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LEARNING
in the shadow of the pandemic

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Volume 13 Issue 2

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Learning in the shadow of the pandemic

John Graham

This edition of *Professional Voice* is being published in the shadow of the COVID-19 pandemic. The articles we feature either implicitly, or in some cases explicitly, acknowledge this situation and, in their own way, reach out to our readers whose professional and private lives have been upturned by the present crisis. The articles cover technology, student voice, arts education, the professional landscape of teaching, teacher education and the public education system.

In its recent survey of members working in schools, the AEU (Vic) asked respondents a series of questions about their experience of the first phase of remote learning and other issues arising from the pandemic. The bulk of survey responses date from late June and the beginning of July, not long after school staff had returned to face-to-face teaching when the virus spread was relatively limited and before the return to remote learning in Term Three. The 2,829 responses reflect the views at that time of staff in government primary and secondary schools and special settings across Victoria.

Most teachers reported that the transition to remote learning because of COVID-19 lowered their job satisfaction (62%), increased their stress and anxiety (87%) and increased their workload (85%). At the same time, an overwhelming number of teachers (96%) indicated that they had developed new remote teaching skills, including the use of technology (particularly software), online lesson presentation and new forms of staff collaboration and interaction with students. Asked what part of their remote learning experience they would like to integrate into their onsite teaching program, the most common responses were: 'greater use of technology' and 'more flexibility for students to engage in self-paced learning'.

Most teachers expressed concern about the impact of remote learning on certain students. 99 per cent of teachers agreed that some students participated less than others in remote

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learning and 88 per cent believed that some of their students would be disadvantaged in the assessment of their achievement because of this. The main reasons for the different student participation levels reported by teachers were: 'the home situation of students' (85%), 'less motivation to learn from home' (84%), 'the need for a more supervised/structured learning environment' (82%) and 'lack of access to IT devices/poor internet' (66%). Other findings about student participation reported by teachers were:

- Engagement of some students online was lower than others (89%)
- Students were not able to effectively collaborate with each other (65%)
- The gap between higher and lower achievers increased (55%)
- Student stress and anxiety increased (66%)

Most teachers (80%) agreed that students from lower SES backgrounds were further disadvantaged by remote learning. The reasons given for this were: 'level of parental support' (70%), 'difficulties with access to technology/internet' (60%) and 'lack of appropriate study facilities at home' (58%).

Teachers were asked after the return to face-to-face learning at the beginning of June whether they considered that their students had made satisfactory learning progress during the remote learning phase. 8 per cent indicated that all of their students had, 72 percent said that some had, 18 per cent said that few had and 2 percent estimated that none of their students had. In special settings 26 per cent of teachers said that few or none of their students had made satisfactory progress. 91 per cent of teachers reported that, to either a great extent (29%) or to some extent (62%), they would need to re-teach students the skills and knowledge they were supposed to be learning during remote learning. Overall 54 per cent of teachers thought their students had been disadvantaged by remote learning compared to 12 per cent who thought they had been advantaged by it. While 97 per cent of teachers reported that students were glad to be back at school, they estimated that more students were positive (44%) about their experience of remote learning than negative (22%) about it.

Over half of teacher respondents thought that the Department of Education and Training had not provided them and their school with the support they needed during remote learning. In terms of on site learning most teachers were satisfied with the health and safety protective measures put in place by the Department but many expressed concern about the capacity for appropriate social distancing in their workplace.

To many teachers one of the most positive outcomes of remote learning was the enhanced recognition from the community of the work they do and of the role of schools in society. 75 per cent of teachers said that they felt there was greater recognition of the work that

they do and 77 per cent thought that the COVID-19 situation had given people a greater appreciation of the value of the school as a community, and as institution in the broader community. However, when asked whether they personally felt more valued as a teacher their response was more nuanced: 52 percent said 'yes' and 48 per cent said 'no'. There was also a significant gap in the response to this question between primary teachers (61% yes) and secondary teachers (43% yes).

The role of technology

The COVID-19 pandemic has enabled technology to assume a new dominance as a medium for schooling processes. Erica Southgate's article outlines the ways in which technology is becoming more 'intelligent' and less transparent as it integrates itself into classrooms and school administration. Artificial Intelligence (AI) and Machine Learning (ML) are being used to automate a range of activities and tasks (e.g. search engines) which can be carried out more efficiently by AI than by humans. The problem is that the 'black boxes' of algorithms which run these artificial neural networks lack transparency because, firstly, the proprietary companies and governments which own the algorithms will not open them for independent review and, secondly, because of the complexity of their operation, which means that they are often not wholly explainable even to the scientists who develop the systems. Southgate calls for educators to "skill up on the technical, pedagogical and ethical matters related to the technology" so that they can make informed choices about the design, implementation and governance of AI in schools and exercise professional control over its use.

