



INDUSTRY WHITE PAPER · EDUCATION & ARTIFICIAL INTELLIGENCE

AI and the Future of *Education*

An evidence based examination of how artificial intelligence will reshape teaching, learning, qualifications and the workforce, and a strategy for Australia's TAFEs and universities.

86%

OF EDUCATION
ORGANISATIONS
USE
GENERATIVE AI

+78M

NET NEW JOBS
BY 2030

4%

OF ROLES AT
HIGH
AUTOMATION
RISK

80%

TERTIARY
ATTAINMENT
TARGET, 2050



ACKNOWLEDGEMENT OF COUNTRY

Origae acknowledges the Traditional Custodians of Country throughout Australia, and their continuing connection to land, waters and community. We pay our respects to Elders past and present, and we recognise the role of First Nations people in the education and skilling of this nation.

ABOUT THIS REPORT

AI and the Future of Education is an independent industry white paper published by Origae and authored by Dr Nick Patterson. It brings together the most authoritative public evidence on artificial intelligence in vocational and higher education, including peer reviewed research and primary policy sources from Jobs and Skills Australia, the Tertiary Education Quality and Standards Agency, the Australian Skills Quality Authority, the review of the Australian Qualifications Framework, the Australian Universities Accord, the OECD, UNESCO, the World Economic Forum and Stanford University.

Figures are the most recent available at the time of writing in June 2026. Every statistic in this report is referenced, and the full source list appears on the final page.

METHODOLOGY

This paper is a synthesis of peer reviewed research and published policy and statistics, rather than original survey work. Where sources differ in reference period or definition, the most recent national figure has been used and the source noted inline. Each claim was checked against its original source. The paper sets strategic direction, and it stops short of detailed institutional design, which is specific to each provider.

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INSIDE THIS REPORT

Contents

01	Executive Summary The intelligence dividend in education	04
02	The Moment Adoption has run ahead of readiness	05
03	The Shape What AI in education becomes	07
04	Students New literacies, real integrity, fair access	08
05	Teachers Relief, scale, and the evolving craft	09
06	Jobs & Skills What graduates must be able to do	10
07	Qualifications Rebuilding the architecture of recognition	12
08	The Institutional Response Direction for TAFEs and universities	14
09	Outlook A three to five year horizon	15
10	A Practitioner's Perspective Personal strategies from the author	16
11	By Sector Two moves for every sector	18

4%

This is not a story about machines replacing people. The most thorough Australian study to date finds that only around 4% of roles face a high risk of automation from current generative AI, and that the dominant effect is to support human work rather than replace it.²

SECTION 01

Executive Summary

For two centuries, formal education has been organised around one scarce resource, the attention of an expert teacher. Artificial intelligence is loosening that constraint. The institutions that work out what to do with abundant, personalised support, and what to keep firmly in human hands, will shape the next era of Australian education.

86%

of education organisations now use generative AI, the highest adoption of any industry

MICROSOFT 2025¹

45%

of educators worldwide report receiving no AI training at all

MICROSOFT 2025¹

+78M

net new jobs worldwide by 2030 as work is transformed, not eliminated

WORLD ECONOMIC FORUM 2025⁶

4%

of Australian roles at high automation risk; the dominant effect is augmentation

JOBS AND SKILLS AUSTRALIA 2025²

80%

tertiary attainment target by 2050, up from around 60% today

UNIVERSITIES ACCORD 2024¹⁵

1 Jul 25

new VET standards require people, not AI, to certify competency

ASQA 2025¹⁶

THE HEADLINE MOVES

1 · Treat AI literacy as core. Every student and every staff member needs it. The training gap, not the technology, is the binding constraint.¹

2 · Redesign assessment across whole programs. Protect the judgements that certify a qualification, rather than patching one task at a time.¹²

3 · Rebuild qualifications around durable human skills and the capabilities that complement AI.^{2,6}

4 · Make micro credentials a genuine, stackable pathway, with real recognition and credit, not a marketing label.^{13,14}

5 · Keep people accountable for judgement. AI is the assistant and never the arbiter; the regulators have drawn the same line.^{16,12}

The reasoning is simple. An institution that governs AI well graduates people the labour market is short of, protects the integrity of its qualifications, and frees its teachers to do their most valuable work. The difference between that future and the alternative is the quality and the speed of the decisions taken now.

