SINGAPORE COUNTRY REPORT

40th ASEAN Council of Teachers + Korea (ACT+1) Convention

Navigating Our Future

Steered by Teachers · Anchored in Relationships · Propelled by AI

Presented by the Singapore Teachers' Union (STU)

Protecting and Promoting Teachers and Teaching since 1946

Executive Summary

The headline

Navigating Our Future means three things at once. Teachers steering AI at the classroom level. The foundation of human relationship holding everything in place. And AI deployed at the system level to make teachers' work more efficient and more effective, in the design of learning, the delivery of teaching, the assessment of understanding, and the support of every child. Efficiency without effectiveness would be productivity intensification. Effectiveness without efficiency would leave teachers still trapped at 53 hours. Both together are the test. MOE's own data, given in Parliament on 14 October and 4 November 2025, shows Singapore teachers have worked an average of 53 hours per week for five consecutive years [78 to 81]. Over the same period, Singapore reached the highest AI adoption and the highest AI training of any TALIS 2024 system. The 53-hour line has not moved. Singapore's experience suggests that adoption alone does not translate into recovered time. Structural mechanisms are needed. Section 3.6 sets out the framework Singapore's teachers propose. For our system, the working target is a shift from 53 to 44 hours per week by 2030, closing three-quarters of the gap to the OECD average of 41. Sister systems will set their own numbers against their own baselines.

Singapore context and verified figures

- **~31,000 teachers** across primary, secondary, and pre-university schools (MOE Education Statistics Digest 2025: 15,273 primary; 12,353 secondary; ~3,400 JC / Centralised Institute) [82]. STU represents ~13,000 educators [21].
- **National AI architecture:** NAIS 2.0 (Dec 2023), MOE EdTech Masterplan 2030 (Sept 2023), AIEd Ethics Framework (Agency / Inclusivity / Fairness / Safety), MOE AIEd Implementation Guide & Checklist (updated Feb 2026), national AI tools on SLS, AI@NIE, and the new MOE AI Literacy Professional Learning Roadmap organised around the **4 Learns**. Learn About AI, Learn to Use AI, Learn With AI, Learn Beyond AI [4 to 14][83][84].
- **A coherent K-to-workforce through-line:** on 21 May 2026, Minister Desmond Lee announced that all students in Singapore's institutes of higher learning (universities, polytechnics, ITE) will complete compulsory AI competencies from 2027 with the frameworks built around the same 4 Learns used in schools [85][86]. This makes Singapore one of the first systems in the world with an aligned AI-competency spine from primary to workforce.
- **Building the evidence base:** MOE has commissioned the *Singapore Longitudinal Early Development Study* (SG-LEADS) with A*STAR, beginning data collection in 2027 on Singapore children's AI usage patterns and their effects on learning and wellbeing [87].

What this report proposes

1. **Pillar I. Steered by Teachers.** Empower every teacher through tiered training (building on the new MOE PL Roadmap), subject-level advisory panels chaired by classroom teachers, a Teacher-Led AI Innovation Fund, co-design seats on every national AI tool, and a permanent Joint Committee between the profession and the Ministry on AI in Education.

2. **Section 3.6. Delivering the Time.** Seven mechanisms Singapore's teachers propose for how AI adoption can translate into time recovered. Framework working target for Singapore: 53 to 44 hours per week by 2030. Sister systems set their own numbers.
3. **Pillar II. Anchored in Relationships.** Strengthen student-teacher relationships through emotional pedagogy and Anchor Periods; strengthen student-student relationships through cooperative learning, peer mentoring, cross-age tutoring; build character through CCE; cultivate core thinking through dialogic and Socratic pedagogy.
4. **Pillar III. Propelled by AI.** Seven additional AI use cases to reduce workload (extended-response marking, differentiation, parent communication in Mother Tongues, SEN administration, curriculum tracking, substitute-teacher handover, and private teacher reflection), plus five governance commitments (Effectiveness Dashboard, Procurement Code, equity audits, environmental disclosure, Parent Transparency Portal + regional research consortium).

1. The Singapore Context and STU's Position on the Theme

Singapore is a city-state of approximately 6 million residents. MOE operates a unified national school system: approximately 31,000 teachers in primary, secondary, and pre-university schools serving roughly 420,000 students; pupil-teacher ratios of 15 at primary and 12 at secondary are comparable to the OECD average [82]. Three structural features shape why Singapore's AI-in-education story is distinctive: centralised pedagogy with decentralised practice; whole-of-government coordination (MOE with SNDGO, GovTech, IMDA, AI Singapore, NIE); and the quadripartite social compact Minister Chan Chun Sing has framed as constitutive of any successful AI rollout involving government, industry, academia, and unions and people [18][20].

STU, founded 19 October 1946 and now ~13,000 strong, is an affiliate of the National Trades Union Congress (NTUC), a foundational member of the ASEAN Council of Teachers, and a member of Education International [21]. STU's positions on AI rest on three pillars consistent with the General Secretary's long-standing advocacy: teacher agency, teacher wellness, and teacher growth [22]. These three pillars structure this report, and they shaped STU's contribution to this Convention's theme.