A second article on the role of technology in education by Steven Kolber identifies a range of issues which have arisen through the transition to online learning over the last few months. He identifies the three key challenges of online learning as: engagement with set work, collaboration with peers and connection with teachers and students. He believes the use of asynchronous video and video conferencing best meet these criteria and should remain as components of a "build back better" approach when schools return from remote learning. He also emphasises that this approach should be accompanied by the prioritisation of teacher professionalism and judgement, greater investment in teacher professional learning in ICT and "concrete measures to ensure that those students already significantly challenged by our existing system are not further disadvantaged".

Student voice and the arts

Roger Holdsworth, who has edited and published *Connect* - an on-line practice journal supporting student participation - since 1979, identifies the different forms and meanings of student participation in schools. He states that: "Terms and concepts such as 'student

voice', 'student agency', 'student participation' and 'partnerships' are stretched or used interchangeably in ways that sometimes confuse people. There is value in being more precise about how we use them." Holdsworth distinguishes the meanings of each of these terms and in doing so explains the broad range of activities which students can be involved in to improve what happens in classrooms and schools. Student voice is not just about students being encouraged to have a say but how adults listen to and respond to that 'voice'. Student agency means students being actively engaged in making decisions about their learning rather than simply expressing their views. Student participation (or partnerships) is about sharing decision-making and implementation in collaboration with others rather than merely attendance or involvement in adult-directed activities.

Mark Selkrig, Kathryn Coleman & Abbey MacDonald set out a case for the important role of the arts in the school curriculum, particularly in the present COVID lockdown environment. The arts can often languish in schools where competing demands on time and space and the NAPLAN fixation can diminish their role. This is despite the way Victoria prides itself on being the arts and cultural centre of the nation with major social and economic benefits for the state. The authors highlight the significance of the arts in developing critical and creative thinking skills and, more broadly, providing students with a medium to learn about themselves and the world they live in. And, in the gloom and doom of pandemic times as Victoria curls up inside its living rooms again, the arts can "provide the play, wellbeing and creative space to support the anxieties and fears of students and their families across our schools".

Teaching and teacher education

Amanda Heffernan, David Bright, and Fiona Longmuir from Monash University outline their findings from a study they carried out in the second half of 2019 about the work satisfaction of teachers and the public perceptions of the teaching profession. The study was based on national surveys of 2,444 members of the teaching profession and 1,082 members of the public. The authors acknowledge that their research was completed prior to the present COVID-19 crisis which may have changed some of the views expressed in the surveys. The findings from the AEU (Vic) COVID survey referred to earlier in this editorial throws some light on this. What is described as "the unexpected finding" from the Monash survey is that despite all of the workload and health and welfare pressures they are under, teachers are still largely satisfied with their work. The role remains rewarding when teachers are able to concentrate on the reason they joined their profession - teaching. However, while the public perception of teachers was high, neither a majority of the public nor of teachers would recommend teaching as a career choice for a young person.

Dianne Toe and Lynette Longaretti describe the *National Exceptional Teaching for Disadvantaged Schools Program* now operating at Deakin University. The important idea behind the program is to attract and prepare the best new teacher graduates to work in disadvantaged or low SES schools as graduates. The program uses a Community of Practice model to develop strong bonds within the group of preservice teachers to further develop their skills, knowledge base and reflective practice skills. The success of the program relies on the strong partnership with local schools which are willing to accept these preservice teachers for their placements, mentor them and help them to develop the skills they need to become exceptional graduates.

Interview

The interview in this edition of *Professional Voice* is with Barbara Preston who has been a leading Australian researcher into public education, the social make-up of schools and teacher professionalism since the late 1970s. She worked for both the Victorian Secondary Teachers Association and the Australian Teachers Union (the predecessor to the federal AEU) where she developed the concept of the 'residualisation' of public school systems in Australia through governments privileging the private sector in their funding policies. In doing that they undermined the important role of public schooling both in strengthening social cohesion and as "an investment and foundation for culture, society and the economy". Another area where Preston carried out ground-breaking research was in her work on the professional nature of teaching. Effective practice in teaching, unlike that of other more individualistic professions, is collaborative, collective and democratic.

"...students' education depends not only on good relationships with their immediate teachers, but also on the intentional inter-relations among many teachers and students over many years, occurring within and forming the institutions of schools and school systems."

