

Generative AI in the Australian education system: An open data set of stakeholder recommendations and emerging analysis from a public inquiry

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The launch of new tools in late 2022 heralded significant growth in attention to the impacts of generative AI (GenAI) in education. Claims of the potential impact on education are contested, but there are clear risks of inappropriate use particularly where GenAI aligns poorly with learning aims. In response, in mid-2023, the Australian Federal Government held an inquiry, calling for public submissions. This inquiry offers a lens onto the policy framing of GenAI in education and provides the object of investigation for this paper. We use the inquiry submissions, extracting structured claims from each. This extraction is provided as an open data set for further research, while this paper focuses on our analysis of the policy recommendations made.

Implications for practice or policy

- For practitioners, policymakers, and researchers. the paper provides an overview and synthesis of submission recommendations and their themes, by source type.
- For respondents to the inquiry (sources), the paper supports reflection regarding synergies and gaps in recommendations, pointing to opportunity for collaboration and policy development.
- For stakeholders with responsibility for aspects of policy delivery and/or those applying a critical lens to the inquiry and recommendation framing(s), the paper offers actionable insight.

Keywords: policy analysis, content analysis, edtech, participatory, AI ethics

Introduction

Since the launch of ChatGPT and DALL-E 2 in late 2022, the growth in capabilities of, and attention on, generative AI (GenAI) has been significant. Analysis of Australian university policies and media coverage regarding GenAI indicates that within the first 100 days, 36% (n = 14) of universities had developed policies regarding AI, indicating tension between concerns regarding academic integrity and opportunities for the use of GenAI (Fowler et al., 2023). This finding was paralleled in analysis of news coverage across Australia, New Zealand, the United States of America (USA) and United Kingdom, with a significant focus on academic integrity concerns and the need for assessment innovation, but less coverage on student perspectives or how GenAI might support students (Sullivan et al., 2023).

Responding to this increased attention, policymakers and regulators internationally have sought to directly address the tools. Avenues such as communication of hard and soft regulation, new policy responses and inquiries of various forms have all attempted to chart a path forward. In the education space, both the United Kingdom Government and the U.S. Department of Education have released position statements: “Generative Artificial Intelligence (AI) in Education” (UK Government, 2023) and the U.S. Office of Educational Technology’s “Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations” (Cardona et al., 2023). One resource providing a set of exemplary pedagogic models for GenAI (M. Sharples, 2023) has achieved widespread use and was rapidly incorporated into the inter-governmental UNESCO “quick start” guide to GenAI (Sabzalieva & Valentini, 2023), among other rapid development and sharing of educator resources. As Cardona et al. (2023, pp. 2–3) noted, there is a dual impetus for addressing AI in education now: (a) to respond to claims of potential in addressing educational priorities; (b) to address the risks, and their scale, if we get the design and use of AI wrong. Perhaps most significantly, whatever the evidence of benefits and risks, the range of actors making claims or engaging with the potential of AI in education is sizeable. There is thus a need to address these claims and their evidentiary basis in order to foster both sound policy and practice across the education sector and into the professions. Understanding the evidence, including what we can learn from non-GenAI innovation and its impact in education, and a path forward for evidence generation, is a significant challenge.

Seeking to address the emergence of GenAI and its application to education, in May 2023, the Australian Federal Government House of Representatives Standing Committee on Employment, Education and Training established a public inquiry (Parliament of Australia, 2023b), “into the issues and opportunities presented by generative Artificial Intelligence (AI), [to] comprehensively explore current and future impacts on Australia’s early childhood education, schools, and higher education sectors” (Parliament of Australia, 2023a).

In this paper, we take submissions to this enquiry as a lens onto stakeholder attitudes regarding GenAI in their responsiveness to the problem-framing made available in the inquiry call (which by its nature, makes other framings less available) (Bletsas & Beasley, 2012). In applying this lens, we note that both inquiry terms of reference and inquiry submissions are situated in social contexts in which the ways that they voice and speak to other actors may be both explicit and implicit. This socially situated context has implications for how these materials are interpreted or taken at face value. To put it another way, submissions seek to do different things and address different groups beyond the committee. Thus, understanding how submissions position themselves is beyond the scope of this paper, and nothing represented is intended to be evaluative in this way. Our key target is to understand how the space is constructed through the material of a public inquiry, and the implications of that for the sector, through addressing the question “How do stakeholders in a public inquiry frame policy recommendations regarding GenAI in education?”

Background

GenAI in education: Brief history and context

GenAI encapsulates technologies built on foundation models such as large language models. GenAI uses these models to provide content based on given prompts (Gozalo-Brizuela & Garrido-Merchan, 2023). Prompts and their responses might include text, code (e.g., in ChatGPT and Bard) and text-to-image generation (e.g., DALL-E & midjourney) (Gozalo-Brizuela & Garrido-Merchan, 2023). More recent systems have adopted a multimodal approach, enabling them to receive and output various forms of media such as text, images, audio, video and even 3D virtual reality simulations (Bussell et al., 2023).

Although calls for evidence and research agendas towards evidence creation are sensible given the novel features of GenAI, there is a well-established body of knowledge regarding both the impacted fields and their associated stakeholders which we should take as a grounding context. One field with clear relevance is that of AI in education (AIED). A history of the field of AI and its application in education charts its emergence to the 1970s, with the first academic event held in 1983 with the Journal of Artificial Intelligence in Education founded in 1989 and learned society in 1991 (Self, 2016); this is not a new field. It has had longstanding commitment to investigation that brings learning and computer theories together in pursuit of understanding and supporting learning, for example, the Handbook of Artificial Intelligence in Education (Boulay et al., 2023) and the journal's 25 anniversary issue (Grandbastien et al., 2016). As such, we already have a significant body of knowledge around the pre-requisites for AI achieving impact in education, work that calls attention to infrastructural, social, learning, technology design and ethical aspects of this challenge. As Schiff (2022, p. 527) put it, "AIED and its broader policy and ethical implications—good or bad—have failed to reach mainstream awareness and the agendas of key decision-makers, a concern given that effective policy and careful consideration of ethics are inextricably linked". Although the field certainly faces challenges in addressing the emergence of GenAI (Holmes, 2023), it has much to contribute along with related fields such as learning analytics and computer-supported collaborative learning in considering application of GenAI in education.

Public inquiries as problem frame and policy formulation

Evidence-informed policymaking faces a range of challenges (Cairney, 2016; Hallsworth et al., 2011; Oliver et al., 2022; Verhagen et al., 2014), including in educational policy (Rickinson, Bruin et al., 2017; Rickinson, Cirkony et al., 2018; Rickinson, Walsh et al., 2022). The significance of evidence standards is an increasing focus across policy areas (e.g., Puttick, 2018), with growing recognition that beyond access to quality evidence, attention should be turned to supporting evidence use (Rickinson, Walsh et al., 2022) and implementation (J. Sharples et al., 2018). This concern parallels a longstanding critique regarding educational technologies (EdTech) that, "there are still unanswered questions about the impact of technology in the long and short term on students' learning, and how it has affected simple and complex learning tasks" (Cox & Marshall, 2007, pp. 59–60). The implications of this gap are stark. The commercial EdTech sector is large (~\$300 billion USD in 2022 expenditure, HolonIQ, 2022); in Australia, the sector includes "13,000 people [...] employed by Australian EdTech companies [...] [The] sector generates \$1.6 billion revenue in the domestic market and \$600 million from exports" (EduGrowth, 2020). Yet at a school level research indicates that of the top 100 most popular EdTech apps in learning, roughly a quarter meet any level of a formal evidence standard (LearnPlatform, 2023); we have no reason to believe tertiary education would differ significantly. This may result in underuse, inappropriate use or poor procurement (Krueger, 2019).

