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Indigenising ICT education in Australian higher education: Perspectives from educators

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This study investigates the integration of Indigenous perspectives within information and communication technology (ICT) curricula across Australian universities, addressing four research questions relating to the extent of integration, approaches used, influencing factors and characteristics of effective practice. Semi-structured interviews were conducted with eight ICT educators and data were analysed using reflexive thematic analysis. Nine themes were identified. Findings indicate that integration remains limited and inconsistent, often driven by individual initiative rather than systematic institutional approaches. While universities demonstrate policy commitments, these are not consistently enacted in curriculum design. Educators employ strategies such as contextualised assignments, interdisciplinary offerings and emerging Indigenous pedagogical frameworks. Key barriers include limited discipline-specific resources, structural curriculum constraints and lack of targeted support. Enablers include collaboration with Indigenous experts and culturally relevant teaching approaches that enhance student engagement. The study offers insights to inform curriculum development, institutional policy and future research in ICT education.

Keywords: ICT curriculum, curriculum Indigenisation, cultural competency in higher education, Indigenous knowledge systems, digital inclusion

Introduction

In recent years, the efforts for the meaningful incorporation of Indigenous perspectives within Australian higher education has improved (Al-Natour et al., 2016; Herbert et al., 2024; Manton & Williams, 2021; Stone, 2019). This movement also aligns with national imperatives to not only address the legacies of disadvantage (Deloitte Access Economics, 2022) but also to enable the flourishing of Indigenous knowledges within contemporary curricula (Flavell et al., 2013). Higher education, and the information and communication technology (ICT) sector specifically, play pivotal roles in shaping future professionals, influencing societal narratives and creating equitable opportunities (Bullen & Flavell, 2022). Yet, despite sector-wide commitments, significant challenges persist in the authentic and

comprehensive integration of Indigenous perspectives into university curricula (Dada, 2024), particularly within ICT education (Herbert, 2024).

Australia's universities are uniquely positioned to influence societal direction (Universities Australia, 2011; Universities Australia, 2022). The strategies emphasise that Indigenous knowledges are not a curricular add-on, but fundamental to the nation's intellectual landscape and future growth. Efforts to Indigenise ICT curricula are grounded in more than symbolic gestures (Jordan et al., 2024). The digital era presents profound opportunities and risks for Aboriginal and Torres Strait Islander communities. While ICT can support cultural preservation (Siliutina et al., 2024), community connectivity (Gregori et al., 2024) and economic development (Trabelsi, 2024), it also risks perpetuating digital divides, embedding cultural biases into technology design and undermining data sovereignty (Gurov, 2025; O'Sullivan & Walker, 2018).

The *Guiding Principles for Developing Indigenous Cultural Competency in Australian Universities* advocates embedding Indigenous knowledges and perspectives in all university curricula, including ICT programs, as the foundation for Indigenous cultural competency (Universities Australia, 2011). Recommendations include integrating cultural competency as a graduate attribute, employing culturally sound pedagogies, training academic staff, and ensuring robust accountability measures, although progress across universities remains uneven and below target levels (Guerzoni, 2020).

Indigenising the ICT curriculum presents unique challenges compared to other fields, and limited recognition of Indigenous knowledge systems within mainstream technology discourse poses barriers to integration (Herbert et al., 2024; Kennedy et al., 2016; Radoll, 2014). However, innovative programs demonstrate the potential of context-driven, partnership-based approaches, such as collaboratively developed case studies and on-Country experiential learning modules, and systematic inclusion of topics such as digital equity, cultural bias in software, data sovereignty and the role of ICT in community wellbeing (Australian Centre for Student Equity and Success [ACSES], 2020; Herbert, 2024).

With technical disciplines such as ICT often facing unique challenges in authentically incorporating Indigenous knowledges, there remains a pressing need for systematic investigation and evidence-based approaches. Accordingly, this paper addresses the following research questions (RQ):

RQ1: How extensively has ICT curriculum incorporated Indigenous perspectives across Australian universities?

RQ2: What approaches to incorporating Indigenous perspectives within ICT curriculum are employed across Australian universities?

RQ3: What factors facilitate or impede the incorporation of Indigenous perspectives within ICT curriculum?

RQ4: What are the essential characteristics of best practice when Indigenous perspectives have been included within ICT subjects?

The remainder of the paper is organised as follows: Section 2 provides the literature and background, Section 3 outlines the methodology, Section 4 presents the findings in relation to the research questions, Section 5 offers a discussion of the implications, and Section 6 concludes the paper with final reflections and recommendations.

Literature review

In this study, Indigenisation of curricula is understood as the intentional and meaningful integration of Indigenous knowledges, perspectives and pedagogies into both the content and delivery of educational programs. This extends beyond the inclusion of isolated perspectives to encompass relational, contextual and co-designed approaches that recognise Indigenous ways of knowing, being and doing. Consistent with prior literature (Bullen & Flavell, 2022; Universities Australia, 2011), Indigenisation involves both what is taught and how it is taught.

The digital divide, cultural bias in ICT design and development, data sovereignty and cyber-safety all present challenges for Indigenous communities (Carlson & Kennedy, 2021; Du, 2017; Herbert et al., 2024; Meston, 2024; Radoll, 2014; Walter et al., 2021). Cultural insensitivity in ICT design is a significant issue, often resulting in technology that does not align with users' cultural backgrounds (Jones et al., 2017; Osborne et al., 2019; O'Sullivan & Walker, 2018; Shirodkar, 2019). ICT professionals should be well versed in Indigenous knowledge and perspectives in order to identify some key areas that the curriculum could address to positively impact on Indigenous communities and wellbeing (Herbert et al., 2022).

Efforts to incorporate Indigenous content into educational curricula have highlighted challenges that can hinder effective learning, such as the complexity of the task and the lack of educator training in Indigenous perspectives (Al-Natour et al., 2016; Bullen & Flavell, 2022; Flavell et al., 2013; Ranzijn et al., 2008; Shipp, 2013). Despite numerous studies exploring embedding Indigenous content across diverse disciplines (Kennedy et al., 2016), there is a notable absence of research examining its extent within the ICT curriculum of Australian universities (Herbert et al., 2024). Curriculum Indigenisation enables non-Indigenous students to delve into Aboriginal and Torres Strait Islander culture, fostering cultural awareness (Bullen & Flavell, 2022; Yunkaporta, 2019), and equips them with the skills to engage respectfully with Indigenous communities (Guerzoni, 2020).

Research indicates that students' attitudes towards cultural issues can change over time, especially when they gain a deeper understanding of cultural identity (Bullen & Flavell, 2022). This highlights the importance of continuously developing Indigenous awareness in students to challenge negative stereotypes (Booth, 2014). Ideally, students should encounter substantial Aboriginal and Torres Strait Islander content across all academic years (Guerzoni, 2020; Herbert et al., 2022). Curriculum Indigenisation not only involves "what" is taught but also "how" and "when" it is taught, accumulating knowledge across the curriculum that influences professional practice (Booth, 2014; Shipp, 2013).

Academics face challenges when incorporating Aboriginal and Torres Strait Islander perspectives into curricula. They often find teaching cultural content and assessing learning outcomes complex (Flavell et al., 2013). Concerns about tokenistic approaches sometimes lead to the exclusion of Indigenous perspectives entirely (Shipp, 2013). Non-Indigenous academics are concerned about their suitability in presenting Indigenous content and worry about their lack of knowledge and its potential to reinforce stereotypes and biases (Ranzijn et al., 2008). Lecturer interest, enthusiasm and confidence in teaching Indigenous content significantly impacts student engagement (Booth, 2014). Inviting Indigenous knowledge holders to participate in curriculum delivery is a widely accepted approach (Maguire & Young, 2016; Ranzijn et al., 2008, 2008; Zubrzycki et al., 2014), however, the scarcity of Indigenous speakers can result in inadequate resourcing in some disciplines (Al-Natour et al., 2016). Currently, there is a lack of understanding regarding factors hindering or facilitating incorporating Indigenous perspectives in ICT programs at Australian universities.