2. National Architecture: From NAIS 2.0 to the Classroom

- **NAIS 2.0** (4 Dec 2023). Vision: "AI for the Public Good, for Singapore and the World" [4]. Three systems, ten enablers, fifteen actions. AI talent target: 15,000 practitioners [5]. S$500m+ via AI Singapore under RIE 2020/2025; S$120m additional for AI for Science under Smart Nation 2.0 (Oct 2024) [13][24].
- **MOE EdTech Masterplan 2030** (Sept 2023). "Technology-transformed learning"; principle: "pedagogy first, students at the centre" [6][7]. Singapore Student Learning Space (SLS, 2018; ISTE Seal 2025); Personalised Digital Learning Programme (PDLP, full coverage by 2021); National Digital Literacy Programme [11][25].
- **AIEd Ethics Framework** . Four principles built on IMDA Model AI Governance + the Ethos of the Teaching Profession: Agency, Inclusivity, Fairness, Safety. Students learn ABOUT AI, USE AI, learn WITH AI, learn BEYOND AI [8][9].
- **MOE AIEd Implementation Guide & Checklist** (updated Feb 2026). six operating principles for AI in Education (about/use/with AI, teacher-blended AI use, guardrails against misuse, age-appropriate light supervised use, older students learning to harness AI ethically, schools enhancing other skills for an AI world) plus two principles for AI in Assessment (alignment to learning outcomes and academic integrity). Codifies the Teacher-in-the-Loop and Teacher-over-the-Loop distinction, with pedagogy first and students at the centre [83].
- **National AI tools on SLS** . These include the Adaptive Learning System (Maths P5–S2, Upper Sec Geography), Learning Assistant (Socratic), Short Answer Feedback Assistant, Speech Evaluation Tool, Authoring Copilot, Data Assistant, Appraiser Testimonial Generator (4,000+ teachers, 40,000+ testimonials). Safety: Litmus and Sentinel [10][11][12].
- **AI@NIE + MOE AI Literacy PL Roadmap** . See Section 3.3 for the full 4 Learns architecture and 100/200 series [14][28][84]. Smart Nation Educator Fellowship (2025) for Senior Specialists and Teacher Leaders [13]. Global AI Nexus of Schools (GAINS, Aug 2025): 23 schools, 7 countries; Singapore founding members HCI, SST, Nanyang Girls', Crescent Girls' [46 to 49].
- **Higher-education alignment:** all IHL students to complete compulsory AI competencies from 2027, using two frameworks (autonomous universities; polytechnics/ITE), both built around the MOE 4 Learns [85][86]. Announced by Minister Desmond Lee at NUS 120 Distinguished Speaker Series, 21 May 2026.
- **The evidence base:** MOE's parliamentary reply of 6 May 2026 confirms it funds the *Singapore Longitudinal Early Development Study* (SG-LEADS) with A*STAR, beginning data collection in 2027 on Singapore children's AI usage patterns and their effects on learning and wellbeing [87].

What this architecture does well, and where it strains

Singapore's design delivers safety, equity, and scale: every classroom inherits the same guardrails, every teacher the same vetted toolset, every student the same 4 Learns spine from primary through workforce. The strain shows in three places. The rank-and-file teacher is the recipient of decisions made above them, not yet a co-author. MOE-built tools deliver coherence and constrain experimentation in roughly equal measure. The Educator Fellowship and the 200-series modules reach those with the time and inclination to take them up; the

median classroom teacher needs deeper reach, in protected work hours. Sections 3–5 develop these tensions and propose responses.

3. Pillar I. Steered by Teachers

Agency, capacity, and autonomy at the classroom level. AI does not steer. Teachers do. Or AI ends up steering for them, by default.

3.1 The Singapore evidence

TALIS 2024: 75% of Singapore lower-secondary teachers use AI in their work, the highest among TALIS systems (with the UAE), vs an OECD average of about one-third [1][27]. 76% have received PD in AI, also the highest, vs only 9% in France [27]. 75% say teaching is their first-choice career (OECD: 69%); 79% of novice teachers say the same (OECD: 58%) [1]. Pre-service: AI@NIE, the GHCT framework (Generative, Human-Centric, Critical, Transformative thinking), NIE Certificate in Artificial Intelligence for Education (from July 2025) [28][29]. In-service: formal MOE/NIE PD (TCEF, AST, TWA+), the Singapore Learning Designers Circle (SgLDC), and the Smart Nation Educator Fellowship (2025) for Senior Specialists and Teacher Leaders [13][32][33].

> *"Autonomy comes with responsibility. Once you've developed the competent professional, let him do his job.", Mike Thiruman, Tec de Monterrey interview [22]*

3.2 The MOE AI Literacy Professional Learning Roadmap (2026): the 4 Learns and the 100/200 Series

MOE released the AI Literacy Professional Learning Roadmap for teachers in 2026, consolidating all AI-related PD in a single OPAL2.0 wiki [84]. Two features make this roadmap distinctive.

First: the 4 Learns framework as the single organising spine. The roadmap is structured around MOE's four pedagogical commitments, meaning Learn About AI (understanding what AI is and does), Learn to Use AI (skilful, purposeful use), Learn With AI (integrating AI into teaching and learning), and Learn Beyond AI (the durable competencies AI cannot replace). These same 4 Learns now anchor the compulsory AI competencies for all IHL students from 2027 [85][86], giving Singapore an aligned K-to-workforce competency spine.

Second: two-tier structure. The Roadmap distinguishes foundational modules (100-Series, online and self-paced) from deeper application (200-Series and Beyond, offered as workshops, micro-learning units, webinars, and learning communities from June 2026 via OPAL2.0):

Module	Focus	Status & timeline
AI 101	Foundational AI Literacy, via the MOE pilot glow! app	Mandatory. To be completed by end-2026 as part of the wider Public Service requirement [84].
AI 102	Introduction to AI Literacy for Teaching & Learning	Core module, via OPAL2.0. Published. Strongly encouraged for completion by end-2027.
AI 103	Introduction to Subject-related Use of AI	Core module. Published from June 2026 onwards. Strongly encouraged by end-2027.
AI 104	AI and Assessment	100-Series. Accessible via OPAL2.0 from July 2026.
AI 105	Use of AI Tools within and beyond SLS	100-Series. Accessible via OPAL2.0 from July 2026.
200-Series and Beyond	Moving from awareness to application: subject-disciplinary teaching, assessment design, and supporting or automating routine administrative tasks to free time for teaching-related work	Varied modes (workshops, micro-learning, webinars, learning communities). From June 2026, via OPAL2.0. Explored at teacher discretion.