Public inquiries offer one lens onto how problems, opportunities and challenges are framed with respect to stakeholders. This lens extends to the ways that evidence is drawn on in mobilising claims regarding recommendations, both directly in both submissions, and subsequently in reporting from inquiries. Analysis of public submissions has been used in this way in a number of previous Australian projects, including (a) content analysis (McCurdy & Knell, 2015); (b) analysis to quantify agreement between the arguments made in submissions and the final committee report (Weaver-Hightower, 2014); (c) and

content analysis of issues raised in submissions to map both to stakeholder groups and the final committee report (Buchan & Harris, 2010). By adopting a critical policy analysis lens, other work has highlighted the way that an inquiry and its terms of reference can both deny and make available particular perspectives through its framing of the “problem” (Bacchi, 2012) – this is seen in an analysis of the Australian Productivity Commission Inquiry into Child Care and Early Childhood Learning (Cook & Brady, 2017); and provided critical discourse analysis of the frames different stakeholders provide in their submissions (Meagher & Wilkins, 2018). Notably, the question of which stakeholders are represented in public inquiries and their policy framing is bound up with the evidence that is “heard” by those participating in the inquiries (Regan, 2019).

As such, although submissions to public inquiries provide a lens onto framings of policy spaces, and perceptions of these among those who submit, it is a distorted, narrow and partial lens:

- **distorted** because submissions respond to the framing provided
- **narrow** because submissions reflect only the stakeholders who submit to them, with some concerns regarding a democratic deficit in public participation in public inquiries
- **partial** because submissions fulfil discursive purpose, with the framing provided by submitting authors intended to fulfil particular pragmatic ends.

Data set and open data

The format of public inquiries involves an online call for submissions, with a subsequent release of these submissions as published materials. This format provides a unique opportunity for the public, the submitters and other stakeholders to take advantage of such open data for their own analysis, potentially bringing transparency to any policy decisions arising from the inquiry. This approach to public policy and public consultation has its benefits and pitfalls. Democratic theorists and public participation scholars have promoted such institutionalised forms of citizen discourse with the state. This includes those facilitated by information technology that has the potential to facilitate deliberative processes towards more widespread public involvement, greater transparency in government processes and a more satisfied citizenry (Zavestoski et al., 2006). However, some of the risks include potential widening of the digital divide due to the infrastructure-dependent, highly situated nature of open data practices; risks of diminishing qualitative methodologies; new risks of bias and exclusion in means of transparent evaluation; and crucial asymmetries in the relationships with industry and the public, which privilege the former and fail to fully include the latter (Ross-Hellauer et al., 2022). This data can provide an evidence lens around the depth, breadth and authenticity of insights into how various groups are thinking about and framing a particular issue.

To facilitate such insight, in this paper we provide access to the submissions. We do this by releasing an open data set alongside our emerging analysis of recommendations submitted to the inquiry. The intent of making the data open is of course partly to ground our analysis, but we also hope that the data itself acts as a catalyst for research as well as a tool for reflection, by supporting other researchers and stakeholders in considering the issues in the space of GenAI and education policy. Open data is generally non-privacy-restricted and non-confidential data which is produced with public money and is made available without any restrictions on its usage or distribution (Janssen et al., 2012). In this case, once published, the submissions are formally a parliamentary publication, under parliamentary copyright (a Creative Commons Attribution, non-Commercial, no-Derivatives or CC-By-NC-ND license). Our use of the data is consistent with that license in reproducing parts of whole submissions (Creative Commons, 2023; Vézina, 2020). In the discussion, we point to some possible future analyses that this data could facilitate.

Approach

Details of the inquiry

The inquiry was convened by The House of Representatives Standing Committee on Employment, Education and Training, into “the use of generative artificial intelligence in the Australian education

system” on 24 May 2023 (Parliament of Australia, 2023b), to inquire into “the issues and opportunities presented by generative Artificial Intelligence (AI)” and its impacts across the education sector (Parliament of Australia, 2023a). Instructions included a link to general guidance on making a submission (Parliament of Australia, 2021), which notes that “useful submissions make a clear argument, contain recommendations for action, and provide sources for any references”. Submissions were invited to address all or a subset of the terms of reference (ToR) (Parliament of Australia, 2023a):

- (1) “The strengths and benefits of generative AI tools for children, students, educators and systems and the ways in which they can be used to improve education outcomes;
- (2) The future impact generative AI tools will have on teaching and assessment practices in all education sectors, the role of educators, and the education workforce generally;
- (3) The risks and challenges presented by generative AI tools, including in ensuring their safe and ethical use and in promoting ongoing academic and research integrity;
- (4) How cohorts of children, students and families experiencing disadvantage can access the benefits of AI;
- (5) International and domestic practices and policies in response to the increased use of generative AI tools in education, including examples of best practice implementation, independent evaluation of outcomes, and lessons applicable to the Australian context, and;
- (6) Recommendations to manage the risks, seize the opportunities, and guide the potential development of generative AI tools including in the area of standards.”

Although our analysis in this paper focuses on ToR 6, seeking recommendations, we note the broad framing of the inquiry in terms of “issues and opportunities”, the targeting of “recommendations for action” in that context. Our analysis uses this framing to drive data extraction. The development of this project emerged from a process of engagement with the parliamentary inquiry, including the formation of an expert group to co-author a submission to the panel, drawing on our own work and key work across the field to develop a framing and concrete recommendations. As such, we are not neutral actors in this space, with submissions we contributed to as part of the data (see the Declaration of interests section) and potential for our own perspectives to shape the data extraction and analysis.

Research ethics

We note that the data extraction and analysis provided here constitutes a secondary use of the data. The data submitted to public inquiries is submitted explicitly for the purposes of engaging in public discourse and the policy process, as set out in the ToR for the inquiry. Our analysis aligns closely with that end (i.e., it matches the expectations of the individuals from whom the data was obtained). Submissions can be made both deidentified (i.e., published without name) or confidentially (i.e., not published but used by the committee), with all submissions checked by the committee for removal of personal information (aside from author and/or organisation) prior to publication.

Despite the nature of the data as publicly published, and under a relatively permissive license, we nevertheless note that there is sometimes potential in such submissions to cause distress to authors. In this case, we think that concern is unlikely and note that our intent is not to make any evaluation of individual submissions themselves but rather to analyse groups of submissions to generate new insights.

Materials and data extraction

Once submissions were made, the inquiry committee check and publish each via their website. PDF submissions were downloaded from the Inquiry page (Parliament of Australia, 2023b) as they were uploaded by the secretariat, with an initial batch of 43. The initial submissions were used to develop an approach, which was then expanded to further submissions published; 95 submissions (with two confidential). For each publicly published PDF:

1. Key metadata was extracted for the source including the name of the submitter, the type of submitter (organisation or individual type) and any notes.

2. The submission PDFs were reviewed to identify and extract into separate tables expressions of:
 - a. opportunities or uses for GenAI (typically addressing ToR 1 or 2)
 - b. risks or challenges in use of GenAI (typically addressing ToR 3 or 4)
 - c. recommendations (typically addressing ToR 6)
 - d. sources included (addressing the ToR and guidance regarding making submissions, and often addressing ToR 5).
3. Supplementary materials were downloaded but not included in this analysis.