To address this, academics must find effective strategies to demonstrate the interconnectedness of Indigenous content and professional practice (Ranzijn et al., 2008). Successful integration of Indigenous perspectives with discipline-specific material motivates students and highlights the importance of learning Indigenous content alongside industry-specific subjects (Bullen & Flavell, 2022; Flavell et al., 2013; Herbert et al., 2023). This study investigates existing ICT bachelor courses to identify these factors and bridge this knowledge gap.

Different interpretations exist regarding what Indigenisation looks like in practice. Some approaches focus on incorporating Indigenous perspectives into existing curricula, while others advocate for more transformative change that repositions Indigenous knowledges as foundational rather than supplementary (Battiste, 2013; Lowe et al., 2025). This distinction is significant, as superficial inclusion risks tokenism, whereas meaningful Indigenisation involves relational, context-specific and often co-designed approaches with Indigenous communities (Bullen & Flavell, 2022; Zubrzycki et al., 2014).

Method

Research design

The study adopted a qualitative descriptive design to explore how Indigenous perspectives are incorporated into ICT curricula. This approach was ideal for our aims, ensuring we captured educators' actual practices and views in situ without imposing abstract theories or analytical overreach (Bradshaw et al., 2017; Lambert & Lambert, 2012).

Semi-structured interviews were chosen as the primary data collection method due to their suitability for obtaining in-depth descriptions of participants' perspectives (Brinkmann & Kvale, 2014; DiCicco-Bloom & Crabtree, 2006). Interviews enable participants to narrate their experiences in their own words, and the semi-structured format provided a flexible yet guided framework, ensuring key topics were covered while allowing participants to introduce relevant issues (Kallio et al., 2016).

The data were analysed using reflexive thematic analysis informed by the six phases outlined by Braun and Clarke (2006, 2021). While these phases provide a useful framework, the analytic process was iterative and non-linear, with researchers moving reflexively between familiarisation, coding, theme development and refinement.

Participants and sampling

Investigators approached all 39 Australian universities that offer Bachelor of IT courses. Out of 39 universities approached, only eight academics agreed to participate. This reflects real challenges in the field, such as discomfort, lack of preparedness or marginalisation of Indigenous content in ICT. The participants were eight non-Indigenous ICT educators and curriculum developers working in Australian universities (Table 1). These individuals were academic staff members involved in teaching ICT courses or designing curricula, thus possessing first-hand knowledge on whether and how Indigenous perspectives feature in ICT programs. A purposive sampling strategy was used to recruit participants who had relevant experience or roles in curriculum design for ICT.

Table 1: Interview participation distribution

Regional universities	6
Australian Technology Network of Universities	1
Other	1
Total	8

In this study, selection criteria included course coordinators, or lecturers involved in curriculum development. Initial participants were identified through professional networks and project contacts (for example, via an academic ICT education community). Subsequently, snowball sampling was employed to expand the sample, in that early participants were invited to suggest or refer to other potential participants meeting the criteria (Naderifar et al., 2017).

Ethical approval for the project was obtained from the host university's Human Research Ethics Committee (Approval # H0030291).

Data collection

An interview schedule containing open-ended questions and prompts was developed to cover key topics such as examples of Indigenous content in curriculum, personal approaches to inclusion, and perceived facilitators and barriers. This interview guide underwent a pilot test with two colleagues (not included in the main sample) to ensure questions were clear, culturally sensitive and capable of eliciting rich detail. Feedback from the pilot led to minor refinements in wording and ordering of questions, bolstering the guide's effectiveness (Kallio et al., 2016).

Interviews were conducted via the Zoom video-conferencing platform. This mode was chosen for practicality and inclusivity (Archibald et al., 2019), as participants were geographically dispersed across Australia and Zoom enabled face-to-face conversations without requiring travel. The interviews lasted approximately 28–40 minutes each (about 33 minutes on average), depending on how much the participant chose to share.

Throughout the interview, the interviewer used the guide flexibly; all core questions were covered, but the order varied naturally with the conversation flow. Probing questions were used to encourage depth and clarification (for example, "Can you tell me more about that?" or "What led you to take that approach?"), ensuring a rich description of experiences and opinions. After each interview, the audio recording was transcribed verbatim to produce an accurate textual record of the conversation. The interviews transcribed were imported into NVivo 14 (QSR International) qualitative data analysis software for management and analysis.

Data analysis

The data were analysed using reflexive thematic analysis (Braun & Clarke, 2006; 2021) through both manual coding and NVivo software. An inductive approach guided the analysis, with three researchers independently conducting manual coding to ensure deep engagement with the data, while a fourth round of coding was conducted separately in NVivo for comparison and discussion.

The combination of manual and digital coding methods enhanced transparency, enabled triangulation of interpretations and reduced individual bias in the analysis process. Initial semantic codes reflecting

participants' perspectives and experiences were grouped into broader categories, which informed the development of higher-order themes aligned with the research questions. Coded segments and emerging themes were reviewed collaboratively, and discrepancies in interpretation were discussed and resolved through consensus. This process helped establish a shared codebook and reinforced reliability through investigator triangulation. NVivo was subsequently used to manage the dataset, refine thematic relationships and support further analytic steps.

Themes were constructed to represent consistent and meaningful patterns across the dataset, aligned with the study's research questions. Researcher reflexivity was maintained throughout, with analysts documenting reflections on their assumptions and potential influence on interpretation. Direct quotes were retained to support transparency and allow readers to evaluate the trustworthiness of findings. This combination of manual coding, NVivo-supported organisation and iterative reflexive discussion ensured a rigorous and transparent analysis process consistent with descriptive qualitative principles.

Results

This section presents the key findings from the thematic analysis of eight semi-structured interviews with ICT educators and curriculum coordinators across Australian universities. The analysis identified several major themes and subthemes aligned with the four research questions (RQ1–RQ4).

To improve transparency regarding the relative prominence of findings across the dataset, Table 2 summarises the frequency with which each theme was discussed by participants. These frequencies are descriptive rather than statistical and are intended to assist readers in distinguishing between dominant, moderate and emerging themes.

Table 2: Relative prominence of themes across participants

Theme	Participant count
Theme 1 – Inconsistent and Limited Integration	7/8
Theme 2 – Institutional Policy Exists, but Curriculum Practice Lags	6/8
Theme 3 – Indirect or Interdisciplinary Inclusion	4/8
Theme 4 – Embedded Examples and Contextual Assignments	5/8
Theme 5 – Incorporating Indigenous Learning Frameworks	2/8
Theme 6 – Limited Institutional Support and Resources	7/8
Theme 7 – Structural and Curricular Constraints	6/8
Theme 8 – Co-Design with Indigenous Experts	5/8
Theme 9 – Student Awareness and Engagement Outcome	4/8

Research Question 1 (RQ1): How extensively has ICT curriculum incorporated Indigenous perspectives across Australian universities?

Figure 1 shows the NVivo analysis which branches into three primary thematic categories: Policy Scope, Policy Availability and Indigenous Integration in ICT Content. Each of these parent nodes is further broken down into child nodes that reflect the diverse ways institutions are engaging with Indigenous perspectives.