The pedagogical thesis of the Roadmap is that teachers do two things in practice: they anchor AI use on sound pedagogy, and they adapt their practices to navigate evolving AI developments. "AI is evolving fast, but good teaching principles remain timeless" [84]. The Roadmap is embedded in the Singapore Teaching Practice via the EdTech Pedagogical Scaffold, so AI use

is treated as an extension of e-Pedagogy, not as a separate track. This is exactly the framing Pillar I of this Convention theme demands.

The ecosystem of support is deliberately layered: self-directed exploration through the modules; in-school Professional Learning Communities (PLCs); school-to-school Networked Learning Communities including the SgLDC [33]; and system-level MOE/NIE programmes including Subject Chapter professional learning opportunities [84].

The Singapore teachers' view: what the Roadmap does, and where it could reach further

The 4 Learns spine and the 100/200 architecture are substantial advances. AI 101 being mandatory, delivered through glow!, and completing by end-2026 is a significant piece of national coordination. The 200-series openings around administrative task automation match the workload emphasis of Pillar III of this report. Three further directions would, in the view of Singapore's teachers, deepen the Roadmap's reach. First, that all of AI 102 to 105 be completed in protected paid work hours, not on teachers' own time (Section 3.5.1 sets out how). Second, that at least 30% of every teacher's AI PD develop phronesis (situated ethical judgment) rather than only techne (Section 3.5.2). Third, that modules be co-designed with serving classroom teachers through subject-specific advisory panels (Sections 3.5.3 and 3.5.4).

3.3 Teacher agency: the Singapore approach

Singapore's teachers have taken a settled position on this. Singapore's tripartite tradition is mature. The right response is not to reach for adversarial rights but to make co-decision-making and shared training the everyday operating mode of AI in education. Where a teacher has had a meaningful seat at the design table, a meaningful voice in subject-level decisions, and the training to use these forums well, the question of "refusal" rarely arises.

The European Council's May 2026 Conclusions reach the same view at the regional level: teachers must "contribute to the design and evaluation of AI tools, in line with an approach based on digital humanism that ensures technology supports human agency and democratic values" [36]. The OECD's Reimagining Teaching in an Accelerating World (March 2026) calls for "educational generative AI systems designed with teachers, enabling them to monitor students' interactions with generative AI and actively shape its use in learning" [73].

3.4 Seven directions Singapore's teachers see for strengthening implementation

The context. The MOE AI Literacy PL Roadmap described in Section 3.2 is a significant advance. Building on it, Singapore's teachers, through STU, see seven directions in which implementation could be further strengthened. These are offered here as principles of teacher-led implementation, applicable in Singapore and potentially useful for sister systems working through the same design questions.

- **3.4.1 Complete every teacher's AI Practitioner Track in protected work hours.** Building on AI 101 as mandatory by end-2026 [84], a Practitioner Track (AI 102 plus AI 103 plus one 200-series module of the teacher's choice) could be completed by every serving teacher by 2028, with paid release time and substitute cover, not on top of existing workload.
- **3.4.2 Build phronesis, not just techne, into AI PD.** ≥30% of every teacher's AI PD hours devoted to situated ethical judgment through case-based dilemmas and ethics-in-context simulations, assessed by portfolio rather than by test. Anchored in the 2026 NIE finding that phronesis is the weakest dimension of teacher AI capability [58].

3.4.3. Subject-Specific Teacher AI Advisory Panels

One panel per subject area (English Language, Mother Tongue Languages, Mathematics, Sciences, Humanities, Arts, CCE, PE, CCAs), chaired by a serving classroom teacher, with members nominated jointly by STU, MOE, and the Academy of Singapore Teachers. Panels advise on AI tool design, classroom guidance, assessment policy, ethics, and, crucially, on the ongoing evolution of the 4 Learns Roadmap for their subject. Panels' professional judgment carries weight in MOE decisions on AI deployment in that subject; where a panel reasonably declines to endorse a deployment, MOE provides a documented response and revision plan.

- **3.4.4 Mandate teacher co-design seats on every national AI tool.** ≥3 serving classroom teachers in design-authority roles from inception; STU nominates one. Tools carry an explicit "Teacher Co-Designed" mark.

3.4.5. Teacher-Led AI Innovation Fund

Jointly governed by MOE and STU. Grants of S$5,000–S$30,000 awarded directly to serving classroom teachers (individually or in small teams) to pilot AI-supported pedagogical innovations. Recipients receive paid release time, AI@NIE coaching, and a TCEF presentation slot. Successful pilots scale via MOE adoption. Target: 100+ teacher-led pilots funded annually from 2027; ≥10 scale to MOE-supported tools by 2030.

3.4.6. A permanent Joint Committee between the profession and the Ministry

Quarterly meetings, an annual public report, and standing remit over (a) tool deployment and PD design, including annual review of the AI Literacy PL Roadmap; (b) the annual Workload Audit, the diagnostic instrument of Section 3.6; (c) teacher grievances arising from AI use; and (d) AI use in teacher evaluation, where the EU Council's May 2026 Conclusions explicitly say automated evaluation should be avoided [36]. Singapore's teachers see this joint governance forum as the load-bearing wall of any workable Time Delivery framework.

- **3.4.7 Embed AI Leadership in school leader preparation.** AI Leadership module in NIE's LEP and MLS by 2027, covering ethical AI leadership, teacher autonomy, parent communication, performance appraisal, and leading PLCs in AI-saturated environments.