Note

Readers can click on to the many URL links in this edition by going to the online version at **https://www.aeuvic.asn.au/news-media/professional-voice-journal**.

Artificial intelligence, machine learning and why educators need to skill up now

Erica Southgate

When did you first become aware that artificial intelligence (AI) was part of your everyday world? Was it when you first used a smart phone assistant, got a product suggestion or tagged a friend on social media, or went through a facial recognition scan at passport control? Now consider when you first thought about the use of AI in education. Was it when you first saw a robot being used in class and wondered just how smart it really was, or during the NAPLAN automated essay marking controversy, or the trials to replace roll call with facial recognition technology? Perhaps, like many people, you didn't realise or had only vaguely thought about where AI is infused into computing applications, or about how it works. In this article, I offer an introduction to AI and its subfield of machine learning (ML) and describe some of its uses in education. I also explore some important ethical and governance issues related to the technology.

Artificial intelligence (AI)

AI has been defined as:

> *a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy (OECD, 2019).*

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Although the field of AI computing has been around since the 1950s, the beginning of the 2000s saw advances in the AI-related areas of computer vision, graphics processing and speech recognition technology (Mitchell and Brynjolfsson, 2017). Access to and the tools to harvest 'big data' and the ability to store and manage this in the cloud combined with the growth of online communities to share code and collectively problem-solve, saw exponential innovation in AI. Big data refers to the growth, availability and use of information from a variety of sources such as the internet, sensors, and geolocation signals from devices: It is characterised by its volume, variety and velocity (or how fast it is being added to, harvested and used in real time) (Michalik, Štofa, and Zolotova, 2014).

Science fiction is replete with narratives about superintelligent machines creating dystopian futures. However, this type of AI does not exist. At present we are in an era of narrow AI (Table 1). This type of AI is able to do the single or focused task they were designed to do, sometimes with efficiency or effectiveness that can outperform humans (for example, AI-powered search engines can locate and organise vast amounts of information faster than a human could, even if it sometimes amplifies biases). There is currently no general AI. General AI would exhibit the wide-ranging intelligent and emotional characteristics associated with humans and display a 'theory of mind' which is an awareness of its own mental states and that of others. And, as previously stated, there is certainly not superintelligent AI like ones found in science fiction. This is a good thing because humans are currently still trying to grapple with the benefits and risks of narrow AI.

AI can be embodied in robots (although not all robots have AI) or disembodied or invisibly infused into computing programs (like search engines or map/navigation guidance apps). Often both children and adults overestimate the intelligence of AI and they are prone to anthropomorphising it (giving it human qualities) in both its robot and disembodied computer program forms (Faggella, 2018). Humans are often over-trusting of robots even if the robot makes obvious errors. For example, in one experiment humans followed a robot's directions during a simulated but realistic fire emergency even when it was obvious that the robot was making mistakes in guiding them (Wagner, Borenstein and Howard, 2018).

Table 1: Types of Artificial Intelligence from Southgate et al. (2018) adapted from Hintz (2016).

Superintelligence	AI that exceeds human intelligence in every field (sometimes called the singularity). Example: None as this type of AI does not exist.	
General AI	**Self Awareness** *Example:* None as this type of AI does not currently exist	AI at this level would extend the 'theory of mind' to predict the internal states of others. Having achieved human-like consciousness, it might choose to exhibit non-human abilities.
	Theory of Mind *Example:* None as this type of AI does not currently exist	This type of AI would have an updatable representation of the world that includes an understanding that other entities in the world also have their own internal states.
Narrow AI **WE ARE HERE**	**Limited Memory AI** *Example:* Virtual assistants, self-driving cars	This type of AI receives current input and adds pieces of this input to its programmed representation of the world. This can change the way the AI makes current or new decisions.
	Reactive AI *Example:* AI chess player	Designed for a specific task, this AI receives input, and acts on this input. They cannot be applied to different tasks, and past experiences do not affect current decisions.

Machine learning (ML)

Today, talk of AI invariably involves the subfield of machine learning (ML). Maini and Sabri, (2017) define ML as:

> *(A) subfield of artificial intelligence. Its goal is to enable computers to learn on their own. A machine's learning algorithm enables it to identify patterns in observed data, build models that explain the world, and predict things without having explicit pre-programmed rules and models (p.9).*

The field of ML involves getting algorithms to learn through experience (an algorithm is instructions that tell the computer or machine how to achieve an operation). Computing systems with ML learn as they receive data but do not need to be explicitly programmed to do this.