Establishing the unit of analysis to extract for each of 2a-c presented a challenge; some submissions clearly demark opportunities, risks and recommendations, for example, through use of subheadings and/or lists; others did not. In some cases, ToRs were not explicitly referred to, discussion of risks and opportunities was combined, or coverage of the key features (2a-c) varied in length with some very short mentions (e.g., the word “privacy”) of key issues given in larger chunks of the text. An approach was adopted to (a) review for implied coverage of 2a-c (e.g., unheaded paragraphs containing sentences such as, “Government should”) and (b) to consider the weight given to any issue relative to the submission’s consideration of any other factor. That allowed us to collate concerns that were provided in short bullet point lists, while not attempting to extract each key term from submissions that included those terms within more substantive framing inclusive of other issues (e.g., under a subheading).

Approach to analysis

The tables described above were used as the basis of analysis, with each row in each table representing one unit of analysis and expressing a single recommendation, risk or challenge, opportunity or use case or source. The free hosted version of the open source tool baserow (<https://baserow.io/>) was used for this purpose, with exports of this data made with R into searchable HTML tables. Recommendations varied in their targets, with some focusing on specific policy instruments (e.g., guidelines or funding) and other policy outcomes (e.g., improvements in equity); some highlighted particular actors (e.g., researchers or key regulatory bodies such as the Tertiary Education Quality and Standards Agency) or target stakeholders (e.g., learners, library users) – we have drawn some of these key stakeholders out in our discussion.

Tags were applied to each row, in the first instance – the target of this paper – focusing on recommendations. The tagging process involved:

- (1) The first author reviewed a set of recommendations, to develop and apply an initial set of tags. Tags were applied in a non-mutually exclusive way (i.e., a single recommendation might address multiple tags).
- (2) Prior to initial export, tags were consolidated or re-framed where appropriate.
- (3) At export, the tags were grouped under higher-level themes for analysis by co-authors; comments regarding the tags and their suitability were solicited.
- (4) The first author proceeded to tag all recommendations.
- (5) The recommendations were then grouped for synthesis by the co-authors, each using the format below.
- (6) The original commentaries were then synthesised into the paper, at this stage the tensions and issues were collapsed and commentary and stakeholders collated for the discussion.

Based on the higher-order themes, members of the team were asked to provide their analysis using the following structure, flagging examples of linked submissions using (#n):

- (1) **Synthesis:** Overview synthesis of what is being recommended
- (2) **Tensions:** Any tensions between recommendations
- (3) **Issues:** Any key issues highlighted that are addressed by these recommendations
- (4) **Evidence:** Any evidence provided (likely none given that evidence was generally provided in text surrounding the excerpts made)

- (5) **Stakeholders:** Any key stakeholders flagged
- (6) **Commentary:** Any key considerations through our own critical lens, particularly regarding gaps in issues addressed and connection of recommendations to wider practice, issues, or evidence.

Our approach drew on conventional content analysis, adopting a primarily inductive, iterative approach (Hsieh & Shannon, 2005). The aim of this approach is to provide a heuristic overview of the topics discussed in the recommendations and a lens through which to analyse groups of related recommendations.

Results: Overview of submissions

Overview of data

Submissions were received from a range of organisation types, with 12 submissions from individuals ($n = 6$ academics; with $n = 5$ individuals and $n = 1$ withheld) as in Table 1. Peak bodies included a range of representative bodies including industry networks, professional societies, and others. Some organisations may exist in multiple types, here the type identified as most salient to the inquiry is used.

Table 1
Overview of submissions by inferred source type

Submission type	No. of submissions
Individual	5
Universities ^a	18
University or higher education network	6
University centre	8
Individual academic	6
Government	9
Inter-governmental organisation	1
Company	5
Non-profit	7
Union	3
Advocacy group or representative body	3
School network	2
School	1
Peak body	20
Withheld	1

Note. ^a71 submissions were from university-linked groups or individuals.

Table 2 indicates the spread of recommendations, opportunities, issues and references across the data (noting that it is not always possible to ascertain clear demarcation of these features, and thus in some cases multiple instances might be compressed while in others a single instance may be separated into multiple counts).

Table 2
Overview of identified recommendations, opportunities, issues and cited sources or references provided across submissions

Theme	Submissions with none identified
Recommendations	9
Opportunities or uses	34
Risks or challenges	26
References	51

Based on the process outlined above, a set of topics was identified as the focus on each recommendation. These topics were then grouped into themes, as indicated in Table 3, each recommendation might address multiple topics and thus these are counts of occurrence, rather than counts of individual recommendations; in the discussion that follows, some that framed a space in different ways (e.g., “new policy” vs “keep existing policy”) are discussed together, while in the original data they can be explored separately.

Table 3

Overview of theme occurrence across recommendations (count of topic occurrence)

Theme	Topic	No.
Policy and evaluation	Australian technology and models	6
	Foster responsible AIED	25
	Local responses and autonomy	6
	Mandatory watermarking	4
	Monitoring impacts	10
	New policy	47
	Ongoing and global monitoring	9
	Situate with existing policy	35
	Subtotal	142
Materials	Capacity-building	42
	Communications	16
	Guidelines	49
	Subtotal	107
Learning	Curricula changes	43
	New assessment models	40
	Prepare learners	20
	Subtotal	103
Resourcing	Evidence generation	32
	Research investment	30
	Resourcing	35
	Subtotal	141
People	Indigenous leadership	2
	Professional development (PD)	47
	Marginalised group engagement	12
	New workforce model	20
	Stakeholder engagement	38
	Subtotal	119
Values	Indigenous intellectual and cultural property (ICIP) and Indigenous data sovereignty (IDS)	2
	Equitable access	24
	Respect rights	39
	Subtotal	65
	Total	1253

Figure 1 indicates the spread of the topics across the submission types. This indicates that although materials – such as guidelines – feature prominently, particularly among peak body submissions, the topics covered by each submission type are varied, with each topic discussed by most submission types, although Figure 2 suggests different absolute emphases in these submissions based on number of submissions.