3.5 Delivering the Time: A Framework Singapore's Teachers Offer

How AI Adoption Can Translate into Time Recovered

Pillar II is what the AI age most demands of Singapore's classrooms, and it is what AI alone cannot deliver. It depends on time. Time can only come from two places. From Pillar I's training and co-decision-making. And from Pillar III's workload-reducing AI use cases. But only if we actively prevent the recovered time from being silently reabsorbed into the next initiative.

The single question that decides whether the AI rollout has succeeded

In 2030, will Singapore teachers have more time for their students than they had in 2024? MOE's own data shows the answer for the last five years has been no. Working hours have held steady at 53 per week across all teaching levels [78 to 81]. Singapore's teachers believe this test needs to be made public, measurable, and binding, and offer here the framework by which it might be met.

3.5.1 Why absorption is the rule, not the exception

In every knowledge-work sector where AI has been deployed at scale, recovered time has rarely accrued to workers as reduced hours. Microsoft's 2024 Work Trend Index, drawn from 31,000 workers across 31 countries, found 75% of knowledge workers using AI, AI "power users" saving ~30 minutes per day; yet 68% still report feeling overwhelmed by the sheer volume and pace of work, and 46% report being near burnout [75]. The pattern is persistent overwhelm despite widespread AI adoption. The OECD's Reimagining Teaching in an Accelerating World (March 2026) names the dynamic explicitly for education: without intentional structural protection, AI productivity gains are reinvested in task expansion rather than worker time recovery [73].

Three Singapore-specific dynamics intensify the absorption risk: (a) system initiative flow, in which recovered hours create surface area for the next strategic priority; (b) kiasu parental expectation, in which "teacher has more time" is read as "more individual attention for my child"; (c) the professionalism trap, in which Singapore teachers fill found time with what they judge to be high-value work, not rest. Without explicit structural protection, professional commitment becomes the mechanism of its own erosion. Sister systems in the region will recognise variants of these dynamics in their own contexts.

3.5.2 Seven Mechanisms

The framework. The seven mechanisms below are the framework Singapore's teachers propose. They are designed to work together as a set; individually, any one can be neutralised. They are described here as they would apply in Singapore, and offered as a template that other systems may adapt to their own institutional realities.

- **M1 Measure net hours per teacher per term, not gross AI adoption.** An annual Workload Audit (Section 3.5.6) using TALIS-style time-use diary methodology, co-designed with teachers, audited independently, published publicly. Precedent: the UK DfE Workload Reduction Toolkit [76].
- **M2 One-in, one-out task retirement.** For every AI tool deployed, a corresponding manual task is formally retired. Listed publicly in the Joint Committee's annual report. Precedent: the UK Workload Reduction Taskforce's 2024 list of 23 administrative tasks teachers should no longer perform [77].
- **M3 Hard ring-fencing of Protected Relational Time.** Where AI saves teacher time, a defined share (proposed floor: 60%) is formally ring-fenced as Protected Relational Time and may not be reassigned to new task loads. The Joint Committee certifies annually; non-ring-fenced tools pause for review.
- **M4 Initiative moratorium during the AI absorption window.** A 24-month moratorium on new system-wide initiatives, with any exception during the window requiring a Workload Impact Assessment signed off by the Joint Committee. Genuine emergencies excepted. Precedent: NHS England workload-impact discipline; Wales National Workforce Strategy.
- **M5 Sunset clauses on AI tools that fail the time test.** Every national AI tool launched after 2026 carries an 18-month delivery window. If the Workload Audit shows no measurable, ring-fenced time savings in the work it was deployed to address, the tool is deprecated or substantially redesigned. The Joint Committee adjudicates.

- **M6 Structural improvement in pupil-teacher load.** A multi-year commitment to reduce average class size and/or expand Allied Educator and Teacher Aide deployment. AI productivity gains partly redirected to teacher establishment growth, not to staff substitution. The system's public position on which of these two models is operative should be explicit.
- **M7 A public political compact with a measurable target.** A public commitment, in the strongest institutional form the system allows, to a specific reduction in average weekly teacher working hours by 2030. Singapore's teachers believe the right target for our system is a reduction from 53 (MOE internal data, all teaching levels, stable 2020 to 2025 [78 to 81]) to 44 by 2030. That is a nine-hour reduction, closing three-quarters of the gap to the OECD average of 41. Sister systems set their own targets against their own baselines.

The 53 to 44 test

For Singapore, the working target Singapore's teachers believe would signal that AI is delivering on its promise is a reduction in average weekly teacher working hours, as measured by MOE's own internal survey, from 53 to 44 by the 2029 to 2030 school year. That is a nine-hour reduction. It closes three-quarters of the gap to the OECD average of 41 hours. It is the single measurable number that the profession itself sees as the honest test of the rollout. It is offered publicly, in this report, both as Singapore's own working target and as an example of the kind of measurable public commitment that sister systems in the region may wish to name for their own contexts. Numbers will differ. The principle of a public, measurable target holds across every system that has committed to AI in classrooms at scale.

4. Pillar II. Anchored in Relationships

The foundation that holds everything else in place. The relationship between teacher and student. The relationships students build with one another. The formation of character. And the ways of thinking that no machine can do for us.

4.1 The relational gap TALIS 2024 surfaced

The single most consequential TALIS 2024 finding for this Convention

Of seven lesson aims TALIS measures, the one Singapore teachers are least likely to report achieving, at only 64%, is "helping students to manage their own emotions, thoughts, and behaviour" [3]. This is precisely the area AI cannot help with. It is the relational pillar. Pillar II is the work of closing this gap.

Ang, Ong, and Li (2020), using a Singapore MOE dataset, validated the Student Version of the Teacher–Student Relationship Inventory (S-TSRI): satisfaction and instrumental help predict school belonging; conflict predicts aggression [39]. Singapore data confirming that the relational competencies of teachers materially shape student outcomes. The TALIS 64% sits beside the 27% of Singapore teachers reporting stress "a lot" (OECD: 19%) [3]: a world-class workforce performing relational labour under sustained pressure.