02

SECTION 02 · THE STATE OF PLAY

The Moment

A general purpose technology has reached classrooms faster than any institution planned for. Students adopted it within months. Governance is still being drafted.

Something unusual has happened. A general purpose technology has reached classrooms, lecture theatres and training workshops faster than any institution planned for. Students adopted generative AI within months. Governance frameworks are still being drafted.

The numbers tell the story plainly. Education leads every other industry in generative AI adoption, yet roughly 45% of educators worldwide, and 52% of students in the United States, report receiving no AI training at all.¹ The tools are in everyone's hands. The capability to use them well is not.

Formal systems are responding, but unevenly. Two thirds of countries now offer or plan to offer school computer science, double the share in 2019, and 81% of United States computer science teachers agree that AI should be part of foundational computer science education. Fewer than half feel

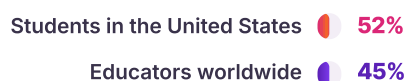
equipped to teach it.³ Intent has run ahead of capability at every level of the system.

Regulation is further behind still. UNESCO issued the first global guidance on generative AI in education in 2023, and warned that the absence of national regulation in most countries leaves the data privacy of users unprotected and institutions exposed.⁴ When the OECD examined the question in 2023, none of the countries it reviewed had introduced specific regulation for generative AI in education, and only a small number had published voluntary guidance.⁵

There is a deeper pattern here worth naming. New technologies in education have always been adopted by individuals long before they are governed by institutions, and generative AI has compressed that lag from years into months. Students reach for the most capable tool available. Policy committees meet on a slower clock.

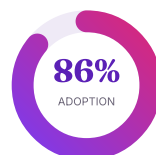
The training gap in education

Share who report receiving no AI training¹



Education leads every industry in adoption, yet trails on training.

Highest of any industry



86% of education organisations now use generative AI, the highest adoption rate of any sector measured.¹

The risk is not that AI arrives. It has already arrived. The risk is that usage, policy and capability drift apart until a crisis forces a defensive response.

SECTION 03 · THE AI NATIVE INSTITUTION

What AI in education becomes

To govern AI well, leaders need a clear picture of what it actually does in education, beyond the noise. On this point the research is consistent. A systematic review of 138 studies found that the dominant applications gather into a few areas, namely personalised learning, intelligent tutoring, assessment, and administration.⁷

An earlier and foundational review reached the same conclusion, and added a warning that still holds. Educators are largely absent from the research itself, which means the technology has often been designed around learners and systems rather than around the professionals who teach.⁸

Large language models change the texture of all of these. They make personalised feedback, adaptive tutoring and learning support available at a scale that was not possible before, while introducing real risks around misinformation, academic integrity and equal access.⁹ The same capability that helps a

struggling student at midnight can also produce a confident falsehood, and the two cannot be separated. They are properties of the same technology, to be managed rather than removed.

It helps to think in two horizons. In the near term, AI is an assistant. It drafts feedback, generates practice material, answers routine questions and eases administration. In the medium term it becomes more capable of acting on its own, through adaptive learning environments, tutors available outside class hours, and an emerging AI native institution whose curriculum, assessment and support are designed around abundant intelligence rather than bolted onto scarcity.

The shape AI takes in any institution is a choice, about which tasks to delegate, which to support, and which to protect. The research is clear that AI can tutor, mark, personalise and predict. It is far less clear, and far more important, what an institution decides to keep as the work of people.

The question is no longer whether AI can tutor, mark and personalise. It is what we want people to remain responsible for once it can.