Figure 1: Extent of Indigenous integration in ICT curricula

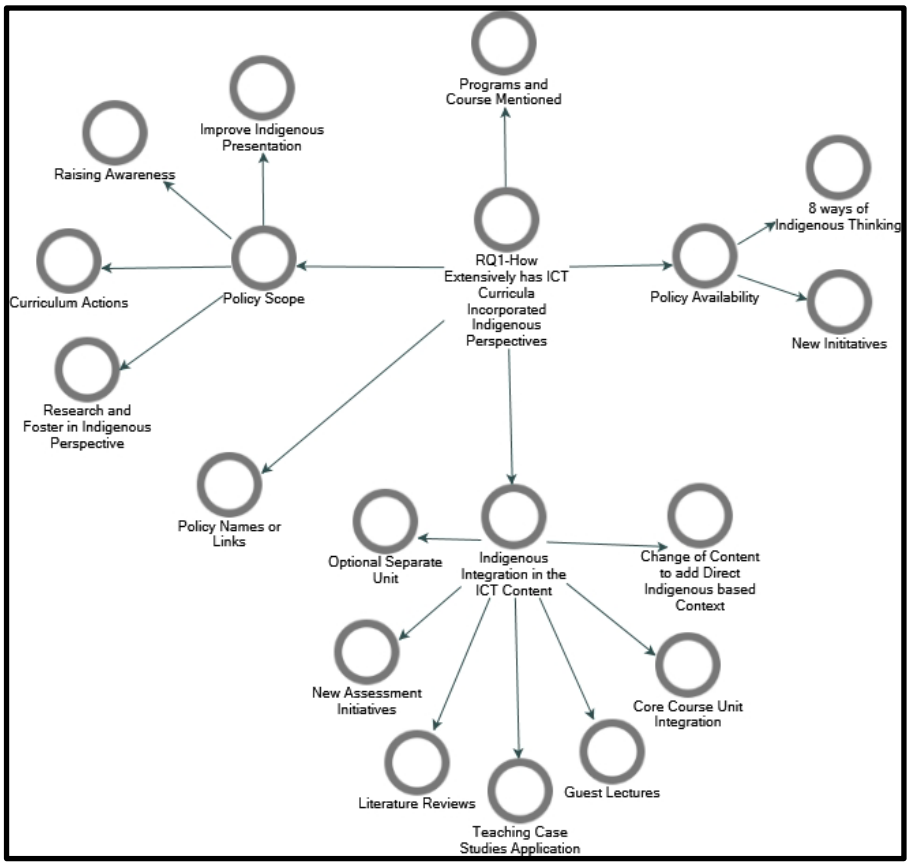


Figure 1 illustrates thematic relationships identified through NVivo analysis. The nodes represent coded concepts, while connections indicate relationships between themes. As this is a qualitative study, the figure does not imply statistical significance. Themes related to limited integration and policy scope were discussed by the majority of participants, whereas specific initiatives such as the 8 Ways of Thinking and new assessment approaches were mentioned less frequently, indicating emerging or less widespread practices.

Theme 1: Inconsistent and Limited Integration (7 of 8 participants)

This was one of the strongest themes identified in the dataset. Most participants reported that Indigenous perspectives remain limited and unevenly integrated across ICT curricula in the eight participating universities. Although there was broad recognition of the importance of embedding Indigenous content, implementation was often ad hoc and dependent on individual lecturer initiative rather than coordinated institutional practice. Several participants reported the absence of Indigenous content within core ICT subjects, whereas others described preliminary efforts such as incorporating content through a single unit or optional assessment tasks. However, these approaches tend to be isolated and lack cohesive program-level strategies or institutional mandates, resulting in fragmented and inconsistent integration across ICT curricula. Some example quotes from the participants follow.

"It's not embedded across our units. Only the professional practice unit tries to explicitly link with Indigenous perspectives. There's no structured requirement in our ICT degrees to address Indigenous knowledge. It comes down to individual lecturer interest." – (Participant 2)

"There is no distinct topic or module within the ICT course that deals with Indigenous content." – (Participant 7)

"It's mostly left to individual lecturers if they want to include it. There's no structure or mandate." – (Participant 8)

Theme 2: Institutional Policy Exists, but Curriculum Practice Lags (6 of 8 participants)

Many universities have institutional policies, such as Reconciliation Action Plans (RAP), that promote the integration of Indigenous perspectives into teaching and learning. However, these policies have not been systematically operationalised within ICT curricula. While graduate attributes often reference Indigenous knowledge, participants highlighted a lack of clear mechanisms to ensure these are meaningfully embedded in curriculum design and assessment. Compliance is frequently self-reported or optional, resulting in limited accountability. Consequently, the inclusion of Indigenous content tends to rely on individual lecturer initiative rather than being supported through structured, program-level requirements.

"The policies exist at the university level, but there's very little guidance on how we're supposed to implement them in ICT."– (Participant 1)

"It's more like a tick box—if yes, explain how. But no one follows up." – (Participant 2)

"There's a RAP in place, and we talk about graduate capabilities, but there's no real framework to show what that means in a coding or data unit."– (Participant 4)

"We have graduate attributes related to Indigenous knowledge, but they aren't actively measured or assessed." – (Participant 6)

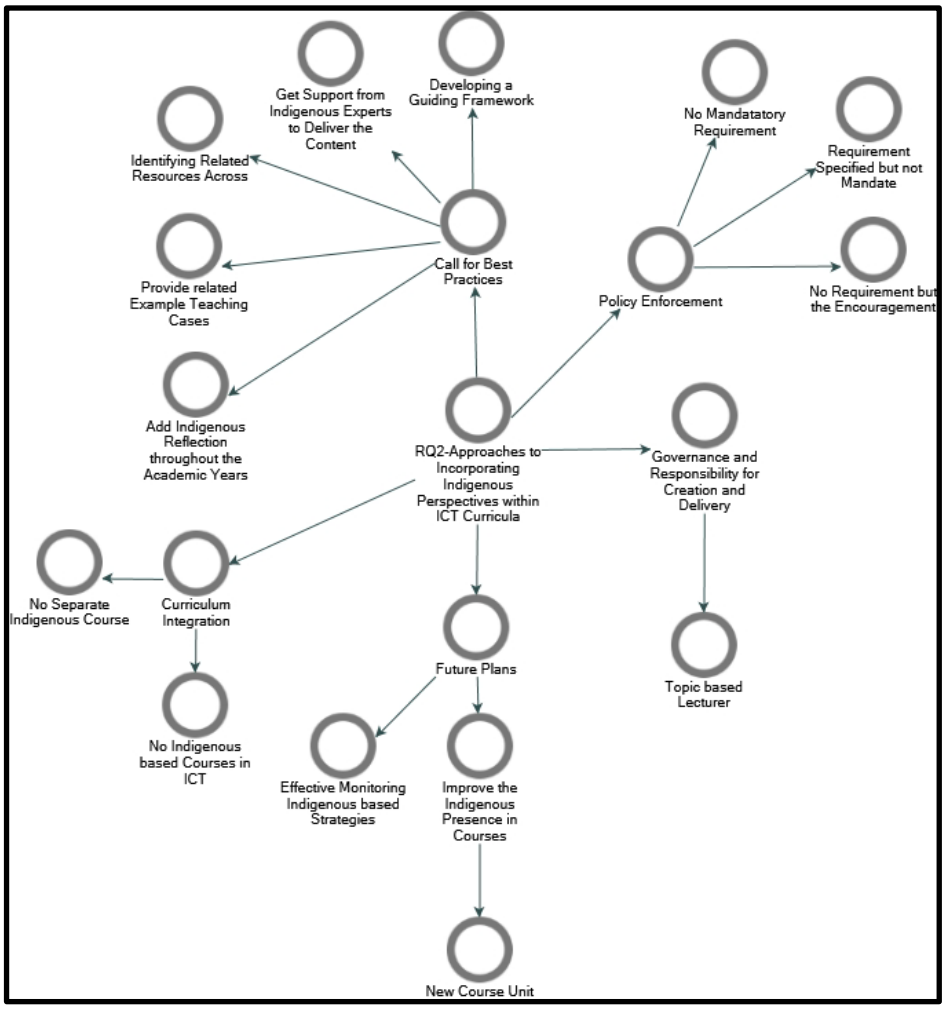
"Our university has the policy, but in ICT it's mostly untouched." – (Participant 7)

"They want us to embed Indigenous content but haven't updated the curriculum mapping or accreditation tools to support it." – (Participant 8)

Research Question 2 (RQ2): What approaches to incorporating Indigenous perspectives within ICT curriculum are employed across Australian universities?

At the centre of the model is the parent node representing overall approaches, branching into four main categories: Call for Best Practices, Policy Enforcement, Curriculum Integration, and Governance and Responsibility for Creation and Delivery (see Figure 2). Under Call for Best Practices, the coding captures strategies such as providing related teaching cases and resources, support from Indigenous experts, incorporating Indigenous reflections throughout academic years, and the development of guiding frameworks. The Policy Enforcement node shows varying institutional stances, ranging from no mandatory requirements to policies that encourage or require Indigenous inclusion. Curriculum Integration identifies whether Indigenous perspectives are embedded within core or separate ICT courses or not present at all. Governance and Responsibility highlights who is tasked with delivering this content, including topic-based lecturers. Future Plans, another main node, reflects intentions to improve Indigenous presence through new course units and better monitoring of Indigenous strategies.