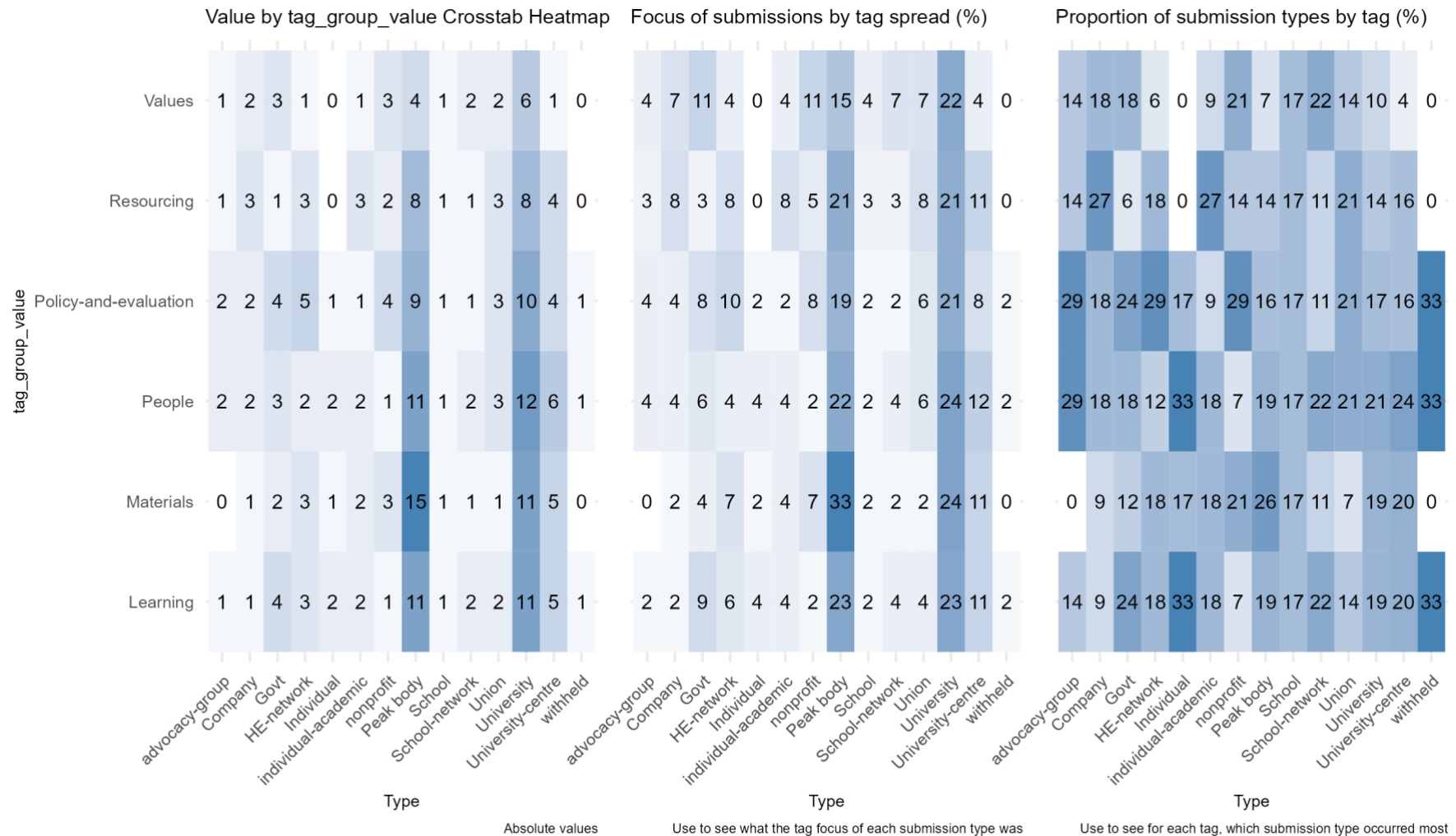


Figure 1. Distribution of recommendation themes and source types using n of distinct sources; from left to right, pane (1) shows the absolute values for recommendation themes by occurrence in each source type (multiple occurrences in a single source are counted once only), this pane provides insight into the distribution of foci by source-type; (2) shows row-wise proportions such that for each theme the coverage of that theme by source may be readily identified by reading across the row; (3) shows column-wise proportions such that for each source-type the focus of recommendations made may be readily identified by reading down the column. Rounded % used.

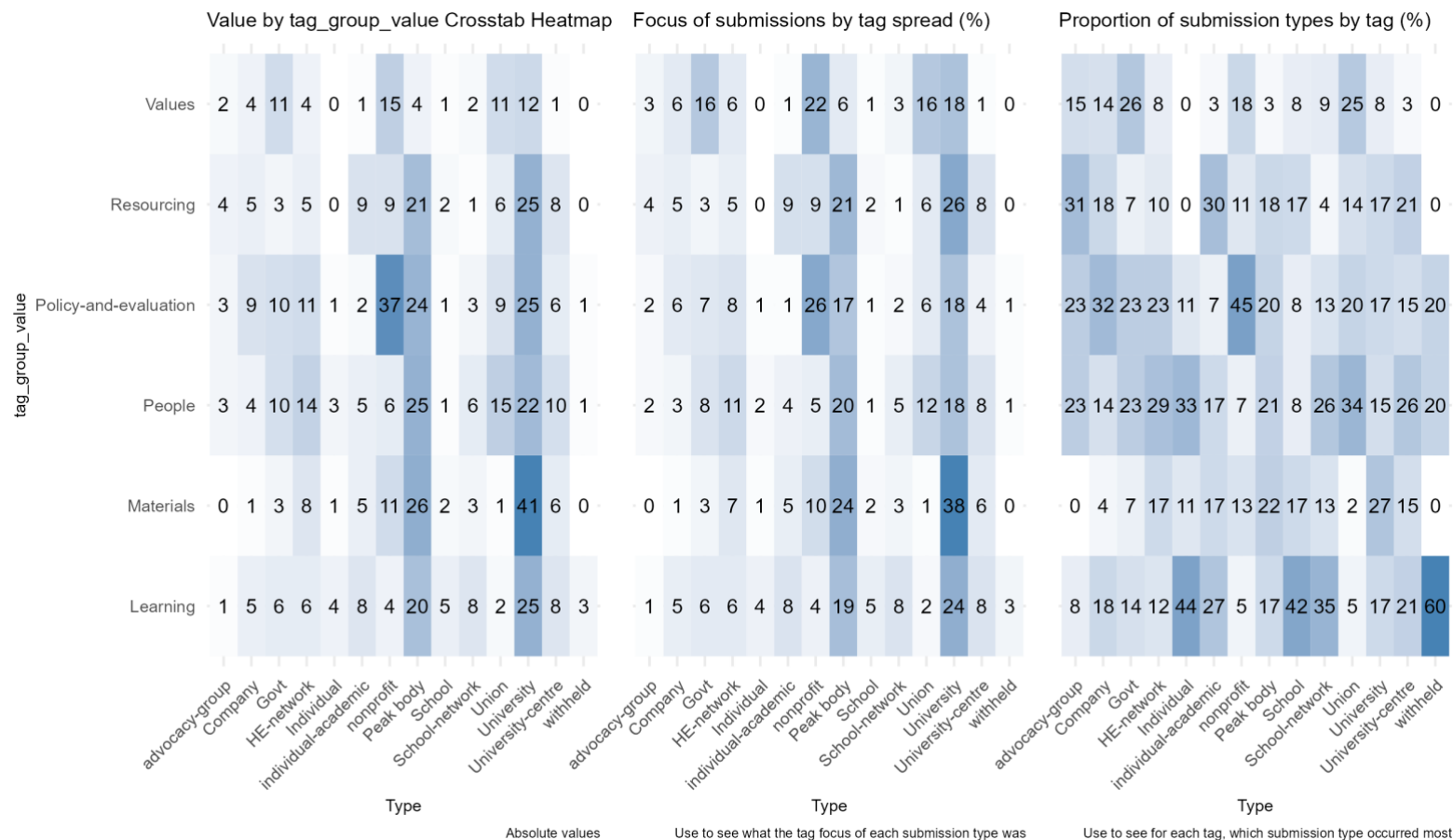


Figure 2. As above (Figure 1), using n of recommendations from each source type (i.e., multiple occurrences of a recommendation in a topic, for a single source, are counted in this figure), rather than reducing to number of distinct sources (per Fig 1). Distribution of recommendation themes and source types; from left to right, pane (1) shows the absolute values for recommendation themes by occurrence in each source type (multiple occurrences in a single source are counted once only), this pane provides insight into the distribution of foci by source-type; (2) shows row-wise proportions such that for each theme the coverage of that theme by source may be readily identified by reading across the row; (3) shows column-wise proportions such that for each source-type the focus of recommendations made may be readily identified by reading down the column. Rounded % used.

Results: Detailed review of recommendations

Policy and evaluation

Ongoing and global monitoring of the policy landscape and impacts

Monitoring impacts of GenAI and strategies in response to GenAI to ensure harm minimisation and appropriate risk was a relatively consistent recommendation (#60, 41, 51, 65, 88, 84, 81, 27, 35). Various submissions suggested looking internationally at developing GenAI impacts and policy responses. The changing nature of the space was flagged (#58) with suggestion to follow international leads in regulation (#58, 90), specifically export markets (#56), with some highlighting the importance of Australia monitoring and learning from this discourse, particularly around impacts on rights and desirable futures (#55, 20, 45, 29, 32).