SECTION 04 · LEARNERS

New literacies, real integrity, fair access

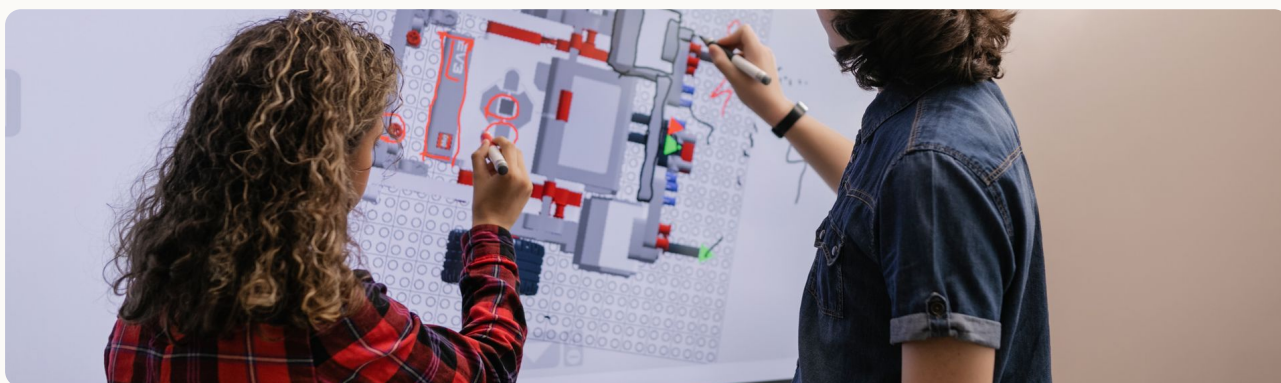
For students, AI is best understood as support rather than substitution. Used well, it offers personalised feedback, explanation on demand, and adaptive help that a single teacher across thirty learners could never provide.⁹ Used carelessly, it offers a shortcut around the very thinking that learning is meant to develop.

This makes a new set of literacies essential. Students now need to prompt a model clearly, to check its output against trustworthy sources, and to weigh confident machine written text with a critical eye. These are not technical niceties. They are the contemporary form of critical thinking, and they belong in the core curriculum rather than in an optional workshop.

There is also a comfortable assumption that needs dispelling. Students who are fluent consumers of digital media are not automatically careful users of AI. Ease with a tool is not the same as wisdom in its use, and treating young people as already AI literate is one of the more dangerous assumptions an institution can make.

Integrity is the hardest edge. A survey of 1,217 people across 76 countries found that concern about the potential of generative AI to enable academic dishonesty features strongly, and that views are shaped heavily by cultural context rather than settling into a single global consensus.¹⁰ Detection on its own is not the answer, because it is difficult and unreliable, so the response has to combine clear policy, genuine training, and assessment that is harder to fake.¹¹

Equal access deserves the same attention. Where capable AI is spread unevenly, by device, subscription, language or confidence, it can widen the very gaps that education exists to close. UNESCO's guidance is explicit that generative AI has to be deployed in a way that puts people at the centre and protects learners rather than exposing them.⁴ An institution that provides fair access to capable and well governed tools turns a potential source of inequality into a genuine equaliser.



The new student literacies, prompting, verification and critical evaluation, are the contemporary form of critical thinking. Photo: Alena Darmel / Pexels.

SECTION 05 · THE PROFESSION

Relief, scale, and the evolving craft

If there is a single story in education AI that is seldom told, it is the opportunity for teachers and trainers. Much of the profession's load is not the irreplaceable human work of teaching. It is the surrounding effort of drafting, marking, documenting and administering. This is precisely where AI offers relief.

Feedback is the clearest example. Timely and specific feedback is one of the most powerful drivers of learning, and one of the hardest things to deliver at scale. AI makes it possible to give students more frequent and more detailed feedback as they work, which frees teachers to apply their judgement where it counts, on the conversations, the mentoring, and the design work that only a person can do.