There are different types of ML. Some examples include:

- *Supervised learning*: Qualified people label or classify initial input data to train an algorithmic model to identify patterns and make predications when new data is given to it. The algorithm learns from experience that is guided by a human labelling the data.
- *Unsupervised learning*: In this type of ML, algorithms create their own structure (features) that can be used to detect patterns and classifications in unlabelled data. Unsupervised learning is used to explore and detect patterns when an outcome is unknown or not predetermined. It is possible that with large enough data sets, unsupervised learning algorithms would identify patterns in behaviour or other phenomena that were previously unknown.
- *Reinforcement learning*: This has an algorithm interacting with a specific environment to find the best outcome through trial and error without training: 'The machine is trained to make specific decisions. … (It) learns from past experience and tries to capture the best possible knowledge to make accurate … decisions' (Ramzai, 2020).
- *Deep learning*: Associated with artificial neural networks (ANN). This type of ML is inspired by the way neurons connect in the human brain. It has numerous layers of algorithms that interact to model data and make inferences. There are multiple ANNs at lower levels of abstraction to effectively solve chunks of a problem and provide these partial solutions to ANNs at higher levels to derive a larger solution (LeCun, Bengio and Hinton, 2015). ANNs are 'organized into layers of nodes, and they're 'feed-forward," meaning that data moves through them in only one direction (so that an) individual node might be connected to several nodes in the layer beneath it, from which it receives data, and several nodes in the layer above it, to which it sends data' (Hardesty, 2017). Deep learning is being used to understand complex data such as natural language processing which involves complicated vocabularies or machine vision processing that has intricate pixel information (Maini and Sabri, 2017).

Developing a basic understanding of ML is important because: knowledge about algorithmic processes help demystify the technology; it empowers us to better identify when AI is present and may be intervening in our lives through automated 'nudging' based on machine predictions and classifications; and, it allow us to proactively ask serious questions about the predictions and classifications generated by machines and the potential for bias, error and discrimination. To elaborate on this last point:

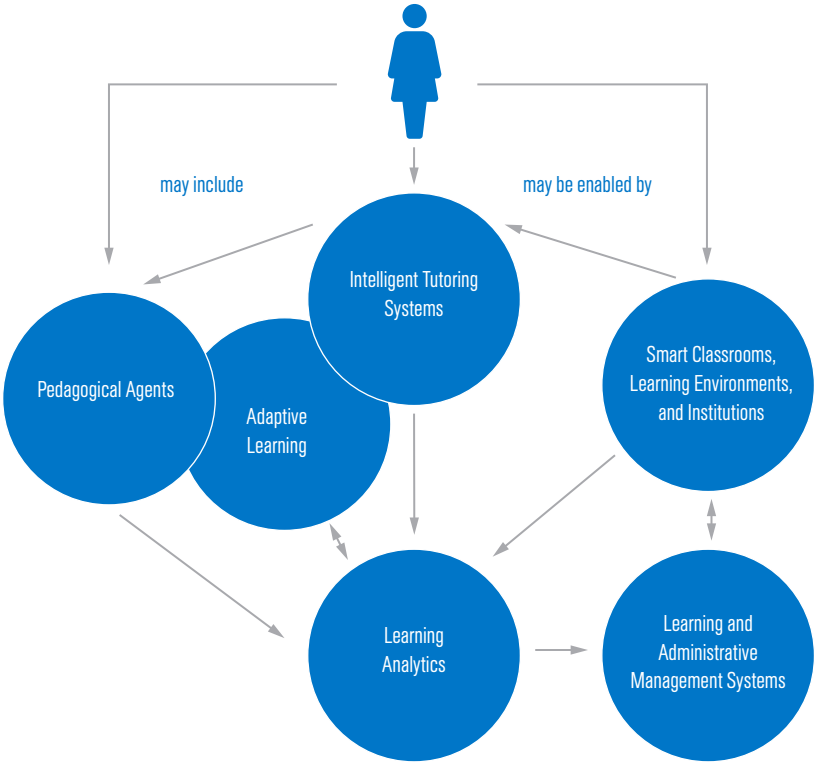
> *Amazon stopped using a hiring algorithm after finding it favoured applicants based on words like "executed" or "captured" that were more commonly found on men's resumes. … Another source of bias is flawed data sampling, in which groups are over- or underrepresented in the training data. For example, Joy Buolamwini at MIT working with Timnit Gebru found that facial analysis technologies had higher error rates for minorities and particularly minority women, potentially due to unrepresentative training data (Manyika, Silberg and Presten, 2019].*

