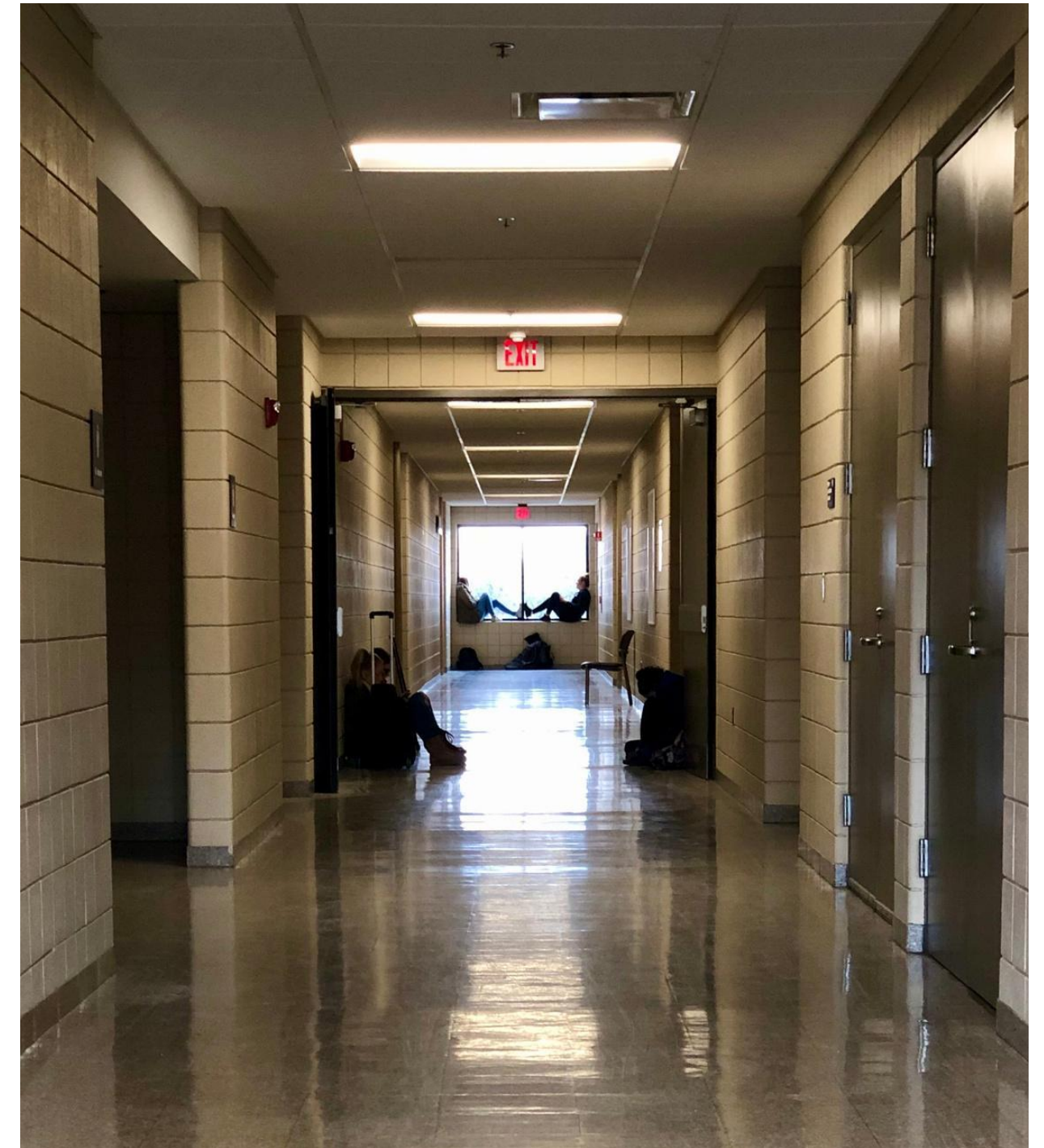


Implications

Guiding Educational Policy & AI Practice

Successful AI integration across schools requires a human-centred approach that preserves teacher agency at the core of instructional decision-making. To achieve this, educational institutions must pair ongoing professional development in critical AI literacy with clear governance guidelines for curriculum and assessment. By balancing technological efficiency with pedagogical autonomy, stakeholders can foster collaborative human-AI practices that amplify creativity without diminishing educator judgement.

Preserving pedagogical integrity while advancing digital literacy





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Thank You

NAVIGATING OUR FUTURE

Steered by Teachers, Anchored in Relationships, Propelled By AI



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Thank You

Tuninipot

*Knowledge of Nature,
Inspiration of Life*

Everyone has a story to share

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