Figure 2: Approaches to incorporating Indigenous perspectives within ICT curricula



Theme 3: Indirect or Interdisciplinary Inclusion (4 of 8 participants)

A common approach among universities is to rely on interdisciplinary or elective options to introduce Indigenous content. Several participants noted that Indigenous-focused units are often offered through other colleges or divisions and may be available to ICT students, although they are rarely actively encouraged within ICT programs.

While these opportunities can provide valuable exposure, they remain optional and are not integrated into the core structure of ICT curricula. As a result, engagement with Indigenous perspectives is limited and dependent on individual student choice rather than being systematically embedded within the program.

"Students could take ... [the college for Indigenous support] college units ... but they're not linked to the ICT degree directly." – (Participant 1)

"We rely on electives by ... [the college for Indigenous support] ... [subject code] is the only core unit with a related outcome." – (Participant 6)

Theme 4: Embedded Examples and Contextual Assignments (5 of 8 participants)

Educators are embedding Indigenous perspectives within ICT curricula through contextualised assignments and examples integrated into existing units. These approaches often involve case-based or

data-driven tasks that draw on Indigenous contexts, such as the use of Indigenous health datasets, Country-based data, or issues related to privacy and cultural ethics in areas such as cyber-security. In some cases, assessments have been reframed using story-sharing approaches and localised contexts to support ICT problem-solving in more culturally relevant ways.

In the absence of formal curriculum mandates, these practices are typically initiated by individual educators and developed in an ad hoc manner. Examples include tasks involving Aboriginal site mapping, consideration of cultural factors in user interface design and reflections on Indigenous data sovereignty within ethics-focused units. While such approaches demonstrate the potential for meaningful integration, they often lack alignment with broader program-level strategies and remain dependent on individual initiative.

These approaches help make Indigenous content relevant to ICT practice and student learning. However, they are typically isolated, dependent on individual effort and lack broader program coordination or institutional support, making them valuable but difficult to sustain or scale.

"I used a database problem based on Indigenous landmarks. The challenge was mapping Country to postcode." – (Participant 1)

"I included a module and assignment focused on Aboriginal issues in ICT; students now ask fewer 'why are we doing this?' questions." – (Participant 2)

"I include a weekly case study in our data science class. One of them focuses on AI bias in Indigenous populations, and students discuss ethical design." – (Participant 4)

Theme 5: Incorporating Indigenous Learning Frameworks (2 of 8 participants)

A small number of educators have begun incorporating Indigenous pedagogical frameworks into ICT teaching practices. Notably, approaches such as the 8 Ways of Aboriginal Learning have been used to inform the redesign of assessments and teaching strategies. In addition, some institutions have applied yarning circle principles within tutorial activities, enabling students to engage in reflective and dialogic learning environments rather than traditional presentation-based formats.

These initiatives represent early-stage innovations that demonstrate the potential of Indigenous pedagogies to inform more culturally responsive teaching practices within ICT education. However, their application remains limited and is not yet widely embedded across programs, reflecting their emerging status within the broader curriculum landscape.

"We're using the 8 Ways framework to embed cultural learning into process analysis." – (Participant 5)

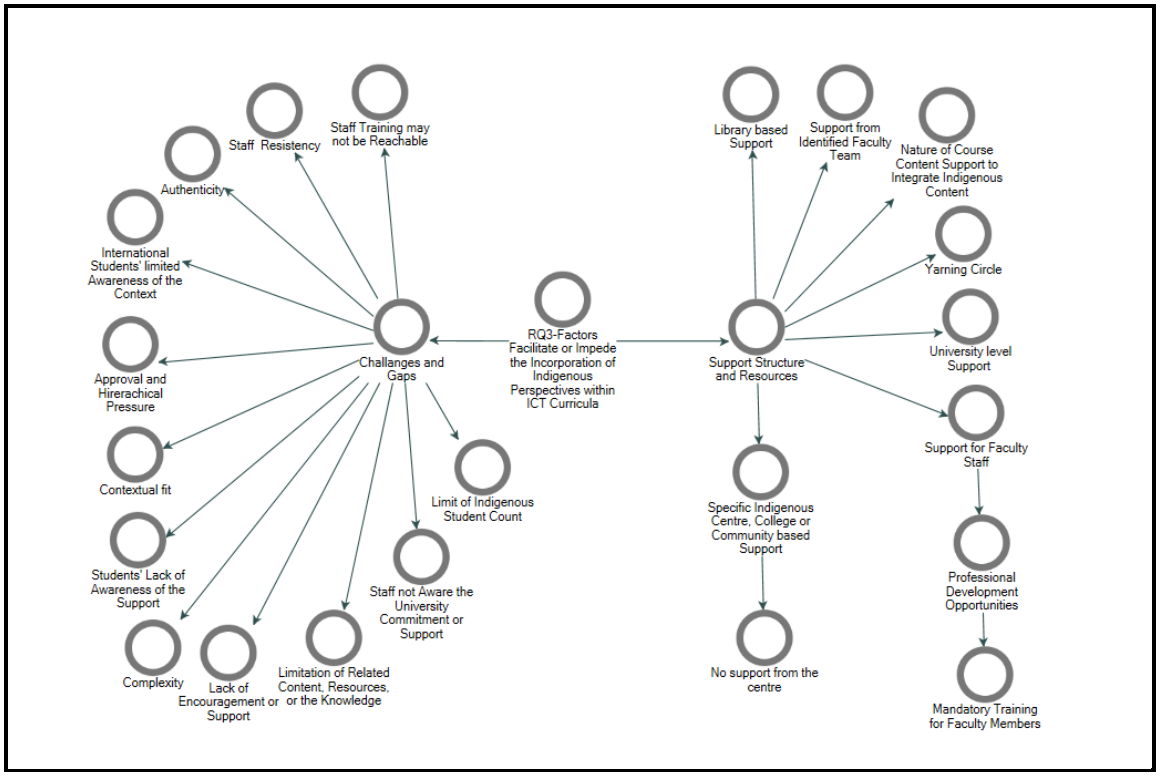
"I referred to [one of the author's] work and used design thinking with the 8 Ways to guide my unit redesign." – (Participant 4)

"We modelled one of our tutorials on a yarning circle. It allowed students to reflect and speak without the pressure of performing—more conversational, less performative … It's a circle, literally. There's no one at the front. Everyone's sitting in a way where you're facing each other. We open with a question, something open-ended, and go around with each student responding in turn, if they choose to. There's no pressure. Some students just listen, and that's okay. It's more about shared understanding than critique or debate." – (Participant 5)

Research Question 3 (RQ3): What factors facilitate or impede the incorporation of Indigenous perspectives within ICT curriculum?

Figure 3 shows the model organised into two main parent nodes: Challenges and Gaps, and Support Structure and Resources, each highlighting key factors that influence the integration process. Under Challenges and Gaps, several interconnected issues are identified, including lack of staff awareness and training, authenticity concerns, contextual misalignment, hierarchical pressures and limited Indigenous student representation. These challenges are compounded by complexities in content integration, staff resistance and a perceived lack of institutional encouragement or appropriate content/resources. The second domain, Support Structure and Resources, highlights enabling factors such as course content alignment, support from faculty teams, yarning circles, university-level and library-based support, and professional development opportunities. However, it also acknowledges that these supports may be absent or under-utilised, as shown by references to "No support from the centre" and limited professional training. Together, the diagram illustrates the interplay of structural, cultural and institutional elements influencing the effective inclusion of Indigenous perspectives in ICT education.

Figure 3: Factors that facilitate or impede the incorporation of Indigenous perspectives within ICT curricula



Theme 6: Limited Institutional Support and Resources (7 of 8 participants)

Participants highlighted a lack of discipline-specific support, noting the absence of tailored materials, guidance and training for ICT educators seeking to embed Indigenous perspectives. While many universities provide general support through Indigenous engagement offices or library services, these resources are rarely designed to address the specific needs of ICT disciplines. As a result, educators are often required to independently source, evaluate and adapt content, which can be time-consuming and challenging.