One of the key issues is the often 'black box' nature of ML. This means that the algorithmic process between inputs and outputs is not transparent because the algorithms: (1) are proprietary (the property of companies and governments who will not open these for independent review); or (2) so complex in their operation, like ANNs, that the machine's decision-making processes are not wholly explainable even to the scientists who develop the systems (Campolo, Sanfilippo, Whittaker and Crawford, 2017). 'Black box' AI has limited transparency (and therefore limited contestability and can materially affect the options people are given and their life opportunities — it can determine if someone gets a job interview or a loan, which welfare recipients get a debtor's notice, which learners get categorised as 'at risk' of attrition or failure, or who has access to a particular curriculum pathway in an intelligent tutoring system.

AI and education

AI is present in many applications that are used in the classroom (for example Photoshop). There is also a field of research called AI in Education (AIED) which has been around since the 1970s. This field is interested in developing systems that can automate routine teaching tasks and facilitate learning with intelligent (adaptive) tutoring systems, pedagogical agents in learning applications (characters that can help learners), and robomarking (for an overview see Luckin, Holmes, Griffiths, and Forcier, 2016). AI plays an important role in generating data analytics and in mining data for insights. There is also a vision of educational institutions as 'smart' environments that are part of the Internet of Things (IoT) where sensors in the environment and data from official and personal devices is harvested so that efficiencies can be delivered: This is really only a future vision at present although there continues to be great interest in the harvesting of geolocation and biometric data (data from people's bodies such as facial recognition, pupil dilation and gaze pattern) in educational contexts. Figure 1 provides an overview of where AI may be present in educational computing systems.

Figure 1. Overview of typical AIED applications and their relationship to each other (adapted from Southgate et al. (2018).



A recent review of AIED in higher education (universities are the main driver and incubator of the technology for education) found that there was generally inadequate theoretical connection to pedagogical theory and perspectives, limited critical reflection of challenges and risks of AIED, and a need for more research on the ethical implications of using the technology in education (Zawacki-Richter, Marín, Bond and Gouverneur, 2019).

What are some of the ethical and governance issues to consider?

AI with ML may yield benefits for education in terms of both administration and learning, and it is fair to say that not all AI-powered applications represent the same level of ethical risk. It is arguably the case that advances in AI have outstripped legal and regulatory oversight. This means that educators must lead the way in asking ethical questions about the technology.

Elsewhere I have provided a practical framework for educators to ask ethical questions about the design, implementation and governance of AI in relation to five ethical pillars which I will touch on here:

1. *Awareness*: We need to develop foundational knowledge about the technology to raise awareness of what it is, where it is present and what it is doing, how it might be used for good. and when it should never be used. Many people 'are not aware of the multiplicity of agents and algorithms currently gathering and storing their data for future use' (boyd and Crawford, 2012, p.673). Educators, students and parents and care-givers should be made fully aware of AI data harvesting, storage and third party and other sharing arrangements with a focus on strong informed opt-in consent obtained. Promoting awareness of AI with informed consent will provide some protection from deception and allow all stakeholders an opportunity to be involved in deciding the role and parameters of the technology in education. Approaches to raising awareness need to take into account groups who may have lower literacy and digital literacy skills.

2. *Explainability*: One of the foundational principles of education is explainability. This is the capacity of, and commitment by, educators and those leading and operating educational institutions to explain — with proficiency, clarity and transparency — pedagogical and administrative processes and decisions and be held responsible for the impact of these. Similar to awareness, this is a pedagogical project which seeks to provide all stakeholders with genuine, consultative and public opportunities to ask questions about applications of technology in school systems and have these questions responded to in an honest, intelligible (plain English) and timely way. This also involves educators holding manufacturers, vendors and procurers of AI technology responsible for explaining:

- how the application upholds human rights;
- what the technology should do, can and can't do;
- the educational and societal values and norms on which it was/is trained and acts;
- the learning and pedagogical theory and domain knowledge on which it is based;
- evidence of its efficacy for learning for diverse groups of students;
- arrangements for data collection, deidentification, storage and use including third party or other sharing agreements, and those for sensitive information such as biometrics or measures embedded in affective computing applications;
- if algorithmic 'nudging' is part of the system, how it complies with ethical principles; and
- full, timely disclosure of potential or actual benefits and risks, and any harm that may result from a system.