This reframes workload rather than simply cutting it. The opportunity is to redirect the hours now consumed by repetitive marking and documentation towards the parts of teaching that are hardest to automate and most valuable

to students. Institutions that bank the saved time as a pure efficiency, without reinvesting it in the human work, will capture the smaller share of the benefit and miss the larger one.

Assessment is where this matters most. The expert review commissioned by the higher education regulator concluded that generative AI has made existing assessment problems worse, and that reform has to be systemic and run across whole programs, rather than a series of patches to individual tasks.¹² For teachers, the task is not to police every assignment. It is to redesign assessment so that human judgement is built into the system.

None of this works without keeping people in the loop. The evidence has long noted that educators are too often designed out of AI systems rather than into them.⁸ The institutions that get this right will treat teachers as the designers of their AI supported practice, with real investment in capability behind them.



The opportunity for teachers is to redirect saved hours from repetitive marking towards the human work of teaching that AI cannot do.
Image: generated by the author.

Automate the load, not the relationship. The craft of teaching survives this transition. It is everything around the craft that AI should carry.

DR NICK PATTERSON, ORIGAE

SECTION 06 · THE LABOUR MARKET

Jobs & Skills

Education does not train people for today's economy. It trains them for the one they will enter, and the signals are now clear enough to act on.

Worldwide, the World Economic Forum projects that by 2030 around 170 million jobs will be created and 92 million displaced, a net gain of about 78 million, while 39% of the core skills workers need will change and 85% of employers plan to prioritise upskilling their workforce.⁶ The signal is not mass unemployment. It is a mass transformation of what work requires.

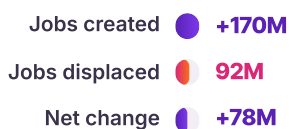
The Australian picture is more reassuring still, and more useful for setting strategy. A whole of labour market study by Jobs and Skills Australia found that only around 4% of Australian roles face a high risk of automation, that nearly 80% face a low risk, and that about 49% face moderate augmentation, with generative AI far more likely to support human work than to replace it.² The same study records rising demand for digital literacy and for higher order human skills such as critical thinking, communication and adaptability.

This is an important correction to the anxiety that dominates the public conversation. The evidence does not support a defensive crouch against a wave of automation. It supports a confident investment in the capabilities that make people more effective alongside AI. The real risk is not that machines take the jobs students train for. It is that graduates enter those jobs unable to work well with the tools their employers already use.

The durable graduate capabilities are the ones that complement AI, namely judgement, communication, ethical reasoning, collaboration, and the ability to direct and check AI rather than be replaced by it. That capability is built on disciplinary knowledge, not in place of it. You cannot judge AI output in a field you do not understand. Policymakers will increasingly need consistent measures to track these human capabilities against advancing AI.¹⁹

Global jobs outlook to 2030

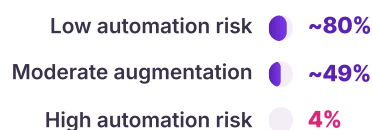
Jobs created, displaced and the net change⁶



A transformation of work, not its disappearance. 39% of core skills change by 2030.

How current generative AI affects Australian roles

Exposure of Australian roles to current generative AI²



Augmentation, not replacement, is the dominant effect.

The most employable graduate is not the one who avoids AI, nor the one who defers to it, but the one who can direct it, judge the output, and take responsibility for the result.

SECTION 07 · RECOGNITION

Rebuilding the architecture of recognition

The Australian qualifications architecture is a genuine national asset, and it was built for a world of longer and more stable credentials. As skills change faster, the architecture itself has to adapt without losing the rigour that makes Australian qualifications trusted.

The review of the Australian Qualifications Framework was direct. The framework was not designed to accommodate shorter forms of credential, and the review recommended recognising micro credentials for credit towards qualifications, and revisiting how the framework describes contemporary capabilities such as digital literacy.¹³

Micro credentials are central to the answer. The National Microcredentials Framework defines them as short and certified units of learning aimed at a specific skill or capability, sitting below the scale of a full qualification, with

national standards for recognition, portability and credit.¹⁴ Done properly, they let learners build and stack verified capability as the world changes.