Tensions and issues: The key tension in policy responses over time, and in relation to global context, is also seen in the discussion below; briefly, balancing local needs and autonomy with standards (which may bring benefits in trade, compliance and consumer protections).

Tensions in need for new policy, situating against existing policy and local responses and autonomy

Institutional autonomy in setting policy and navigating the changing landscape was highlighted (#3, 61, 40, 30), as well as ground-up staff autonomy (#52). Submissions also noted the strength in existing policy to navigate implications for education and educational institutions (#3); however, in places clarity regarding the application of existing policy or principles to new context was sought (#58, 56, 81, 22, 32, 38) or the need to ensure alignment with these policies (#55, 65, 88, 84). Alignment with developing work between state and territory departments of education regarding AI in education was also highlighted (#2, 66).

New policy was called for in various forms. New governing bodies were proposed to give oversight of GenAI in education (#12) or alternatively, new for existing bodies (#83; the information commissioner, #76; Tertiary Education Quality and Standards Agency). Sector-wide policy on what technology can be used in education (#64) was flagged and, more broadly, standards that technology must meet around issues such as data governance (#49, 40, 42, with #83 giving very detailed proposals). A specific point was made regarding the need for changes in copyright law in light of GenAI (#36).

Some also discussed various integrity concerns including reversing existing bans on GenAI (#14), the banning of GenAI providers that explicitly target cheating on assessments (#58) and the need for policy around tools such as plagiarism detectors which should balance concerns regarding risks of surveillance and false positives with those of deterrence and detection (#64). Although three submissions (#64, 65, 84) mention watermarking or AI content verification tools and possible policy for these, challenges to this were highlighted (#3), with specific calls for evidence of efficacy in any use of AI detection (#54).

Tensions and issues: The submissions highlight issues regarding the significant work in balancing (a) flexibility to a changing environment and the autonomy and local responsiveness of institutions and individuals, with (b) evaluation of and clarity regarding existing policy mechanisms to respond to GenAI, and (c) creation of new policies addressing any gaps.

Fostering responsible AI in Australia: Infrastructure and models

A number of recommendations pointed to the desire for the Parliamentary Committee to progress policy that would foster responsible AI in education. These mentioned responsible and transparent integration of AI in education (#29, 88, 43) while maintaining human oversight and ensuring ethical use (#81, 27, 43). Another common theme was the importance of accountability and responsibility in using AI technologies (#83, 71, 27). These recommendations emphasised the importance of regulations and standards (#71, 27, 43, 29, 35) to ensure fairness, the preservation of academic integrity and the prevention of unintended consequences. There was also some emphasis on the need to address potential biases in AI systems through a combination of regulation and organisational roles in establishing and monitoring data

governance practice to ensure assurances about the quality, quantity and diversity of data sets used in AI (#71, 35, 38, 83, 27, 43, 53). The submission by the Australian Academy of the Humanities (#45) pointed to the possibility of Australian-flavoured large language models generated over local data sets, as did a research group (#75) with two (#38, 71) suggesting investment in Australian infrastructure around GenAI.

Tensions and issues: There is some tension between the desire to develop models that can be used across a broad range of contexts to maximise benefits, and those associated with localising models, and ensuring human oversight in decision-making. There is an associated tension that while transparency may promote understanding and trust, “explainable” models require human judgement and how this information will be used is not always clear.

Material resources

Capacity-building and communications

The need to build capacity and knowledge sharing mechanisms in Australia was highlighted by a number of submissions. These included establishing a stakeholder body with corresponding knowledge sharing hub to share strategies and evidence (#71, 44, 20, 41, 58, 19, 49, 91, 32, 21, 35) and learning from education institutions that already engage with GenAI (#41). Two supplementary platforms for developing this community and knowledge sharing are an annual conference on GenAI in education (#71), and "GenAI challenges" as a catalyst for cross-sector applied research (#71). The importance of curation and communication from regulatory bodies regarding the impacts of GenAI and good practice was also flagged (#60, 58). It was noted that capacity-building should align with existing strategies including the National Teacher Workforce Action Plan (#16) and resources such as lesson plans (#81, 22, 31) and masterclasses (#73).

Evaluation of Australia's current capacity in AI including its social or human implications (#45) and investment in this regard particularly focused on upskilling educators (#17), with the possible need to make explicit synergies in existing curricula and teacher workforce plans (#16). Resourcing for this PD may be required particularly to foster equitable access (#47), and this may extend to other stakeholder groups including librarians (#51).

Tensions and issues: Capacity-building is a complex concern, with tensions around the kinds of resourcing provided, and ensuring different stakeholder groups are engaged and supported to learn in order to engage with AI and their social implications. Models of professional learning may require adaptation, alongside approaches to evidence generation, synthesis and translation to build evidence hubs or toolkits for different groups.

Guidelines

Many submissions made reference to guidelines in various forms, and for a range of stakeholders both generally (#19, 35, 37, 71, 10, 6, 1) as well as specifically mentioning learners (#3, 6, 39), educators (#16, 64, 7), institutions (#65, 22, 26, 14, 41, 44, 58, 82, 88, 90, 38), institutional leaders (#8), researchers (#44), industry (#41, 71) and policymaker (#32).

Tensions and issues: The need for universalising guidelines and the role of guidelines as providing a framework for local operationalisation are in tension; this tension is also seen in other recommendations in which the importance of institutional autonomy is noted. There are also some differences in the specific principles flagged, although clearly the submissions received were not intending to provide any comprehensive overview in this respect. Ownership of guideline development is also contested, with regulatory bodies, universities and government departments all mentioned, as well as cross-sector initiatives. Clearly articulating what is meant by AI is also highlighted and the implications of this for developing consistent strategies for AI use across the sector. These concerns include those around data governance and privacy, and integrity and well-being (see the Respect for and protection of people's rights section).

Learning implications

Need to prepare learners

There was widespread agreement that GenAI technology should be introduced into education. Respondent #61 noted the technology should be introduced into secondary study and be appropriately scaffolded into tertiary study, establishing a strong foundational familiarity with tools prior to more sophisticated application in a higher education setting. Some flagged a need to: equip students and educators with digital literacy skills (#61), including regarding risks to personal data (#64), foster ethical technology use (#64, 61) and integrate GenAI into education, to ensure preparedness for the evolving technological landscape (#61, 16).

Tensions and issues: Although many submissions flagged a need to prepare learners for a GenAI world (with its potentials and risks), this has unaddressed implications for curriculum and PD, and further clarity is required regarding age-appropriate curricula particularly in an environment in which presently all age groups are starting from a low baseline.

Curricula changes

A number of submissions focused on curricula encompassing schools and universities. A common response was that any intent to implement AI in schools be accompanied by instruction (#62, 51, 14, 16, 65), at both the school and university level (including for staff, #40), as well as vocational learning (#39, 87).

It was noted it should not be added to the existing curriculum without explicit licensing and support from the Australian Curriculum, Assessment and Reporting Authority (#8, 16), which may require making room for new content. Any intent to introduce AI should be accompanied by appropriate timeframe, resources and training (#8). Respondents #17 and #58 noted that universities, schools and professional bodies should work together to enable responsive and coherent courses. The notion of ethics was raised by several respondents (#17, 41, 65) where digital literacy programmes to provide students with the skills needed to engage with generative AI tools in a responsible and ethical way were seen as important.

Tensions and issues: A core tension in curricula changes is between the desire to introduce new content, and the implications of that both for workload and need to remove content from the curriculum, particularly given capacity concerns around professional learning to deliver such content.