3. *Fairness*: Fairness is used in several ways in AI ethics. The first relates to the potential social inequality that AI is forecast to generate over the coming decades with structural economic

shifts due to automation. The second relates to the potential benefits of interacting with AI being fairly distributed and the burdens of experimental use being minimised. The other area, and one that has garnered a lot of interest, involves AI bias. There are many publicised cases of AI bias with sexism, racism and other forms of discrimination occurring (Campolo et al. 2017). When AI-powered systems predict outcomes for, or categorise individuals or groups, they subtlety and overtly influence how we understand those people, and this can lead to discrimination and stigma even when humans are in an automated decision-making loop. Campolo et al. (2017) recommend standards be established to track the provenance, development, and use of training datasets throughout their lifecycle in order to better understand, monitor and respond to issues of bias and representational skews. In addition, Wachter and colleagues (2020) elaborate on the challenges AI presents in terms of new forms of discrimination including the possibility that the technology will generate new forms of discrimination not immediately discernible to humans:

> *Compared to human decision-making, algorithms are not similarly intuitive; they operate at speeds, scale and levels of complexity that defy human understanding, group and act upon classes of people that need not resemble historically protected groups, and do so without potential victims ever being aware of the scope and effects of automated decision-making. As a result, individuals may never be aware they have been disadvantaged and thus lack a starting point to raise a claim under non-discrimination law (Wachter, Mittelstadt and Russell, 2020, p.6).*

4. *Transparency*: An 'important underlying principle is that it should always be possible to find out why an autonomous system made a particular decision (most especially if that decision has caused harm)' (Winfield and Jirotka, 2017, p.5). AI is often described as an opaque technology. It is commonly invisibly infused into computing systems in ways that can influence our interactions, options, decisions, moods and sense of self without us being aware of this (Cowrie, 2015). Furthermore, the proprietary status of the data sets used to train AI and its algorithms hinder scrutiny from independent experts. Customers must rely on industry assurances that adequate checks have been carried out regarding privacy implications for the type of personal data being harvested and shared, and that the potential risks of algorithmic bias have been addressed. Relatedly, industry can have a legal obligation to protect data, making full disclosure problematic if bias or other harm does occur (boyd, 2016). Another reason AI can be considered opaque relates to the 'black box' nature of some types of ML particularly deep learning. Some researchers suggest that black box ML should not be used in 'safety critical systems' where classification, predictions and decisions made by AIs can have serious consequences for human safety or wellbeing (Winfield and Jirotka, 2018), and this includes the realm of education. Technologists have suggested

technical ways in which AI systems can be made transparent (IEEE, 2019), especially in relation to how a system interprets and implements norms that influence decisions made by the machine. However, this area remains contentious with continuing ethical and technical debate around how to ensure transparency.

5. *Accountability*: Governance of AI will entail new ways of thinking about the interconnections and tensions between proprietary interests, public and transparent auditability, regulatory standards, policy and risk assessment, legal obligations, and broader social, cultural and economic responsibilities. Accountability in an AI world is an exceedingly complicated area:

> *(T)he complexity of (autonomous and intelligent) technology and the non-intuitive way in which it may operate will make it difficult for users of those systems to understand the actions of the (system) that they use, or with which they interact. This opacity, combined with the often distributed manner in which the (automated and intelligent systems) are developed, will complicate efforts to determine and allocate responsibility when something goes wrong. Thus, lack of transparency increases the risk and magnitude of harm when users do not understand the systems they are using, or there is a failure to fix faults and improve systems following accidents. Lack of transparency also increases the difficulty of ensuring accountability. (IEEE, 2019, p.27).*

Regulation and standards that clearly identify the types of operations and decisions that should *not* be delegated to AI are slowly being formulated. Both manufacturers of, and those procuring, AI systems need to have policies that address algorithmic maintenance, pre-conditions for effective use, and supply training for those implementing the systems. The IEEE (2019) suggest that algorithmic maintenance needs due diligence and enough investment in relation to monitoring outcomes, complaints, inspection and replacement of harmful algorithms, and that delegating responsibility to end-users for this is not appropriate. Gulson and colleagues (2018) provide a sensible set of recommendations including: developing procurement guidelines that encourage ethical, transparent design of AI; reviewing international data protection legislation to develop a suitable approach for Australian education; and establishing official guidelines for adaptive and personalised learning systems that ensure learning efficacy and equity.

Importantly, governance structures must have accessible contestability mechanisms for students, staff and parents and care-givers that include access to independent expert technical and ethical advice so that potential bias and other harms might be identified and responded to earlier rather than later. There are many interconnected issues including:

surveillance; algorithmic bias and discrimination; data privacy, consent and sharing arrangements; the growth and scale of integrated biometric and geolocation harvesting through administrative and learning applications; function creep (using data for purposes not originally intended); and the security of personal data and its potential for reidentification. These all raise very serious ethical issues that need constant attention within transparent systems of governance that include processes that allow for open dialogue between stakeholders within school communities and processes of contestability.