4.2 Strengthening Implementation: Deepen relationships, character, and thinking

What needs to change. The relational pillar is the most vulnerable to inadvertent erosion. The seven actions below prescribe practices, not principles. Each is anchored in Singapore's existing curricular infrastructure (CCE, the 21st Century Competencies framework, the Singapore Curriculum Philosophy) and international research.

- **4.2.1 Codify a Protected Relational Time policy.** Where AI saves teacher time, ≥60% formally recoded as Protected Relational Time (student conversations, parent meetings, advisory and pastoral work, PLC reflection) and not reassigned. Tracked in the Workload Audit.

4.2.2. Master the Pedagogy of Emotion: close the TALIS 64% gap

Of seven lesson aims TALIS 2024 measured, the one Singapore teachers are least likely to report achieving, at only 64%, is "helping students manage their own emotions, thoughts, and behaviour" [3]. The single TALIS finding AI cannot help with, and the foundation on which all the others depend. Action: ≥20 hours of annual PD on social-emotional pedagogy, anchored in NIE's CCE frameworks and the Singapore Teaching Practice, with peer-supervised case practice. Senior Teachers and Lead Teachers in social-emotional pedagogy mentor colleagues at the school level. Target: from 64% to 80% by TALIS 2030.

- **4.2.3 Establish daily Anchor Periods for protected relational and reflective time.** Morning circles or advisory (relational), at least one CCA/week (social-embodied), one weekly reflection session (metacognitive). Devices physically absent or stored. Build on MOE's existing P1–P3 hands-on principle [16] and extend, age-appropriately, upward.

4.2.4. Strengthen student-student relationships through structured peer learning

AI tools place each student in a one-to-one dialogue with a machine, risking the thinning of horizontal student relationships at the very moment they are most needed. Action: systematise three structures across all MOE schools. (a) Structured Cooperative Learning per subject (Kagan / Johnson & Johnson protocols, with individual accountability and positive interdependence); (b) within-grade peer mentoring (buddies for new students, students with SEN, students managing transitions); (c) cross-age tutoring (upper primary to lower primary, secondary to primary, JC to secondary), with paired training and CCE credit. Use the AI workload-savings from Pillar III to give teachers the time to design and reflect on these structures.

- **4.2.5 Embed character formation in AI pedagogy through Singapore's CCE curriculum.** Build CCE units from Upper Primary through JC on (a) Honesty in the AI age (attribution, integrity), (b) Effort and perseverance (when not to use AI), (c) Responsibility (impact of AI use on others), (d) Care (relationships AI cannot replace), (e) Resilience (the discomfort of doing one's own thinking).

4.2.6. Cultivate core thinking skills through dialogic and Socratic pedagogy

Generative AI's central pedagogical risk is that it shortcuts the cognitive effort that produces understanding. The OECD's Digital Education Outlook 2026 warns that overreliance on tools providing direct answers "can reduce students' active engagement, improving task performance without corresponding learning gains" [42]. The defence is not to ban AI. It is to design lessons that demand the kind of thinking AI cannot easily do. Action: systematise across the school week the following: Dialogic Teaching (Robin Alexander's protocols), Socratic Seminars; Philosophy for Children (especially lower primary); Visible Thinking routines (Project Zero); claim-evidence-reasoning argumentation in science and the humanities. These are the pedagogies that build the 21st-century competencies MOE has long named. They cannot be done by AI; they make AI useful by making students stronger thinkers first.

- **4.2.7 Strengthen the communities of adults around each child.** Require every form teacher to have ≥1 non-transactional, non-AI-mediated conversation per term with each student's primary caregiver. MOE policy that AI-generated classroom analytics are inputs to teacher and PLC reflection only, never to performance evaluation, and never visible to parents or external evaluators without teacher consent [36][56].

5. Pillar III. Propelled by AI

At the system level. Pillar III is where AI does its proper work. Not as a substitute for what the teacher does in the classroom (that is Pillar I), but as the force-multiplier that makes teachers' work both more efficient and more effective. Two dimensions must move together. AI must save teacher time by reducing the routine and administrative load that has kept our teachers at 53 hours a week. And AI must make the work of teaching and learning genuinely better. Better design of learning experiences. Better differentiation. Better assessment of what students actually understand. Better support for every learner. Singapore has built the most coherent national AI toolset of any small system in the world. The next phase must widen its reach on both dimensions, deepen the evidence base under it, and tighten the accountability around it.

5.1 What SLS delivers today, categorised by work process

STU's honest assessment of the current SLS toolset against the dual test of efficiency and effectiveness is as follows. The improvements cluster asymmetrically. On the student learning side they are already substantial. On the teacher teaching side they are real but narrower, with clear coverage gaps that Section 5.6 addresses.

Work process	SLS tool	What it improves
Student learning: personalisation of pathway	Adaptive Learning System (ALS). Maths P5–S2, Upper Sec Geography	Differentiation at scale that a single teacher cannot practically deliver to 40 students simultaneously. Each student gets appropriate challenge.
Student learning: inquiry-based dialogue	Learning Assistant (LEA), secondary; P4+ supervised	Socratic dialogic method at scale. The pedagogy research consistently ranks as most effective, made available to every student.
Student learning: language practice	Speech Evaluation Tool (SET), English and MTL	Private, unlimited, non-judgemental pronunciation and fluency practice. Impossible to replicate one-to-one with a teacher.
Teacher assessment: real-time insight	Data Assistant (DAT)	Surfaces class-wide misconceptions from qualitative responses in real time. This is genuinely new work. Teachers previously had no practical way to see what an entire class was thinking.
Teacher assessment: feedback velocity	Short Answer Feedback Assistant (ShortAnsFA), close-ended short answers only	Tightens the feedback loop so students learn from mistakes sooner. Time saved AND learning-process improved. Narrow scope: not for essays, projects, or oral work.
Teacher design: ideation	Authoring Copilot (ACP)	Improves the ideation and drafting phase of lesson planning. Broader idea generation, better first drafts. Time saved AND design-process improved.
Teacher administration: testimonials	Appraiser Testimonial Generator (4,000+ teachers; 40,000+ testimonials [12])	Pure administrative time saving. Narrow but valuable.