The Universities Accord places this within a system wide ambition. It contains 47 recommendations, a target of 80% of working age Australians holding a tertiary qualification by 2050, up from around 60% today, modular and micro credential pathways, and a new Australian Tertiary Education Commission to steer the reform.¹⁵ Qualifications reform is not a side project. It is national policy.

	VOCATIONAL EDUCATION (ASQA)	HIGHER EDUCATION (TEQSA)	MICRO CREDENTIALS
FRAMEWORK	AQF training packages and competency standards	AQF qualification levels	National Microcredentials Framework
ORIENTATION	Competency based and occupational	Graded and disciplinary	A specific skill or capability
TYPICAL DURATION	Months to years	Years	Hours to weeks
STACKABILITY	Towards qualifications	Towards degrees	Portable and credit bearing where recognised

The three pillars of Australian post secondary recognition are complementary rather than competing. AI raises the value of getting the connections between them right.^{13,14,15}

AI may assist the process, but human judgement certifies the outcome. The two regulators have, in effect, drawn the same line.



INTEGRITY SITS UNDERNEATH ALL OF IT

AI assists, and a qualified person certifies

In vocational education, the 2025 Standards for Registered Training Organisations, in effect from 1 July 2025, require that people make the competency decisions. Providers cannot rely on AI to determine competency, and they have to verify that learners have completed their own work.¹⁶ In higher education, the regulator's position is that assessment reform has to be systemic and run across whole programs.¹²

This is a more workable principle than it first appears. It does not ask institutions to ban AI from assessment, which is neither possible to enforce nor desirable. It asks them to be

deliberate about where in a program the load bearing judgements sit, and to protect those points, through assessment design, supervision, oral defence, or evidence of process, so that a qualification continues to mean what it claims.

Recognition of prior learning sits exactly at this intersection. Done by hand, it is slow and inconsistent. Done with AI support against the relevant standards, it can be faster and more consistent, provided the competency decision remains a human one. AI carries the analysis, and the qualified assessor carries the decision.

1
Jul
25

From this date, the new VET standards require that **a qualified person, not an automated tool, makes the competency decision**, and that AI generated content is checked by qualified trainers and assessors.¹⁶



SECTION 08 · GOVERNED ENABLEMENT

Direction for TAFEs and universities

An analysis of the top 100 universities in the United States found that none banned generative AI outright, and that the common stance was open but cautious, with ethical use, data privacy and accuracy as the governing concerns.¹⁷ That is the right default. Neither prohibition, which fails, nor a free for all, which exposes, but governed enablement.

Generative AI is at once a disruptive threat and a chance to reform, and institutions that treat it only as a threat will forfeit the gains.¹⁸ Institutions tend to fail in one of two ways. Prohibition drives AI use underground, where it cannot be observed, taught or governed. A free for all mistakes the absence of rules for the presence of strategy. Governed enablement is the deliberate middle path, and it is harder than either extreme.

From this, four principles follow at the level of direction. **Governance**, clear policy across the institution on acceptable use, data privacy and accountability, lived rather than merely published. **Capability**, investment in the AI literacy of staff and students, because the training gap, not the technology, is the binding constraint. **Assessment security**, the redesign of assessment across whole programs. **Partnership**, working with those who have done this before rather than rebuilding every capability in house.

The honest message to leaders is this. The direction is now knowable, but the design is not generic. Two institutions with the same principles will need very different implementations, shaped by their students, their disciplines, their exposure to regulation, and their appetite for risk. Getting that implementation right, quickly and safely and in a way people will adopt, is the real work.

The institutions that lead will not be the ones with the most tools. They will be the ones that made the clearest choices about what to delegate and what to keep as the work of people.