New assessment models

Alternative approaches to assessment were a common concern (#3, 7, 16 91, 88, 81, 76, 75, 74, 70, 68, 50, 25, 27, 31, 35, 37). Respondent #3 suggested more complex assessments will need to be developed with the incorporation of AI into educational practices, while addressing concerns about academic misconduct. Submission recommendations indicate thoughtful contextualisation and integration of AI into assessment practices will be required, with recommendations to prioritise academic integrity and foster creativity and originality in student work (#7), to incorporate proctored, in-person assessments alongside AI tools (#7), a suggestion for a bank of approved tasks developed by AI (#12) and a review of existing assessments (e.g., #39).

Tensions and issues: Many of the responses here were very brief and did not go into great detail about what the new models might encompass. Complex relationships between assessment, curriculum and other structures in education institutions were recognised as a longstanding core tension (#79).

Resourcing

Resourcing (capacity-building and material support)

Resourcing – explicitly through provision of personnel capacity and/or financial support – was a common recommendation (#17, 19, 26, 29, 35, 47, 51, 52, 56, 58, 60, 61, 65, 76, 83, 87).

A number of submissions called for support for institutional and sector wide licensing (#26, 35, 56, 76) with some submissions pointing to the equity issues likely to arise from existing digital divides (#19, 32, 58, 61). Some responses suggested that libraries and community centres could support community access and upskilling of the Australian population (#21, 51). Others explicitly pointed to the implications that GenAI will have on existing workload models and PD across the schooling and higher education sectors (#47, 52, 58, 60, 76). Some calls for more resourcing suggested that this be accompanied by a prioritisation on what supports teaching and learning (#26, 32).

Tensions and issues: Resourcing was often linked specifically to capacity-building and the need for research and evidence underpinning our strategies and engagement with GenAI.

Research investment

Highly aligned with the need for evidence about GenAI, were numerous calls for further research investment (#19, 24, 44, 45, 49, 51, 55, 57, 58, 65, 71, 91), with half from non-university submissions. One set of recommendations centred around the need to encourage interdisciplinary teams (#19), pointing to the potential to reform the research and development (R&D) tax credit to support this kind of social science research.

Two submissions suggested that research investment be driven by commissioning the Australian Education Research Organisation to provide expertise and advice about what educational technology works best to support teachers and improve student outcomes (#49, 55). These two recommendations may be influenced by the EdTech report by Loble and Hawcroft (2022) (noted by ~7 submissions).

Tensions and issues: In places, specific bodies were mentioned for resourcing (e.g., Australian Education Research Organisation) or specific strategies (e.g., the R&D tax credit), while others were more open; these strategies are likely to have implications for outcomes, and these must be carefully considered.

Evidence generation

A number of submissions (#19, 29, 49, 51, 54, 55, 57, 65, 71) recommended that a stronger evidence basis is required, with a number of them pointing out that there is currently very little data to help educators to make well-informed decisions about how to use GenAI. Some submissions pointed to the need for a central repository of evidence to support educators (#19, 49, 71), but interestingly these were all affiliated with the University of Technology Sydney. Only one submission pointed to the need to protect disadvantaged and marginalised groups (#55). However, three submissions made stronger recommendations that centred around risk mitigation, with Professor Phil Dawson (#54) recommending that we not use software claiming to detect GenAI until there is evidence to support it, and from the Australian Human Rights Commission (#65), suggesting that “Policies should mandate rigorous and continual evaluation and validation processes, together with regular independent auditing, to identify and mitigate algorithmic bias in any generative AI tools used in the Australian education system”.

Tensions and issues: The relative novelty of the field, coupled with the fact that large language models were not created specifically for educational use, means that we currently have very little knowledge about how best to utilise them. This call for evidence was often made in tandem with a call for extra research investment (see previous section). Regarding submissions linking bias and evidence, these specifically point to the requirement that evidence be used to ensure that the educational environments supported by new AI tools are not prone to bias (a known issue of such models).

People and values

Respect for and protection of people's rights

Several submissions emphasised the need to respect and protect the rights of content creators, teachers, users, learners and consumers, including protection of intellectual rights and personal data privacy (#14, 26, 28, 35, 36, 42, 49, 53, 65, 76, 83, 88), the need to develop new policies to protect content creators (#36), develop legislative protection for user data (#26) and translate policies to make them understandable to help educate and protect users (#83).

Tensions and issues: Often the rights of content creators and the interests of the users are at odds with each other. Some of this can be resolved through education and awareness. Government and school systems that have a stake in advancing the interests of schools, students, teachers and education leaders can often be at odds with the interests of product and platform providers.

Marginalised-group engagement

Recommendations regarding marginalised group engagement included calls to consider different educational needs based on disadvantaged and marginalised status (#49, 55, 65, 73) and research on these impacts (#88, 71). In some cases, these recommendations proposed collaborative models, fostering sustainable collaborations between educators who are dealing with disadvantaged students (#44). Others (#27, 58, 84) focused on the involvement of diverse stakeholders in decision-making, including Aboriginal and Torres Strait Islander people, people with culturally and linguistically diverse as well as racially marginalised backgrounds, people with disabilities and people with social and economic disadvantage.

Tensions and issues: Marginalised groups refer to a large group of people that have been directly or indirectly addressed across a subset of submissions. Not only students, but educators and policymakers might belong to these distinct groups, and they might be instrumental to identify and pursue the needs of all these separate groups, with each group likely having differing needs. Detailed consideration of marginalised-group-engagement, and representation of and by these groups will require work beyond that presented in these submissions.

Indigenous inclusion and Indigenous leadership

Some submissions emphasised the importance of supporting First Nations inclusion and leadership through proactive programmes and recommended that development of GenAI standards in Australia should include reference to Indigenous cultural and intellectual property (ICIP) and Indigenous data sovereignty (IDS), for example, pointing to Indigenous-led educational innovation (#71, 62). The risks that Indigenous knowledges and intellectual property will be incorporated into GenAI and used without appropriate attribution or acknowledgement need to be minimised (#58, 62) or that Australian and Indigenous culture may be erased by the dominance of USA-centric content (#33) were highlighted. Consideration should be given to local contexts and Indigenous culture, with ethical frameworks and guidelines developed in consultation with stakeholders (#33, 91), including Indigenous peak bodies and organisations (#33, 35).

Tensions and issues: Indigenous interests are often lumped with the interests of marginalised or vulnerable groups without recognition of their sovereign status and unique First Nations perspectives (#60, 84, 91). Risks are highlighted regarding appropriating Indigenous knowledges and of violating ICIP and IDS and taking them out of their community context, alongside risks of erasure.

Equitable access

Submissions mentioned the need to ensure equitable access to GenAI tools through tackling demographic divides in affordability, accessibility and capability (#19, 21, 22, 25, 26, 27, 28, 32, 35, 39, 44, 47, 50, 51, 52, 64, 65, 71, 84, 88). Additionally, in order to aid the adoption of useful AI tools, they need to be free of cultural, racial and gender biases and not perpetuate or amplify existing biases or discrimination (#42). Other barriers to adoption include lack of digital literacy, lack of support for individual learning needs and the lack of scaffolding for those who are educationally disadvantaged (#22, 27). Four submissions also mentioned the need for resourcing libraries to scaffold and build the learning capability of students (#35, 50, 51, 71).

Tensions and issues: Many submissions generalise across both secondary and tertiary institutions without articulating their different contexts and needs. However, today's secondary students will be tomorrow's tertiary students, and as this technology evolves, it is essential for all students to learn how to use them meaningfully and ethically before they come to tertiary studies.