What SLS does not yet cover in teacher work processes. Seven areas of teacher work remain outside the current SLS toolset. Extended-response marking (essays, projects, oral work, since ShortAnsFA covers close-ended only). Differentiation of teacher-facing resources (ACP drafts one resource, not tiered versions). Parent communication, including in Mother Tongues. SEN documentation (IEPs and Learning Support Plans). Curriculum coverage tracking against MOE syllabus. Substitute-teacher handover. Private teacher reflection to support professional growth. Section 5.6 proposes seven use cases that close these gaps, each judged against both efficiency and effectiveness, and each preserving teacher human-in-the-loop.

The overall picture. Singapore's national AI toolset delivers strong effectiveness gains on the student learning side (personalisation, dialogic learning, language practice), real but narrower effectiveness gains on the teacher work side (formative insight, feedback velocity, design ideation), and modest time savings on discrete administrative tasks. The seven additions in Section 5.6 extend teacher-work coverage across both dimensions, and Sections 3.5 and 3.6 ensure that the gains reach every teacher and translate into recovered time rather than absorbed intensification. School-level examples of adjacent innovation: Yuan Ching Secondary (Leung Yulun's ChatGPT pedagogy [51][52]); Peirce, Fuchun, ASRJC [44][53]; AICET / SoftMark at St Andrew's JC and Codaveri for coding [54]; the Global AI Nexus of Schools founding members HCI, SST, Nanyang Girls', Crescent Girls' [46 to 49].

5.2 Seven Additional AI Use Cases: Efficiency and Effectiveness Together

What needs to change. Singapore's toolset is technically strong but has clear coverage gaps on the teacher-work side (Section 5.1). The seven additions below close those gaps, and each is judged against two tests, not one. First, does it save teacher time? Second, does it make the work of teaching itself better, whether through deeper feedback, sharper differentiation, richer parent communication, more responsive SEN support, better-informed teaching decisions, or safer teacher reflection? Time saved is measured within the framework set out in Section 3.6; effectiveness gained is delivered through Pillar II's relational, character-forming, and thinking-cultivating work. All seven preserve teacher human-in-the-loop, integrate with SLS rather than adding standalone tools, respect MOE's off-limits ground (notably automated wellbeing assessment of students or teachers) [15][16][36], and align with the MOE AIEd Implementation Guide's principles [83] and the "supporting or automating routine administrative tasks" priority in the MOE PL Roadmap's 200-Series [84].

5.2.1. Extended-Response Feedback Assistant (essays, projects, oral work)

ShortAnsFA helps with close-ended short answers; ShortAnsFA itself notes it is "suited for close-ended, short-answer questions, but not mathematical computation-based questions, where the nuances of problem-solving and showing working are critical" [12]. The majority of marking time, which covers essays in EL, Literature, History, and General Paper, MTL assessments, and project work in D&T, Humanities, and Sciences, remains manual. Singapore teachers report 6.4 hours of marking per week [3]. The Extended-Response Feedback Assistant generates draft formative feedback against teacher-defined rubrics; clusters student responses by common strengths and weaknesses; preserves teacher human-in-the-loop on every output. Build on AICET's SoftMark pilot at St Andrew's JC [54]. Target: marking time down to no more than 4 hours per week by 2030.

- **5.2.2 Differentiation Copilot.** Generates three or four tiered versions of the same lesson resource (entry, on-level, stretch, with-scaffolding). Pairs with ALS readiness data. The "Pedagogy of One" Minister Chan has named [38], delivered through teacher hands, not as an AI-direct path to each student.
- **5.2.3 Parent Communication & Translation Copilot.** Drafts notes and meeting summaries; translates fluently into Chinese, Malay, and Tamil. Integrated with Parents Gateway. Teacher reviews every draft. Does not handle wellbeing communications without explicit teacher framing [16]. Supports volume; teachers protect depth (Action 4.5.7).

5.2.4. IEP and Learning Support Plan Co-pilot

Individualised Education Plans and Learning Support Plans for students with SEN are essential, individualised, and administratively heavy. Allied Educators (LBS), SEN Officers, and Form Teachers face significant documentation burden. No national AI tool yet supports them. The Co-pilot, co-designed with these teachers, drafts IEPs against MOE templates, clusters intervention strategies by need profile, and tracks goal attainment longitudinally. Teacher/AED human-in-the-loop on every plan. Tool drafts paperwork; never makes pedagogical decisions for the child. Target: administrative time per child reduced ≥40% by 2028 with quality maintained or improved.

- **5.2.5 Curriculum Coverage & Syllabus Alignment Tracker.** Auto-maps content covered against MOE syllabus from lesson plans and SLS activity records; flags gaps; recommends re-teach opportunities. Teacher reviews; tracker never auto-adjusts pacing.

- **5.2.6 Substitute Teacher Brief Generator.** Within 30 minutes of leave being lodged: one-page brief for the relieving teacher, covering what was taught, what is expected, teacher-flagged student notes (no AI inference), and ready-to-use SLS materials.