In addition, participants reported a lack of structured professional development or resourcing specifically aimed at ICT academics. This gap further limits the capacity for consistent and confident integration of Indigenous knowledge within ICT curricula, reinforcing reliance on individual initiative rather than coordinated institutional support.

"There's nothing ICT-specific in terms of support—no examples, no templates, nothing that speaks our language as tech educators." – (Participant 3)

"It's mostly on us to figure out what's appropriate and where to get material. The university says it's important but doesn't provide the how." – (Participant 8)

"We don't have a repository or a guidebook. You have to find people, ask around, and build our own stuff. That's not scalable." – (Participant 1)

"The institutional message is supportive in principle, but not backed up with actual resources for implementation, especially in our faculty … I spent a lot of time sourcing and validating content myself." – (Participant 2)

Theme 7: Structural and Curricular Constraints (6 of 8 participants)

Structural constraints within ICT programs were identified as significant barriers to the integration of Indigenous perspectives. Participants noted that many degree programs are already tightly structured, often comprising full 24-unit course loads, leaving little or no room for additional electives or new Indigenous-focused units. This lack of flexibility limits opportunities to incorporate cross-disciplinary or culturally focused content.

In addition, the highly technical nature of ICT subjects was perceived to present challenges in aligning Indigenous perspectives with existing curriculum content. Some participants observed that conventional ICT textbooks and teaching models are often framed as culturally neutral, making it difficult to identify clear entry points for integration. Together, these structural and disciplinary factors contribute to the limited and inconsistent inclusion of Indigenous perspectives within ICT curricula.

"We had no additional room in our curriculum for the Bachelor of IT, because we were using all 24 units." – (Participant 1)

"In our field, a lot of the units are very technical—like coding, networking. It's not straightforward to bring in cultural aspects unless you rethink the entire context or example used." – (Participant 5)

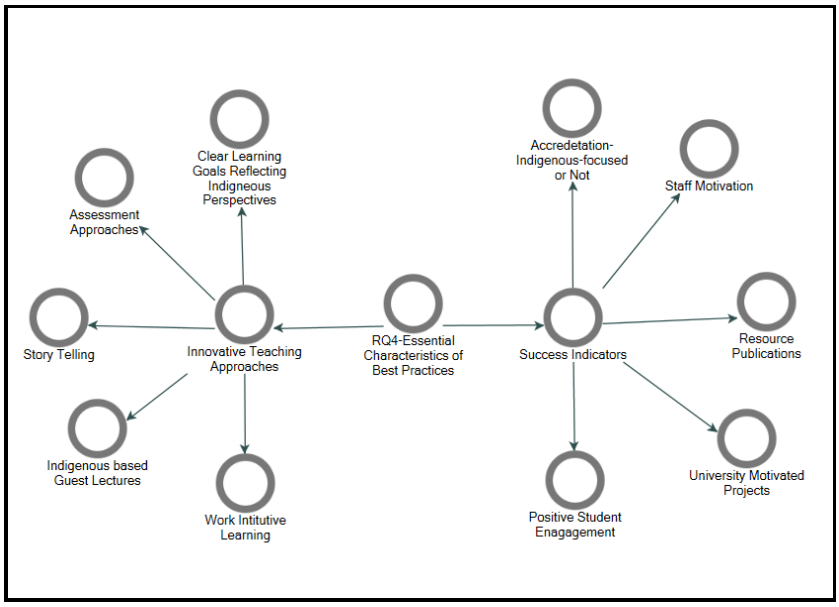
"Many ICT textbooks and curricula are agnostic to culture. That makes this harder." – (Participant 3)

Research Question 4 (RQ4): What are the essential characteristics of best practice when Indigenous perspectives have been included within ICT subjects?

Figure 4 illustrates the effective practices for integrating Indigenous perspectives into ICT education. It is organised into two main branches: Innovative Teaching Approaches and Success Indicators, both of which feed into the overarching goal of defining best practices. Innovative Teaching Approaches shows strategies such as culturally relevant assessment methods, including storytelling and Indigenous guest lectures, alongside clear learning goals that reflect Indigenous world views and work-intuitive learning that connects theory to real-world, often community-based, practice. These methods aim to create meaningful, respectful and inclusive learning environments. On the other hand, Success Indicators help

evaluate the impact of these practices. These include staff motivation to engage with Indigenous content, accreditation outcomes (whether Indigenous-focused or not), positive student engagement, the development of resource publications and the presence of university-motivated projects that demonstrate institutional commitment. Collectively, these elements define best practices for embedding Indigenous perspectives, ensuring both pedagogical innovation and measurable impact within educational settings.

Figure 4: Essential characteristics of best practice when Indigenous perspectives have been included within ICT subjects



Theme 8: Co-Design with Indigenous Experts (5 of 8 participants)

The most effective examples of Indigenous integration were associated with collaboration between educators and Indigenous experts or community members, including Elders and Indigenous centres. Participants who engaged in co-design practices reported greater confidence in delivering content, as well as improvements in the authenticity and cultural relevance of curriculum materials. These collaborations also contributed to stronger student engagement by grounding learning in lived experience and Indigenous knowledge systems.

However, such practices were typically informal and relied upon individual initiative rather than being embedded within institutional strategies. As a result, while co-design demonstrates significant potential as an enabling approach, its implementation remains uneven and limited in scale across ICT programs.

"We consulted an Elder unofficially … but having that voice was critical." – (Participant 2)

"Our Indigenous engagement division looks at ways to incorporate Indigenous content in our curriculum. So, we do have something relevant to that." – (Participant 3)

"We are considering Indigenous knowledge as part of the intellectual property … [the program] also has the guest lecturers who come from the Indigenous background, and they can talk about that with relevant foundational knowledge." – (Participant 4)

Theme 9: Student awareness and engagement outcome (4 of 8 participants)

Educators across universities are actively exploring ways to enhance students' understanding of the importance of Indigenous representation within ICT contexts. In the absence of formal guidance, many academics have adopted experimental and iterative (trial-and-error) strategies to support this learning. These approaches include embedding reflective tasks, incorporating culturally relevant case studies, and facilitating class discussions that encourage students to critically engage with issues of representation, inclusion and cultural context in technology development.

While these efforts vary in depth and remain in early stages of implementation, they reflect a growing commitment to fostering student awareness and engagement. Participants observed that students are more receptive when the purpose and relevance of Indigenous content are clearly communicated. However, most educators noted the absence of formal mechanisms to evaluate the effectiveness of these approaches, highlighting the need for structured institutional frameworks, guidelines, and support systems to ensure consistency and impact.

"The benefits that we have seen in our ICT students, most of them are international students in our metro campuses, whereas in our regional campuses we get a lot of local students. Local Australian students know who Aboriginals are and what is Indigenous content and things like that. However, in terms of international students, they are not aware of this, and when we introduced this content in one of the ICT units last year, many students were very keen to understand. You know they didn't even know this aspect exists … And they were curious, and they were asking a lot of questions when we added this content in a unit. And then we started sharing that information in classes." – (Participant 3)

"I think it's mainly about when in teaching perspective. That one strategy which actually leads to success is sensitising students about why we are doing something. And what is our goal? ... The reflection journey which is inspired by the yarning circle ways that have been successful. So, in this strategy, generally we have seen that our students are open to adopting something if they can understand the context of that, and they can understand why they are doing that. So, it's very important that we take the students as part of this journey rather than somewhere they don't understand. We are trying to apply that approach as long as they are part of the project, they understand the context, we can make them part of the team which is working towards it. Then it is more effective." – (Participant 4)

Discussion

This study examined the integration of Indigenous perspectives within ICT curricula across Australian universities and identified a complex landscape characterised by institutional commitment, uneven implementation, structural constraints and emerging innovation. Although many universities now articulate commitments to Indigenous inclusion through a RAP, graduate attributes and institutional strategies, the findings demonstrate that these commitments are not consistently translated into curriculum practice within ICT education (Lowe at al., 2025; Universities Australia, 2011). Across the participant universities, the integration of Indigenous perspectives remains fragmented, limited and frequently dependent on individual educator initiative rather than systematic institutional approaches. Collectively, the findings suggest that ICT curriculum Indigenisation within Australian higher education is progressing, but unevenly and often without the structural support necessary for sustained transformation (Lowe et al., 2025).