Concluding remarks

As educators we must become actively involved in asking ethical questions about computing systems that can automate or profoundly affect decision making, and whose predicative and classificatory functions can have impacts, positive and negative, on how students and teachers are viewed and treated. We are fortunate in that the integration of AI into schooling systems is just arriving – we have a window of opportunity to skill up on technical, pedagogical and ethical matters related to the technology. While there has been some discussion about the de-skilling of teachers through automation, we must turn more attention to collectively asking questions about the computing systems introduced into schools, the data that is harvested through them, its use and sharing arrangements, and the effects this has on teachers and students. The introduction of automated and intelligent systems which influence decisions and make predictions and classifications about humans should only occur with caution and as part of a broader pedagogical and ethical project that empowers school communities to make informed choices about the design, implementation and governance of AI in schools.

Postscript: I am currently conducting research on the ethics of AI in education and am looking for teachers, school leaders and policy makers to interview. If you are interested in finding out more please email me – **Erica.southgate@newcastle.edu.au**

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Student Voice, Agency and Participation

Roger Holdsworth

In my first year of teaching, I was faced with a topic in senior Maths that I'd not met at University. Fortunately, there were two students in the class who were repeating the subject. Together we worked out how to learn this. In retrospect, the experience taught me profound (if unrecognised at the time) lessons about trusting and working collaboratively with my students.

Jump forward a decade: while teaching in Brunswick, I coordinated a cross-age tutoring program in which the school paid students to tutor others. Tutors had skills in their first and home languages that were recognised to maintain the learning of more recently arrived students. I was fascinated to see the impact of this, both on the learning of tutors and tutees and on their engagement, as we provided 'real roles of value' as part of their curriculum. I also particularly noted the positive outcomes for more marginalised students when we trusted them to tutor in precisely those areas in which they (and others) saw themselves as failures.

At the same time, we were also publishing *Ascolta*, a five-language community newspaper, written, edited and laid-out by primary and secondary students in the area. This brought together students, parents and teachers to learn together and portray a vision of their Brunswick. We (teachers – sometimes the 'outsiders' in the area) learnt from students and their families.

Terms

Initially we talked about these approaches in classrooms and across schools as 'youth participation in education'; the shortened term 'student participation' further emerged in work of the Participation and Equity Program (PEP) in the 1980s. There we drew a distinction between limited meanings of 'participation *in* schooling' (ie 'turning up', as in 'participation rates' or 'bums on seats'), 'participation *at* school' (ie taking part in activities that others prescribed), and the 'deeper' meaning of 'participation *through* school' (ie making decisions

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about education and life, within schools and the wider society) (Holdsworth, 1985). While the first two meanings were necessary, they were much more limited than the forms of 'student participation' already extant in classroom projects, student organisations and so on.

Ideas about 'participation' have a strong conceptual history in areas of development, youth affairs, health and education. In the broader youth sector, Roger Hart's 'ladder of youth participation' (Hart, 1992) encapsulated a continuum of processes from 'manipulation' and 'tokenism', through 'informing' and 'consulting', to 'sharing responsibility' for decisions and action. Reddy and Ratna (2002) pointed out that young people *are* participating all the time, and that forms of ladders and other typologies are, in fact, descriptions of adult perceptions, even containment, of that participation. Harry Shier (2001) explicitly then addressed ideas about organisational support for young people's participation.

Late in the 1990s, the term 'student voice' started to emerge. Reflecting Hart's continuum, possible levels of our recognition of 'student voice' were identified:

- speaking out;
- being heard;
- being listened to;
- being listened to seriously and with respect;
- incorporating student views into action taken by others; and
- sharing in decision-making, implementing action; reflecting on action. (Holdsworth, 2000)

There is currently much more formal attention to these approaches than there has been over the last half century at least. The Victorian Department of Education places ideas about student voice and agency as central to learning outcomes within policy and practice documents. A *Research Report* in 2007 (Manefield et al, 2007) set the scene, and the more recent *Amplify* toolkit (**https://fuse.education.vic.gov.au/pages/amplify**) provides a wealth of useful resources and case studies. The development and growth of the Victorian Student Representative Council (the **VicSRC**) (**http://www.vicsrc.org.au/**) as the peak body for school-aged students in Victoria, has provided students with a voice at a systems level, alongside teachers, principals and parents. The VicSRC's *Teach the Teacher* program (**http://www.teachtheteacher.org.au/**) is recognised internationally as a significant innovation in creating a space in schools for students to lead collaborative conversations with teachers about important issues they wish to highlight.