5.2.7. Private Teacher Reflection Companion (teacher-owned, opt-in)

Reflective practice is foundational to Singapore Teaching Practice and NIE's teacher education models [31]. AI can support this, but only if the architecture is non-negotiable. Architectural commitments: (a) data resides under the individual teacher's account, not the school's or MOE's; (b) outputs never accessible to school leaders, MOE, or external evaluators without the teacher's affirmative consent for a named purpose; (c) the tool surfaces patterns in the teacher's own reflections over time, asks reflective questions (drawing on NIE's GHCT and Reflective Practice frameworks [28][31]), and signposts relevant PD; (d) STU has audit rights on data architecture and use. The tool exists to deepen growth, not to extract it.

5.3 Governance and Accountability

- **National AI-in-Education Effectiveness Dashboard.** Annual, public. Tool-level adoption, time saved per tool (from Workload Audit), learning impact, equity disaggregation, AI-related grievance registry. First publication 2027.
- **National AI Procurement Code for Education.** Every AI tool used in schools discloses model provenance, data flows, bias testing, age suitability, environmental footprint, and a teacher-readable plain-language summary. Build on AI Verify and Project Moonshot [4][23] and the Council of Europe draft instrument [74].
- **Equity-by-design audits on every national AI tool.** Before deployment and annually thereafter, disaggregated by SES, MTL and language background, SEN status, and gender. Where gaps appear, design changes required before scale-up.
- **Environmental footprint disclosure.** Annual reporting of estimated energy and water footprint of major AI tools, alongside use volumes. Green-AI preference in the Procurement Code.
- **Parent Transparency Portal + ACT+1 Regional Research Consortium.** Portal via Parents Gateway: which SLS AI tools the child used, what data, what AI-generated feedback. Regional research consortium anchored at NIE Singapore with KERIS Korea and ASEAN partners on the longitudinal effects of AI on cognition, workload, and equity, building on MOE's own SG-LEADS study with A*STAR from 2027 [87]. First report at the 41st Convention.

6. Voices from Singapore Schools and Educators

6.1 The classroom voice

> *"We don't shy away from using AI. But we use it in a very deliberate and purposeful way, so that AI or any piece of technology doesn't take away the essence of learning."*, Educator featured in GovTech Decoded, 2025 [10]

> *"When an answer ChatGPT provided was inaccurate, I showed them that asking the question in smaller parts gave the correct answer. So they also learnt how to ask questions skilfully."*, Mr Leung Yulun, Chemistry Teacher, Yuan Ching Secondary School (President's Award for Teachers 2021) [51]

6.2 The teacher-leader and union voice

> *"When classroom visits are done only for evaluation, teachers become anxious, lessons become 'performances,' and authenticity is lost. But when visits are conducted for support, something powerful happens: trust grows, practice improves, and learning becomes real."*, Mike Thiruman, LinkedIn [55]

A consistent theme across STU's public communications: AI tools intended to relieve teachers must not become surveillance tools that intensify scrutiny. The same principle applies to AI-driven classroom analytics under development by A*STAR with NIE [56]. This is the basis of Actions 4.5.7 and 5.6.7.

6.3 The pre-service and academic voice

> *"Teaching AI in schools needs to go beyond a skills-based approach. Singapore's AI4S and ALS rollout are a promising start, but must connect to deeper critical thinking, ethics, and civic literacy."*, Prof (Emeritus) Looi Chee-Kit & A/P Loh Chin Ee, NIE [57]

Looi and colleagues' 2026 study of 19 mid-career Singapore teachers found that those with higher intelligent-TPACK levels produce stronger AI integration action plans, but phronesis is the weakest dimension [58]. This is the empirical anchor for Action 3.5.2.

6.4 The minister's voice

> *"We need high trust before we need the high touch, and before that, we need high tech."*, Minister Chan Chun Sing, Global Lifelong Learning Summit, 1 October 2024 [18]

> *"AI cannot supplant learning; it must enable it."*, Minister Desmond Lee, July 2025 [17]

> *"There is a risk that AI may become a shortcut that bypasses thinking and learning, and causes cognitive offloading, and that students become overly reliant or trusting of AI output."*, Minister Desmond Lee, ST Education Forum, 1 April 2026 [59]

> *"What is important is the mastery to combine and apply both AI and their deep knowledge meaningfully within their own discipline. This seeks to ensure a coherent as well as cumulative learning journey from school, through the IHLs, and into the workforce."*, Minister Desmond Lee, NUS 120 Distinguished Speaker Series, 21 May 2026, announcing that all IHL students will complete compulsory AI competencies built around the MOE 4 Learns from 2027 [85][86]

> *"Students must stay grounded in critical thinking amid the AI push."*, Minister Desmond Lee, 4 March 2026 [88]

In Parliament on 25 February 2026, Minister Lee confirmed that MOE is studying the impact of AI on students' basic recall and higher-order thinking; emphasised that direct teacher-student interaction "remains vital"; and stated that AI tools are not used to evaluate student wellbeing, saying "that is the sole domain of our educators, MOE staff" [15][16]. On 6 May 2026 he confirmed the launch of the Singapore Longitudinal Early Development Study (SG-LEADS) with A*STAR to gather Singapore-specific evidence on children's AI usage patterns from 2027 [87]. These are the anchors for Actions 4.5.7, 5.6.7, and the regional research consortium in 5.7.

7. Addressing Parents' Concerns

Parents in Singapore are co-educators, often anxious, and entitled to plain-spoken answers. Eight concerns; eight answers.

1. Will AI replace my child's teacher? No. AIEd Ethics requires teacher human-in-the-loop on every AI output [9][10]. The MOE AIEd Implementation Guide codifies Teacher-in-the-Loop and Teacher-over-the-Loop as the two acceptable modes [83]. The relational dimension is where teachers are irreplaceable.

2. Will my child stop thinking for themselves? This is a real risk MOE is actively studying [15][87]. Safeguards: P1–P3 hands-on (no required AI use); AI from P4 only with teacher supervision [16]; national exams AI-free; MOE's LEA uses Socratic guidance [17]; Action 4.5.6 systematises dialogic pedagogy. At home: avoid AI as homework solver; require your child to explain their thinking; treat AI as a tutor, never a ghost-writer.