In this study, Indigenisation is understood as the intentional and meaningful integration of Indigenous knowledges, perspectives, and pedagogies into curriculum design and delivery. This extends beyond the inclusion of isolated Indigenous perspectives within individual lectures or assessments and instead involves sustained, relational and contextually grounded engagement with Indigenous ways of knowing, being and doing (Battiste, 2013; Nakata, 2007; Universities Australia, 2011; Yunkaporta, 2019). The distinction is important because superficial inclusion risks tokenism, whereas meaningful Indigenisation requires deeper curriculum transformation and collaborative engagement with Indigenous communities and knowledge holders (Battiste, 2013; Nakata, 2007; Bullen & Flavell, 2022). The findings of this study indicate that many current ICT practices remain positioned toward the earlier stages of this continuum, where Indigenous content is often additive rather than embedded as foundational to curriculum design.

A significant finding emerging from this study is the persistent gap between institutional policy commitments and curriculum implementation. While most universities represented in the study had policies promoting Indigenous inclusion, participants consistently described limited discipline-specific guidance, accountability mechanisms or curriculum frameworks supporting implementation within ICT programs. Similar concerns have been identified within broader higher education literature, where institutional commitments to Indigenous inclusion are often visible at policy level but inconsistently enacted within discipline-specific teaching practices (Bullen & Flavell, 2022; Lowe et al., 2025). These findings suggest that the presence of policy alone is insufficient to achieve meaningful curriculum transformation. Rather, institutional commitments require operationalisation through program-level strategies, educator support, curriculum review processes and sustained investment in Indigenous-led collaboration.

Importantly, the findings raise broader questions regarding the extent of institutional change occurring within Australian universities. Indigenous inclusion has received increasing attention over the past decade through Universities Australia frameworks, Indigenous strategies and national discussions surrounding curriculum reform (Bullen & Flavell, 2022; Lowe et al., 2025; Universities Australia, 2011, 2022). However, participants continued to describe Indigenous integration within ICT curricula as inconsistent, optional and frequently symbolic. This suggests that, while institutional awareness and policy visibility may have increased, systemic curriculum transformation remains uneven. The findings therefore contribute to broader discussions regarding how universities enact commitments to Aboriginal and Torres Strait Islander peoples and Indigenous knowledges in practice, particularly within technical disciplines that have traditionally positioned themselves as culturally neutral (Du, 2017; Herbert et al., 2022).

The issue of responsibility emerged strongly across the findings. Participants frequently described curriculum Indigenisation as dependent on the interests, confidence and initiative of individual educators rather than institutionally coordinated processes. While several educators demonstrated strong commitment and creativity in embedding Indigenous perspectives, reliance on individual effort raises important concerns regarding sustainability, consistency and accountability. Similar issues have been identified in earlier studies examining Indigenous curriculum integration across Australian higher education (Flavell et al., 2013; Ranzijn et al., 2008). When curriculum transformation depends primarily on individual goodwill, implementation becomes vulnerable to workload pressures, variable expertise and staff turnover. The findings, therefore, suggest that meaningful Indigenisation requires movement beyond isolated educator-led efforts toward institutionally embedded responsibility and support structures.

The study also highlights the unique structural and disciplinary challenges associated with Indigenising ICT curricula. Participants described tightly structured programs, accreditation requirements and overloaded curricula as major barriers limiting opportunities to introduce additional or cross-disciplinary content. Some educators also perceived ICT as a highly technical or culturally neutral discipline, making it difficult to identify clear pathways for integrating Indigenous perspectives. These findings reinforce arguments that technical disciplines may encounter distinct challenges in curriculum Indigenisation compared with fields where social and cultural dimensions are already more visible (Herbert et al., 2022; Herbert et al., 2024). However, the perceived neutrality of ICT may itself obscure the cultural, ethical and political dimensions of technology, including issues relating to digital inclusion, Indigenous data sovereignty, culturally responsive system design and representation within digital environments (Du, 2017; Walter et al., 2021).

Despite these barriers, the findings also reveal emerging examples of innovative and culturally responsive practice. Several educators described embedding Indigenous perspectives through contextualised case studies, reflective tasks, Indigenous datasets and culturally relevant examples within existing ICT units. These approaches enabled students to engage with Indigenous perspectives in ways connected to authentic professional and societal issues. Consistent with earlier research (ACSES, 2020; Herbert et al., 2023), participants observed stronger student engagement when Indigenous perspectives were clearly contextualised and linked to real-world ICT applications. Importantly, these examples demonstrate that meaningful integration is possible even within technically focused curricula when educators are supported to identify relevant connections between Indigenous knowledges and ICT practice.

Particularly significant were examples of collaboration and co-design involving Indigenous experts, Elders and Indigenous engagement centres. Participants who engaged in collaborative curriculum development reported greater confidence in delivering Indigenous content and perceived improvements in both authenticity and student engagement. These findings align with scholarship emphasising relational and collaborative approaches to curriculum Indigenisation (Maguire & Young, 2016; Zubrzycki et al., 2014). However, such collaborations were typically informal and dependent upon personal relationships rather than institutionally embedded processes. This highlights an important tension within current practice: while co-design appears highly effective, universities often lack the structures, resources or sustained partnerships necessary to support broader implementation. Furthermore, genuine collaboration requires reciprocity and recognition that Indigenous communities should benefit from engagement, rather than being positioned solely as contributors to institutional agendas.

The findings also demonstrate the emerging role of Indigenous pedagogical approaches within ICT education. A small number of participants described experimenting with pedagogical models such as the 8 Ways of Aboriginal Learning and yarning circle principles to support more reflective and relational learning environments. These approaches challenge traditional transmission-based teaching models commonly associated with technical disciplines and instead emphasise dialogue, storytelling, relationality and contextual learning (Yunkaporta, 2019). Although still limited in adoption, these examples suggest that Indigenisation involves not only changes to curriculum content, but also reconsideration of pedagogical approaches and learning relationships within ICT education.

An important insight emerging from the study concerns student awareness and engagement. Participants noted that many students, particularly international students, entered ICT programs with limited understanding of Indigenous histories, cultures and contemporary issues within Australia.

However, when Indigenous perspectives were introduced with clear context and relevance, students frequently demonstrated curiosity, reflection and engagement. This finding suggests that meaningful engagement may depend less on student resistance and more on how Indigenous content is framed, contextualised and connected to professional practice. The findings therefore support approaches that position Indigenous perspectives not as supplementary material, but as relevant and valuable components of contemporary ICT education.

The findings also raise important questions regarding how best practice in curriculum Indigenisation is defined and by whom. Participants identified approaches such as co-design, contextualised learning and Indigenous pedagogies as examples of effective practice. However, these perspectives primarily reflect the views of non-Indigenous ICT educators. As such, the findings should not be interpreted as definitive representations of Indigenous understandings of best practice. Rather, they provide insight into how educators are currently attempting to engage with curriculum Indigenisation in good faith within ICT contexts. Future research should therefore prioritise Indigenous voices, leadership, and perspectives in defining what meaningful and culturally appropriate practice looks like within ICT curriculum design and delivery.

Taken together, the findings indicate that ICT curriculum Indigenisation within Australian higher education remains at an important transitional stage. While policy attention, educator awareness and innovative examples of practice are increasing, implementation remains fragmented and uneven. The study contributes to broader discussions surrounding curriculum Indigenisation by highlighting both the possibilities and limitations shaping Indigenous inclusion within technical disciplines. It further demonstrates that meaningful Indigenisation cannot be reduced to isolated content inclusion or symbolic representation, but instead requires sustained, relational and institutionally supported approaches to curriculum transformation.