Stakeholder engagement

Stakeholder engagement was frequently called for. In many cases, this related to involvement in guidelines and decision-making by inviting the involvement of principals (#26), unions (#36), students (#8, 88), teachers (#8, 37, 87), academics and researchers from a range of discipline areas (#67), professional associations (#67, 83), accreditation bodies (#67 and 83), registration bodies (#67 and 83) and cross-sectorial bodies (#46).

Besides decision-making, some recommendations highlighted development through key stakeholders, including accreditation and registration bodies (#83) or co-designing lectures with AI tools through student-teacher collaborations (#8). One submission (#88) invited policymakers to adopt stakeholder management for all policy development and implementation stages to address the complexity of AI in education. A similar focus on policymakers was the central point in a submission (#104) demanding government money devoted to long-term policies that will ensure the distribution of socio-technical expertise and the embedding of opportunities for collective learning, experimentation and policymaking about the development and use of AI and emerging technologies in education.

Most recommendations are short and without specific actions included. For example, a recommendation from #58 pointed out “the need for a diverse range of interested parties and stakeholders to be included in future decisions and actions related to the use of generative AI”. However, where these decisions and actions will take place and how these diverse groups of people will be included is not clear. In contrast, other recommendations are very specific suggestions. For example, recommendation #64 directly asks for revising the Higher Education Standards Framework (Threshold Standards) 2021 with a carefully designed multi-stakeholder involvement.

One submission (#156) shifted the discussion to the values of education. It demands support in convening public fora and engagement activities to develop collective, democratic, values-led responses for what we learn (e.g., AI literacy) and how we learn (e.g., new AI tools). The recommendation from submission #19 starts with laying out three activities to consider: understanding, evaluating and sharing effective practices. It further discussed these actions by integrating them into other issues, such as values and guidelines. Other organisations, such as the Australasian Academic Integrity Network (submission #58), note the significance of engaging diverse stakeholders across a number of their recommendations.

Tensions and issues: Although stakeholder engagement is a common recommendation, the particular methods and topics of engagement are less frequently articulated.

PD and professional learning

This was a topic that many submissions referred to. It was also referred to by a wide range of stakeholders, including individual teachers, universities, professional associations representing parts of the teaching profession (e.g., principals, English teachers), unions and other industry bodies (such as the Australian Academy of Technological Sciences and Engineering). Generally, the submissions called for the provision of PD for educators with a view to developing AI literacy. Many of these submissions were wide-ranging in nature, focusing on assisting educators to identify opportunities to make use of these kinds of tools in their work and in relation to the curriculum. A number of the submissions made note of the importance of supporting vulnerable or marginalised populations or those populations with specific risks.

Some stakeholders indicated that they had already commenced developing professional learning opportunities in this field. Other stakeholder groups such as library staff (#51), educators working specifically with English as an additional language or dialect cohorts (#21), and policymakers (#32), were mentioned alongside current teachers in schools and universities and the initial teacher education (ITE) cohort. Some submissions identified issues with PD. For example, the English Teachers Association of New South Wales (#64) sought to make sure that any PD includes education about how GenAI tools work. This level of transparency is limited in most tools at the moment. In addition, the concerns of having student and teacher data being uploaded to tools to better inform pedagogical agents was seen as something that

is concerning. Finally, some submissions raised questions about who had the expertise in both education and AI in order to deliver the training effectively.

Tensions and issues: Some tensions are evident in the PD proposed. Principally, some submissions called for courses in AI to be made compulsory in ITE programmes, but did not note what would be removed from the existing suite of programmes and training. Other submissions recommended any such training could take place in-service. Other submissions sought for overall decision making about, for example, the tools to be used in schools, to be made at a higher level than individual teachers, while others sought to train teachers to make these decisions at a local level themselves.

Although it appears that there is broad agreement about the need for both ITE and in-service teacher professional learning about AI, this agreement might mask underlying issues about the delivery of any such professional learning. There are significant questions to be resolved that include the question of how such PD might be accredited with the various teacher registration bodies, and who is responsible for ensuring the quality of this PD. In addition, there are few submissions that have considered how this programme of PD might fit within teachers already very full workloads, nor how it might be funded. The same question relates to the calls for it to be included into ITE.

New workforce models

Limited recommendations propose radical changes in the role of educators. Submission #28 offers a separation of many duties of teachers and resource developers through special department where a limited number of persons supervise or coordinate AI in those duties. Some (#88, 75) highlight specific tasks for automation: administrative or repetitive tasks, such as grading and lesson planning or attendance tracking. Similarly, submission #50 underlines the potential use of AI for the administration and support functions to provide tier 2 assistance (responses to low complexity queries) to help manage workloads and provide 24-hour response.

In some recommendations, the focus shifts to sensitive tasks that should not be automated. For example, recommendations from submission #26 strongly argue that teachers should be in charge of pedagogical decisions regarding resources and learning experiences provided for any given cohort of students. Another (#52) lists what teachers should keep doing: teaching, learning, research, student support services, administration and technical roles.

Many pointed out increased workload, such as greater workload allocations for course design and student assessment and frameworks for considering what types of AI usage might constitute plagiarism (#52). It is also highlighted that teachers need additional time to interrogate the learning process and the assess the artefacts produced by their students. Another related topic with workload is the well-being of teachers. Recommendations from the Independent Education Union of Australia (#26) clearly warn how workload and PD issues might have workplace health and safety implications.

Some work-related suggestions are unclear; for example, recommendations to maintain balance between leveraging AI insights and the value of teacher instruction and support (#25); and to keep decision making regarding learning and assessment to humans (#26) but without consideration of how automation may occur within these decisions. Submission #12 invites a redistribution of tasks of teachers and resource developers, but interestingly this redistribution role is given to a special department where a limited number of persons supervise or coordinate AI in those duties.

Tensions and issues: Although some recommendations point to the potential of AI to complement human activity, others propose automating tasks with teachers in an oversight role. Even though it is not discussed in detail, there is a high potential for a tension among education professionals and subcontracting companies. The vague statements about the automation of tasks show the difficulty of understanding the wide impact of AI on workforce workloads and the tasks of professionals operating in education.

Discussion

Common messages

A commonality to many submissions was the call for increased resourcing, including research funding. However, the purpose of this resourcing varied. In some cases, submissions called for more PD for teachers, or the inclusion of specific AI-focused subjects in ITE. In other cases, the call for increased resourcing was instead focused on research into AI in general, and its relationship with education in particular, or infrastructure development. Nevertheless, it is significant that across stakeholders there were themes regarding resourcing, calls for evidence generation and calls for stakeholder-engaged capacity-building through the sharing of evidence and practices.

Although the Australian Research Council's (ARC) own submission to the inquiry (#77) notes the significant investment in AI via its schemes, our own analysis of ARC data indicates that the humanities and social science disciplines (see data availability statement) account for approximately 27% of projects that mention "artificial intelligence" in any way, over all schemes. Concerningly, despite the need for interdisciplinary research in this space, two ARC analyses indicate such projects are less likely to be funded (Bromham et al., 2016; Woelert & Millar, 2013). The social sciences, and education research in particular, are less likely to have access to other funding streams, with an explicit exclusion from the R&D tax credit (Department of Business, 2023), and closure of the Office of Learning and Teaching in 2016, which had supported Australia's ability to be responsive to emerging learning needs (Hicks, 2016). This gap is reflected in recent calls for a replacement body such as the National Centre for Student Success (Johnson et al., 2023). As Schiff (2022) and many of the submissions have highlighted, research evidence has significant implications for policies and practices of AI in education; as a community, educational technology researchers must be active in contributing to that.