SECTION 09 · THE HORIZON

A three to five year horizon

Look out three to five years and a credible picture comes into view. None of it needs science fiction. It needs deliberate execution, and the sequence matters more than the speed.

01 Foundations

Establish governance, build a baseline of AI literacy for staff and students, and form an honest assessment of where usage and exposure already sit.

02 Integration

Embed AI into teaching, feedback and support, redesign assessment across whole programs, and stand up micro credential pathways with real recognition.

03 Transformation

Move towards an operating model in which the curriculum, the assessment and the support are designed around abundant and well governed intelligence.

Success has a recognisable shape. For an Australian institution, it looks like graduates the labour market is short of, qualifications that hold their integrity under scrutiny, staff who feel supported rather than displaced, and a reputation for getting AI right while peers are still debating it. The international evidence and the Australian policy settings point the same way. The conditions for leadership are in place.



A three to five year horizon: governed foundations, deep integration, and an AI native operating model, reached by deliberate execution.
Photo: RDNE Stock project / Pexels.

The future of education is not less human. Handled well, it is more human, with the machine carrying the load so that people can do the work only people can do.

FROM THE AUTHOR · A PERSONAL VIEW

A practitioner's perspective

The rest of this paper sets out the evidence. What follows is more personal. These are the strategies I would put in place if the decision were mine, drawn from years of building AI products for Australian classrooms. They are my own views, offered as a practitioner rather than as settled policy.

The first thing I would accept is that the ground is moving. AI tools change week by week, and any strategy that assumes a fixed set of them will be out of date before it is approved. So I would build a strategy that works as a foundation now and is designed to evolve, with clear principles that hold steady even as the technology underneath them changes.

I would begin with an adoption phase whose only job is to bring everyone along, students and staff together. Capability and trust are built, not announced. Before an institution asks its people to redesign assessment or rethink a course, it has to give them the time, the training and the safe space to use these tools well.¹

For teachers, I would put AI agents to work on the parts of the job that drain time without developing students. A well prompted agent can draft a lesson plan, propose an assessment aligned to the learning outcomes, generate practice questions and build a marking guide in minutes, which leaves the

teacher to do the shaping, the judgement and the teaching.⁷

I would also trial what I think of as classroom cobots, AI assistants that work alongside a teacher rather than replace them. Their value is clearest in large classes, where one teacher cannot give thirty students attention at once. A cobot can field routine questions, surface the students who are struggling, and let the teacher move from broadcasting towards something much closer to assisted, individual learning.

Online learning is where I would be most ambitious. The next generation of online classes should respond to the learner, not simply deliver content to them. That means designing for emotion and for neurodiversity, so that a class can sense when a student is disengaged or overloaded and adjust, and so that learners who think and process differently are planned for rather than accommodated as an afterthought. This is the thinking behind our own work on Affectly.

Automate the load so people can do the work only people can do. That is the whole of it, and the rest is detail.

DR NICK PATTERSON, ORIGAE

FROM THE AUTHOR · WHERE I WOULD START

From principle to practice

I would hand the repetitive load to AI so that teachers can spend their hours on the creative parts of the classroom. Faster grading and quicker administration are not the goal in themselves. They are how we buy back the time for the experiences only a person can create. Our app GradiumX exists for exactly this, producing rubric aligned feedback in seconds while a qualified assessor keeps control of the decision.¹²

Integrity has to be part of the same system. Where a piece of work has to be the student's own, I would give teachers practical tools to assess whether AI has likely been used, treated as one signal among many rather than as a verdict. Our app PenForensic was built for this, grounded in peer reviewed markers, to support a human judgement and not to replace it.¹¹

01 Build capability through micro credentials

Develop the workforce's own AI skills through short courses that fit around busy teaching lives, rather than long programs few can complete. Where it makes sense, let students earn the same micro credentials for minor credit towards units in their qualification.^{14,15}

02 Embed AI assessment, do not bolt it on

Add AI related assessment into existing units rather than creating brand new units. The capability we want is the responsible use of AI inside a discipline, and that is best assessed where the discipline already lives.¹²

03 A foundation that evolves

Set the principles now and review the tools often. Treat the strategy as a living document with a fixed spine and replaceable parts, so it can keep pace with a technology that will not stand still.