Key findings

A central finding of this study is the persistent gap between institutional policy commitments and curriculum practice. While many universities have established a RAP and express formal commitments to embedding Indigenous perspectives, their translation into ICT curricula remains limited, inconsistent and, in some cases, largely symbolic rather than substantive. The findings further indicate that responsibility for integrating Indigenous content is often placed on individual educators rather than being supported through systematic, program-level strategies. This reliance on personal initiative contributes to uneven implementation across institutions. Compounding this issue is a lack of ICT-specific guidance, teaching resources and discipline-relevant examples, which constrains educators' ability to embed Indigenous knowledge in meaningful and contextually appropriate ways. Structural factors also present significant barriers. Overcrowded curricula and rigid accreditation requirements within ICT programs limit opportunities to introduce new or cross-disciplinary content. Despite these challenges, examples of effective practice demonstrate that meaningful integration is possible, particularly when curriculum design involves collaboration with Indigenous experts and incorporates real-world, culturally relevant applications.

The study also identifies the potential of Indigenous pedagogical approaches, such as the 8 Ways framework and yarning circles, to foster more culturally responsive teaching practices. These approaches not only support deeper engagement with Indigenous perspectives but also contribute to more inclusive learning environments. Importantly, student engagement appears to increase when Indigenous content

is introduced with clear context and relevance, with participants noting heightened curiosity and participation, particularly among international students.

Overall, the findings suggest the need for stronger institutional support, including the development of comprehensive frameworks, targeted professional development and accessible resources. Such measures are essential to move beyond fragmented efforts and support the consistent and authentic integration of Indigenous perspectives within ICT education.

This study has examined how Indigenous perspectives are currently integrated into ICT curricula across Australian universities, highlighting both the systemic challenges and the emerging opportunities for authentic Indigenisation. The findings reveal a persistent gap between policy commitments and practice, with integration often dependent on individual initiative rather than embedded systematically across programs. Despite these limitations, examples of innovative pedagogy, co-design with Indigenous experts and student engagement strategies signal pathways toward more culturally responsive ICT education. Based on these insights, several implications emerge for practice, policy and future research.

Recommendations for practice

For educators and curriculum designers, the evidence underscores the importance of moving beyond ad hoc inclusion to systemic, discipline-specific approaches. Practical strategies include embedding Indigenous perspectives within core ICT units rather than relegating them to electives or optional tasks. Educators can achieve this by contextualising technical learning, such as through assignments involving Indigenous datasets, interface design reflecting cultural protocols or projects engaging with Indigenous community needs. To enable this, professional development is crucial. ICT educators require both cultural competence and discipline-specific guidance to teach confidently and authentically. Importantly, successful practice is grounded in co-design; partnerships with Indigenous scholars and communities not only validate content but also ensure it reflects Indigenous priorities and worldviews. Universities should therefore foster ongoing collaboration between Indigenous knowledge holders and ICT educators, embedding these partnerships as an integral part of teaching practice rather than one-off initiatives.

Recommendations for policy

At the institutional and sectoral levels, stronger frameworks and accountability mechanisms are needed to translate broad commitments into practice. While many universities have a RAP and national strategies endorse Indigenous curriculum integration, their implementation in ICT remains uneven. To bridge this policy–practice gap, universities should prioritise the development of overarching frameworks that provide clear institutional direction while enabling disciplines such as ICT to interpret and apply these principles in contextually appropriate ways. This approach supports consistency at the institutional level while allowing flexibility for discipline-specific implementation. Accreditation bodies and quality assurance processes could play a role by requiring evidence of authentic integration within technical curricula, moving beyond compliance-based approaches that risk being "tick-box" exercises. Policies should also prioritise Indigenous leadership in curriculum design and governance; however, it is important to acknowledge that access to Indigenous expertise and resources may be limited in some contexts. This highlights the need for sustained investment and capacity-building across the sector. Furthermore, partnerships with Indigenous communities should be grounded in reciprocity, ensuring that benefits extend both to institutions and to the communities involved, rather than being extractive or one-directional. Furthermore, investment in resources, such as ICT-specific teaching materials, case

studies and training programs, will be critical to equip educators with practical tools to operationalise these commitments.

Limitations of the study

This study has several limitations, including the small sample of eight interview participants and recruitment challenges, as many academics reported limited or no Indigenous content within their ICT programs. These challenges reflect the broader limited integration of Indigenous perspectives in ICT curricula; however, a follow-up survey is being conducted to provide complementary quantitative data and broader sector-wide insights.

Conclusion and future work

This is one of the first sector-wide attempts to capture voices of ICT educators engaging with Indigenous perspectives. It establishes a foundation for larger-scale, mixed-methods research. This study leads to three overarching conclusions. First, the integration of Indigenous perspectives in ICT curricula remains fragmented and inconsistent, with a clear gap between institutional policy commitments and curriculum practice. Second, the responsibility for Indigenisation is largely placed on individual educators, resulting in uneven and unsustained implementation. Third, while innovative practices are emerging, particularly through contextualised learning and collaboration with Indigenous experts, these remain isolated rather than systematically embedded across programs.

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References

Al-Natour, R., Fredericks, B., Bargallie, D., Marrie, H., & Bond, C. (2016). *Great guide to Indigenisation of the curriculu*m. CQUniversity. https://hdl.handle.net/10018/1212463

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using Zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, *18*. https://doi.org/10.1177/1609406919874596

Australian Centre for Student Equity and Success. (2020). *How a university can embed Indigenous knowledge into the curriculum and why it matters*. Retrieved 27 July 2025, from https://www.acses.edu.au/how-a-university-can-embed-Indigenous-knowledge-into-the-curriculum-and-why-it-matters/

Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit*. Purich Publishing Ltd.

Booth, S. (2014). *Teaching Aboriginal curriculum content in Australian high schools* [Master of Education (Research) thesis]. Edith Cowan University. Retrieved 30 July 2025, from https://ro.ecu.edu.au/theses/1522/

Bradshaw, C., Atkinson, S., & Doody, O. (2017). Employing a qualitative description approach in health care research. *Global Qualitative Nursing Research*, *4*, 1–8. https://doi.org/10.1177/2333393617742282

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. Sage. Retrieved 27 July 2025, from https://study.sagepub.com/thematicanalysis

Brinkmann, S., & Kvale, S. (2014). *InterViews: Learning the craft of qualitative research interviewing* (3rd ed.). SAGE Publications, Inc.

Bullen, J., & Flavell, H. (2022). Decolonising the Indigenised curricula: Preparing Australian graduates for a workplace and world in flux. *Higher Education Research & Development*, *41*(5), 1402–1416. https://doi.org/10.1080/07294360.2021.1927998

Carlson, B., & Kennedy, T. (2021). Us Mob Online: The Perils of Identifying as Indigenous on Social Media. Genealogy, 5(2), 52. https://doi.org/10.3390/genealogy5020052

Dada, A. M. (2024). Global challenges in cultural and Indigenous education. *Educational Perspectives*, *13*(1), 38–48. Retrieved 20 July 2025, from https://educationalperspectives.org.ng/upload_file/7EY8Adenike%202024.pdf

Deloitte Access Economics. (2022). Australia's digital pulse 2022: Unlocking the tech sector: Beyond one million. Retrieved 27 July 2025, from https://www.acs.org.au/insightsandpublications/reports-publications/digital-pulse2022.html.