A range of stakeholders provided submissions contributing to dialogue regarding next steps in addressing GenAI in education and demonstrating the potential of, and need for, stakeholder-engaged responses. Stakeholder-engaged responses offer potential to draw on both existing regulation, policy and resources, alongside shared development to address gaps and share evidence, practices and materials. The submissions share a common concern for cross-sector capacity-building, which could build on this stakeholder-engaged approach. Across stakeholders, although the targets of the recommendations varied, there were common themes in wanting to build capacity including through development of stakeholder-specific materials and generation and sharing of an evidence base regarding the implications of GenAI for learning and institutions.

Tensions, uncertainty and issues

A few areas saw explicit tensions between submissions, particularly in the area of technical approaches to monitoring of GenAI use towards academic integrity such as watermarking. Beyond this, there were implied tensions in a range of areas that can be characterised by the tension between universal standards and local autonomy. On the one hand, submissions called for alignment with international standards, use of models in a wide range of contexts (without calling for localised models) and guidelines and standards to be developed to standardise practice. On the other, many submissions reflected the desire to use existing policy and local autonomy to craft responses for their context, with an articulation of the need for local operationalisation and human oversight. These two are not necessarily contradictory, with some submissions clearly expressing that shared standards can provide frameworks for local action.

Other concerns relate to the significant uncertainty in the space, including regarding intellectual property rights, the workload and workforce development implications of GenAI and what the corresponding curricula and assessment changes would look like in practice in the specific contexts of different kinds of educational institution.

The “how” of developing alignment on many of these issues, and the kinds of values or aims to centre was also a feature, with significant attention to, and diversity across, calls for stakeholder engagement. On this, we point to Cardona et al.’s (2023, p. 54) recent report:

AI technologies are grounded in models, and these models are inevitably incomplete in some way. It is up to humans to name educational goals and measure the degree to which models fit and are useful—or don’t fit and might be harmful. Such an assessment of how well certain tools serve educational priorities may seem obvious, but the romance of technology can lead to a ‘let’s see what the tech can do’ attitude, which can weaken the focus on goals and cause us to adopt models that fit our priorities poorly.

Work is required to address questions of justice in education, in the context of GenAI and beyond, with respect to equitable experience of benefits and harms, of the burden of data scraping and model application and in access to opportunities to learn about and with (and without) GenAI. Work locally and internationally to engage stakeholders in governance for desirable futures can inform this work, centring shared values in our educational systems.

Conclusions

Research scope and limitations

The findings from this work to date are preliminary, from a single inquiry where the results of the inquiry have not yet been released. The nature of submissions, as a particular genre of document, presents limitations on interpretation, and we have not sought to triangulate our readings with those of the original authors. However, by providing this analysis, we provide a lens on how the materials stand in relation to each other and a “best available” resource at this crucial juncture as governments and organisations seek to develop policy.

It is important to note that many of the recommendations make recommendations at the level of schools. While this is out of scope for this special issue, it has nevertheless been included as to exclude such data would provide an impoverished view of the data set, and not ground the coverage of tertiary education within the overall context of education in Australia. Moreover, most of the “non-tertiary” coverage in the data has significant implications for tertiary education in the following ways: (a) school curricula changes will inevitably impact tertiary education intakes and thus tertiary education curricula, even if tertiary educators would not otherwise make any changes; (b) calls for evidence in schools are likely – we hope – to require funding for tertiary education institutions in developing evidence generation capacity (i.e., research degrees, Master of Educational Technology) and indeed in generating evidence (i.e., research funding); (c) much of the discussion of teacher education is about university-based ITE and/or professional learning in which tertiary providers play a key role.

Alongside this analysis, it is interesting to consider missing data in this inquiry. For example, although many experts contributed via organisational affiliations, these forms of submission are necessarily composite and may not represent the diversity of views and concerns, with some notable absences in the submissions. Public inquiries are a key vehicle for influencing policy and bringing expertise and experiences into a shared public forum. These inquiries provide a mechanism for those directly affected by developments to influence policy. And yet key stakeholders (educators, schools, students, parents) appear underrepresented. Only a certain subset of society even knows that a public inquiry is taking place, and those most affected by emerging technologies rarely have a chance to input via this process. What was not said but should have been? We need more types of public fora, which would provide more representative inputs, if we are to drive policy development in a more equitable manner; a policy issue that has recently been referred to as the need for technical democracy in education (Thompson et al., 2023).

Implications and future work

This paper contributes to understanding how stakeholders – including policymakers such as the committee instigating this inquiry – frame possible response to GenAI in education. Through our analysis we have drawn out and synthesised recommendations made, while also making the data available as open data for further analysis. We anticipate this data being useful (a) in the unfolding of the inquiry process, and in reflection by experts regarding how “policy ready” we are in responding, (b) in closer analysis of how recommendations align to the stated risks and opportunities of GenAI in education, and indeed how education is framed across these submissions, (c) in investigating the material resources drawn on in, and implicated by, the submissions, particularly in relation to evidence cited in them and (d) more broadly in providing a policy analysis approach that may be adopted in other domains.

Author contributions

Author 1: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Visualisation, Writing – original draft, review and editing; **Authors 2–7:** Writing – original draft (parts thereof), Writing – review and editing, Formal analysis, Methodology, Validation; **Author 8:** Data curation, Writing – original draft (parts thereof). All authors have read and approved the final manuscript. Authors following the corresponding author (Author 1) are listed in alphabetical order.

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This manuscript builds on that submission but is wholly new in expression and in terms of the ideas expressed. Our particular thanks to colleagues Heather Ford, Jane Hunter and Amelia Johns for their support in developing our submission and initial discussion regarding this manuscript.

Declaration of interests

Most of the authors of this submission contributed to a Centre submission (Knight, Heggart et al., 2023) to the inquiry that is the focus of this paper. Some of the authors also contributed to the institutional submission and external submissions. These submissions form a part of the data and were processed in the same way as all other submissions.

Data availability statement

Original data and code used, along with analysis outputs, are available under a Creative Commons CC-By license. The source data is under parliamentary copyright, under a CC-By-NC-ND license. All materials may be obtained from:

Knight, S., Dickson-Deane, C., Heggart, K., Kitto, K., Çetindamar Kozanoğlu, D., Maher, D., Narayan, B., & Zarrabi, F. (2023). Generative AI in the Australian education system: An open dataset of stakeholder recommendations and emerging analysis from a public inquiry [Data set]. <https://doi.org/10.26195/jjaa-7p04>

Where PDFs embedded URLs inline (i.e., without providing the URL string in text), an additional macro script was used to extract URL links from converted docx files, available at <https://gist.github.com/sjgknight/62ec758d96adee992bc30baa09d6b838>.

This manuscript was reviewed with the data from 94 submissions received as of August 10, at which point we had received an indication there were likely to be few remaining (Inquiry secretariat, personal communication, August 1, 2023). One further submission was subsequently published and has been added to the data set.

“[O]ur own analysis of ARC data indicates that the humanities and social science disciplines (see data availability statement) account for approximately 27% of projects that mention “artificial intelligence” in any way, over all schemes” (p. 20): To compute the ARC funding propitiations, the following 2-digit FOR codes were included in HASS, where those < 30 are in the 2008 classification and > 29 in the 2020 classification: 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 33, 35, 36, 38, 39, 43, 44, 45, 47, 48, 50, 52. This list is consistent with the Academy of Social Sciences list <https://socialsciences.org.au/social-science-fields-of-research/> except with the addition of ‘Creative Arts and Writing’ (FOR 36), and removing ‘Health Sciences’ (FOR 42). Including health sciences increases the count to 33% of projects. For projects that were funded, the mean funding amount is ~804/836k for non-HASS disciplines and ~585/562k HASS disciplines (excluding/including health sciences in HASS respectively).

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