3. What about screen time? Singapore restricts AI in early years and embeds digital wellness in the curriculum. Action 4.5.3 proposes daily Anchor Periods. At home: set explicit limits; no AI as a babysitter; AI used together with your child [62].

4. Is it fair if some children have ChatGPT at home and others don't? Minister Lee has called this "evergreen" [16]. SLS delivers AI equally; ComLink+ and Opportunity Fund target additional support [16]; Commitment 5.7 (equity-by-design audits) is the tool-side answer.

5. My child's teacher asked them to use ChatGPT below the platform's age limit. Should not happen. Minister Lee to Parliament: "If the tool has an age restriction, then we will not use it for children below that age, simple as that" [16]. Raise directly with the school and MOE.

6. How do I know AI is not collecting data on my child? SLS is governed by Singapore's PDPA and the AIEd Ethics Framework. Student data is anonymised; AI is not used to evaluate student wellbeing [16][64]. Commitment 5.7 proposes a Parent Transparency Portal.

7. Will AI widen the kiasu race? A structural risk Singapore has not yet solved. Equity-by-design audits are part of the answer; the other part is parental: insist your child uses AI to learn, not to win [63][65].

8. What is the right age for my child to start with AI? MOE's age-graded approach is the most defensible baseline in any major system: P1–P3 awareness only; P4 onward supervised MOE AI tools; secondary onward broader use with explicit ethics and attribution teaching. Safest at home: SLS first, then ChatGPT Study Mode or Claude for Education Learning Mode for older students.

8. Singapore's Experience, Offered to the Region

Singapore does not present its experience as a template. Every system has its own history, its own institutional culture, and its own political grammar for how change is proposed and delivered. What Singapore offers here is a case, examined honestly, from the perspective of the country's teachers. Nine observations follow, grouped under the three pillars of this Convention's theme.

On Pillar I. Steered by Teachers.

1. **Every teacher, not just the top of the profession.** A structured, tiered training roadmap organised around a common competency framework reaches deeper than fellowships that touch only Senior Specialists and Teacher Leaders. Singapore's emerging 4 Learns framework, delivered across schools and now extended to institutes of higher learning [84 to 86], is one working example of such a spine.
2. **Phronesis matters as much as techne.** Situated ethical judgment is what turns a technically capable AI-using teacher into a professionally sound one. 2026 NIE research suggests it is the weakest dimension of Singapore teacher AI capability [58]. Every system should treat this as core PD content.
3. **Teacher voice as constitutive, not consultative.** Co-design seats on national AI tools, subject-specific advisory panels chaired by classroom teachers, and permanent joint governance forums make teacher voice structural rather than episodic. Singapore is at an early stage of this shift.

4. **Grassroots innovation from the median classroom.** Teacher-led AI innovation funds, with paid release and coaching, let good ideas emerge from where the practice actually happens.

On Pillar II. Anchored in Relationships.

5. **Protect relational time structurally, or lose it silently.** Where AI recovers teacher hours, a defined share needs to be ring-fenced as relational time (student conversations, parent meetings, advisory, PLC reflection) or those hours will be reabsorbed. This is Singapore's experience, and the OECD's finding for education systems generally [73].
6. **The pedagogies AI cannot do deserve equal investment.** Structured cooperative learning, peer mentoring, cross-age tutoring, dialogic teaching, Socratic seminars, and character formation embedded in each system's own values curriculum. These are what remain when AI has done what AI does.
7. **Keep early years and key spaces AI-free.** Singapore's age-graded approach (hands-on P1 to P3; supervised AI from P4; broader use with explicit ethics teaching from secondary) has proved defensible. National assessments in Singapore remain proctored and AI-free. Automated AI assessment of student wellbeing, or of teacher performance, is treated as out of scope.

On Pillar III. Propelled by AI.

8. **The four AIEd Ethics principles hold up in practice.** Agency, Inclusivity, Fairness, Safety [8][9], operationalised through Teacher-in-the-Loop and Teacher-over-the-Loop moderation on every AI output [83].
9. **Public governance of the AI estate.** An Effectiveness Dashboard, a Procurement Code that discloses model provenance, equity audits by design, environmental disclosure, and a Parent Transparency Portal. What is not publicly measured tends not to happen. A public, measurable target for teacher working hours forms part of this: Singapore's own working target is set out in Section 3.6, a reduction from 53 to 44 hours a week by 2030. Numbers will differ across systems; the principle of naming a target that the profession itself sees as honest holds across all of them. The next ACT+1 Convention would be a natural moment for member systems to share where they have landed.

Singapore's own recent institutional movement is worth reporting to the region in this same spirit. In Parliament on 4 November 2025, Minister Desmond Lee set out the Teacher Work Management Framework, ongoing AI-enabled productivity tools, school-level pacing flexibility for new initiatives, expansion of Allied Educators, and protection of teachers' vacation time [79]. The AI Literacy Professional Learning Roadmap released in 2026 [84], and the extension of the 4 Learns framework to all institutes of higher learning from 2027 [85][86], have brought significant coherence to teacher AI development across the education continuum. The commitment on 6 May 2026 to fund the Singapore Longitudinal Early Development Study (SG-LEADS) with A*STAR from 2027 [87] begins to build the Singapore-specific evidence base on AI's cognitive effects that the system has itself said is still forming [15]. Singapore's teachers welcome these developments, will continue to work within Singapore's mature tripartite tradition to strengthen them further, and offer this report as a case examined honestly, work in progress rather than work concluded.

Teacher wellbeing. Student wellbeing.

Steered by teachers. Anchored in relationships. Propelled, but never replaced, by AI.

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