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, *40*(4), 314–321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Du, J. (2017). Research on Indigenous people and the role of information and communications technology in development: A review of the literature. *Journal of the Australian Library and Information Association*, *66*(4), 344–363. https://doi.org/10.1080/24750158.2017.1397857

Flavell, H., Thackrah, R., & Hoffman, J. (2013). Developing Indigenous Australian cultural competence: A model for implementing Indigenous content into curricula. *Journal of Teaching and Learning for Graduate Employability*, *4*(1), 39–63. https://doi.org/10.21153/jtlge2013vol4no1art560

Gregori, P., Holzmann, P., & Audretsch, D. B. (2024). Sustainable entrepreneurship on digital platforms and the enactment of digital connectivity through business models. *Business Strategy and the Environment*, *33*(2), 1173–1190. https://doi.org/10.1002/bse.3551

Guerzoni, M. (2020). *Indigenising the curriculum: Context, concepts and case studies*. University of Tasmania. Retrieved 30 July 2025, from https://www.utas.edu.au/__data/assets/pdf_file/0019/1452520/Indigenising-the-Curriculum-Context-Concepts-and-Case-Studies.pdf

Gurov, O. (2025). Digital inclusion vs digital sovereignty: RRI as a platform for integrating ethics into geopolitics. *YSU Journal of International Affairs*, *1*(1), 100–115. https://doi.org/10.46991/jia.2025.1.1.100

Herbert, N. (2024). Infusing Indigenous perspectives into ICT curriculum. In N. Herbert & C. Seton (Eds.), *Proceedings of the 26th Australasian Computing Education Conference (ACE 2024)* (pp. 19–28). Association for Computing Machinery. https://doi.org/10.1145/3636243.3636246

Herbert, N., Goldfinch, F., Hardy, D., Jha, M., & Seton, C. (2024). *Incorporating Indigenous perspectives within ICT curriculum across Australian universities*. Australasian Council of Deans of Information and Communications Technology. Retrieved 27 July 2025, from https://acdict.edu.au/wp-content/uploads/2024/07/NicoleHerbertIncorporatinghIndigenousPerspectives.pdf

Herbert, N., Lin, Z., Pratik, P., & Springer, M. (2022). Why embedding Indigenous cultural awareness in ICT curriculum is an imperative. In J. Sheard & P. Denny (Eds.), *ACE 2022 – Proceedings of the 24th Australasian Computing Education Conference* (pp. 191–200). Association for Computing Machinery. https://hdl.handle.net/102.100.100/522577

Herbert, N., Lin, Z., & Springer, M. (2023). Effective learning experiences for ICT curriculum Indigenisation. In P. Denny & N. Herbert (Eds.), *ACE 2023 – Proceedings of the 25th Australasian Computing Education Conference* (pp. 77–86). Association for Computing Machinery. https://doi.org/10.1145/3576123.3576132

Jones, L., Jacklin, K., & O'Connell, M. E. (2017). Development and use of health-related technologies in Indigenous communities: Critical review. *Journal of Medical Internet Research*, *19*(7), 132–149. https://doi.org/10.2196/jmir.7520

Jordan, R., Axelsen, M., Matook, S., Bremhorst, M., Burton-Jones, A., Callan, V., Crowe, L., Karanasios, S., Mylonas, A., O'Quinn, R., & Ranpara, A. (2024). Indigenizing curriculum through technology: A socio-technical perspective. *ECIS 2024 Proceedings*, Article 8. Retrieved 21 August 2025, from https://espace.library.uq.edu.au/data/UQ_f2a1f2b/ECIS_2024_2.pdf

Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, *72*(12), 2954–2965. https://doi.org/10.1111/jan.13031

Kennedy, J., Goldfinch, T., Leigh, E., McCarthy, T., Prpic, J. K., & Dawes, L. (2016). *A beginners guide to incorporating Aboriginal perspectives into engineering curricula*. EAC – Engineering Across Cultures. https://Indigenousengineering.wordpress.com/

Lambert V. A., & Lambert, C. E. (2012). Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research*, *16*, 255–256. Retrieved 21 August 2025, from https://he02.tci-thaijo.org/index.php/PRIJNR/article/view/5805

Lowe, K., Golledge, C., Poulton, P., & Thompson, K. (2025). Curriculum as policy deception: A critical analysis of Aboriginal and Torres Strait Islander knowledge inclusion in the Australian Curriculum. *Australian Educational Researcher*, *52*(3), 2561–2582. https://doi.org/10.1007/s13384-025-00824-6

Maguire, A., & Young, T. (2016). Indigenisation of curricula: Current teaching practices in law. *Legal Education Review*, *25*, 95–119. https://ssrn.com/abstract=2836802

Manton, D., & Williams, M. (2021). Strengthening Indigenous Australian perspectives in allied health education: A critical reflection. *International Journal of Indigenous Health*, *16*(1), 24–45. https://doi.org/10.32799/ijih.v16i1.33218

Meston, T. (2024). [Re] Imagining Indigenous educational design: A conceptual manifesto to grow disruptive Indigenous digital activists. *Postdigital Science and Education*, *6*(1), 72–97. https://doi.org/10.1007/s42438-023-00415-7

Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball sampling: A purposeful method of sampling in qualitative research. *Strides in Development of Medical Education*, *14*(3), Article e67670. https://doi.org/10.5812/sdme.67670

Nakata, M. (2007). *Disciplining the savages: Savaging the disciplines*. Aboriginal Studies Press.

Osborne, S., Paige, K., Hattam, R., Rigney, L. I., & Morrison, A. (2019) Strengthening Australian Aboriginal participation in university STEM programs: A Northern Territory perspective. *Journal of Intercultural Studies*, *40*(1), 49–67. https://doi.org/10.55146/ajie.v51i2.37

O'Sullivan, S., & Walker, C. (2018). From the interpersonal to the internet: Social service digitisation and the implications for vulnerable individuals and communities. *Australian Journal of Political Science*, *53*(4), 490–507. https://doi.org/10.1080/10361146.2018.1519064

Radoll, P. (2014). Cyber-safety and Indigenous youth. *Indigenous Law Bulletin*, *8*(12), 11–21. Retrieved 21 August 2025, from http://www.austlii.edu.au/au/journals/ILB/2014/18.pdf

Ranzijn, R., McConnochie, K., Day, A., Nolan, W., & Wharton, M. (2008). Towards cultural competence: Australian Indigenous content in undergraduate psychology. *Australian Psychologist*, *43*(2), 132–139. https://doi.org/10.1080/00050060701762554

Shipp, C. (2013). *Bringing Aboriginal and Torres Strait Islander perspectives into the classroom: Why and how*. Australian Literacy Educators' Association. Retrieved 1 August 2025, from https://missshipp.wordpress.com/wp-content/uploads/2014/07/hand-out.pdf

Shirodkar, S. (2019). Bias against Indigenous Australians: Implicit association test results for Australia. *Journal of Australian Indigenous Issues*, *22*(3–4), 3–34. https://doi.org/10.3316/informit.150032703197478

Siliutina, I., Tytar, O., Barbash, M., Petrenko, N., & Yepyk, L. (2024). Cultural preservation and digital heritage: Challenges and opportunities. *Amazonia Investiga*, *13*(75), 262–273. https://doi.org/10.34069/AI/2024.75.03.22

Stone, C. (2019). Online learning in Australian higher education: Opportunities, challenges and transformations. *Student Success*, *10*(2), 1–11. https://doi.org/10.5204/ssj.v10i2.1299

Trabelsi, M. A. (2024). The impact of artificial intelligence on economic development. *Journal of Electronic Business and Digital Economics*, *3*(2), 142–155. https://doi.org/10.1108/JEBDE-10-2023-0022

Universities Australia. (2011). *Guiding principles for developing Indigenous cultural competency in Australian universities*. Retrieved 27 July 2025, from https://universitiesaustralia.edu.au/wp-content/uploads/2019/06/Guiding-Principles-for-Developing-Indigenous-Cultural-Competency-in-Australian-Universities.pdf

Universities Australia. (2022). *Indigenous strategy 2022–2025*. Retrieved 27 July 2025, from https://universitiesaustralia.edu.au/wp-content/uploads/2022/03/UA-Indigenous-Strategy-2022-25.pdf

Walter, M., Lovett, R., Maher, B., Williamson, B., Prehn, J., Bodkin-Andrews, G., & Lee, V. (2021). Indigenous data sovereignty in the era of big data and open data. *Australian Journal of Social Issues*, *56*, 143–156. https://doi.org/10.1002/ajs4.141

Yunkaporta, T. (2019). *Sand talk: How Indigenous thinking can save the world*. Text Publishing.

Zubrzycki, J., Green, S., Jones, V., Stratton, K., Young, S., & Bessarab, D. (2014). *Getting it right: Creating partnerships for change. Integrating Aboriginal and Torres Strait Islander knowledges in social work education and practice. Teaching and Learning Framework*. Australian Government Office for Learning and Teaching. Retrieved 21 July 2025, from https://acuresearchbank.acu.edu.au/download/601199005b8920b74bf1a25dab737cf6411ea2df0aacd1365bd52267e8985cfc/1815144/Zubrzycki_2014_Getting_it_right_creating_partnerships_for.pdf

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