Set the principles now, and design the strategy to evolve. The tools will change. The judgement we ask of people will not.

DR NICK PATTERSON, ORIGAE

SECTION 11 · ADOPTION BY SECTOR

Two moves for every sector

The direction is shared, but adoption looks different in each sector. These are two priorities for each major teaching area, chosen because they matter most for what graduates can do and for the integrity of the qualification.

Creative Industries

- 1 Direct AI, do not defer to it.** Students learn to brief, curate and edit generative tools, while authorship, taste and originality stay the assessed human skill.
- 2 Build provenance into the brief.** Make disclosure of AI use, attribution and licensing part of every project, so graduates meet copyright and industry expectations.

Information Technology

- 1 Teach vibe coding, the directing and reviewing of AI generated code rather than writing it by hand.** Google now reports that about three quarters of its new code is AI generated and approved by its engineers, and senior teams at firms like Spotify increasingly orchestrate AI instead of typing code. Weight prompting, code review, the debugging of AI output and architecture, which is where the work has moved.
- 2 Make responsible AI engineering the core skill.** Teach privacy, security, model limits and the testing of AI assisted systems as standard practice, so graduates can vouch for code they have directed rather than written line by line.

Engineering

- 1 Speed the exploration, protect the verification.** Let AI widen the design search, while calculation checks, standards and safety judgement stay firmly human.
- 2 Assess the method, not just the answer.** Have students show and defend their reasoning, since AI can return a plausible result without sound engineering behind it.

Business

- 1 Build fluency for analysis and decisions.** Teach students to use AI for research, modelling and drafting, then to test its output against evidence before acting.
- 2 Centre ethics and accountability.** Graduates should weigh bias, data use and the limits of automation in real commercial choices, not treat them as a footnote.

Trades and Apprenticeships

- 1 Keep competency hands on and supervised.** Use AI for theory and revision, while a qualified assessor verifies practical competency, as the 2025 VET standards require.¹⁶
- 2 Put AI to work on the tools.** Train apprentices to use it for diagnostics, manuals and safety checks, with the licensed tradesperson accountable for the result.

Social Care and Health

- 1 Use AI for the load, never the duty of care.** Apply it to documentation and revision, while clinical judgement, consent and empathy stay human.
- 2 Teach safe use with real privacy rules.** Build consent, data protection and bias awareness into every placement and every assessment.

WORK WITH ORIGAE

How Dr Nick can help

This paper sets the direction. Turning that direction into something that works for your institution is a different kind of work, and it is where Dr Nick Patterson and Origae can help. He builds solutions and strategies to support your institution, grounded

in products made for the realities of Australian education.

Each product below was built to solve a real problem in vocational and higher education, and each can be shaped to fit your institution's context, mission and appetite for risk.

PenForensic

Academic integrity analysis that supports the authenticity judgements assessment reform depends on.

GradiumX

An AI grading assistant for vocational and higher education that keeps human assessors in control of the decision.

PriorLeap

AI assisted recognition of prior learning against ASQA aligned qualifications.

TradeltUp & Timba

A platform for TAFE apprentices and their trainers, and intelligent timetabling that removes administrative load.

Affectly

Adaptive online learning that designs for emotion and neurodiversity, so classes respond to the learner.

If a solution here would help at your institution, or you would value a conversation about where to go next, **Dr Nick Patterson and Origae** would be glad to talk.

Start a conversation at nick.patterson@origae.dev

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ABOUT THE AUTHOR

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ABOUT ORIGAE

Origae builds artificial intelligence into the realities of Australian education. Its products include Affectly, PenForensic, GradiumX, PriorLeap, TradeltUp and Timba. To discuss your institution's AI strategy, contact nick.patterson@origae.dev or visit origae.dev.

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