But ideas and terms still blur together. Terms and concepts such as 'student voice', 'student agency', 'student participation' and 'partnerships' are stretched or used interchangeably in ways that sometimes confuse people. There is value in being more precise about how we use them.

Why is this important? Our practice is shaped by our understanding of the terms we use. If there are conflicting ideas and intentions behind these terms, we may ignore possibilities and challenges, or adopt practices with which we are not happy, and which conflict with other value positions we hold. Many of these terms and ideas have substantial histories as well as current debates; these reflect broader ideas about the purpose of education and of schools. We should understand the contexts of this work, because these also shape what we do.

Intentions

I've recently been interested to unpack ideas about this work and tease out implications of their application at classroom, whole school and system levels. I started by thinking about *why* we were interested in these approaches: what are our **intentions**?

We asked students and teachers at various training days to say, in a few words, why 'student voice' (which seemed to be the most used term) was important. (This wasn't a research project; it was a part of warm-up activities.) When we collected and looked at the responses, an interesting pattern emerged.

Overwhelmingly, teachers said: *"Because it improves students' engagement … motivation … commitment … learning …"* And the students said: *"Because it improves the school …"* That difference in emphasis continued in many further conversations in which we reflected on this question with students and teachers.

We weren't the first to ask this. British academic and writer Michael Fielding asks:

> *"What is all this activity for? Whose interests does it serve? Is student voice a neutral technology or an inevitable expression of a set of values and assumptions, not just about teaching and learning, but about the kind of society we wish to live in?" (Fielding, 2012)*

Fielding developed a typology (Fielding, 2012) to indicate a range of meanings: from 'students as data sources', used by teachers to improve their practices; through students' action about learning; to joint adult and student 'intergenerational initiatives around a shared democracy' ie shared responsibility for the common good.

That led us to identify three broad intentions of this work:

- to **increase the effectiveness of teaching practices** through the provision of information, feedback and advice from students to teachers and other adults. This can be referred to as **'student voice'**;

- to **increase students' learning and wellbeing outcomes**, through enabling students to have greater control of their learning, and hence their engagement and motivation. This can be referred to as **'student agency'**.
- to **increase educational outcomes for all participants** (students, teachers, schools etc) through partnerships between and shared decision-making by students, teachers and others. This can be referred to as **'student participation'**.

Within each of these intentions there can be a continuum of practices: eg from 'minimalist' to 'maximalist', from passive to active, from teacher-led to student-led. The terms are also not sharply separated, but the intentions build on each other in a 'nested' way.

Let's tease these out a little more.

Student Voice

The idea of **student voice** – of students 'having a say' ie expressing views, providing information, advice or feedback – underlies all of these concepts. It intends to change and improve teachers' professional practice. This can include a range of examples from simply regarding 'students as data sources', through various forms of student feedback to teachers, to student-led advocacy. It recognises that students have important and unique knowledge that can improve what adults do.

The concept of 'voice' has also been recognised as going far beyond verbal expression. For example, current important work within specialist school settings has challenged us to think about what 'student voice' means for non-verbal students. There was initial work on various forms of artistic expression as voice, and more recently attention to 'body language' and behaviour as 'voice'.

Important issues have emerged about 'who is listened to', and 'who is silenced'. Adam Fletcher also writes about 'convenient' and 'inconvenient' student voice (Fletcher, 2013), and asks why we listen to the former, but not the latter. If we just listen to the students with whom we already agree or who do not challenge us, we learn nothing new.

This refocuses our attention away from *enabling* student voice (which is actually there all the time – as all teachers know), to how adults and systems *hear, listen to and respond to* 'voice'. If 'voice' intends to improve practices, it must be listened to and responded to seriously, inclusively and respectfully.

Student Agency

Building on basic ideas about student voice, students are encouraged to be actively engaged in making decisions about their learning. This has come to be called **student agency**. It intends to change and improve students' roles, ownership and engagement and hence improve student outcomes. It focuses on the actions that students take, rather than simply on their expression of views.

Agency has been defined as:

> *"The capacity and propensity to take purposeful initiative—the opposite of helplessness. Young people with high levels of agency do not respond passively to their circumstances; they tend to seek meaning and act with purpose to achieve the conditions they desire in their own and others' lives." (Vander Ark, 2015)*

Again, student agency exists across a range of possibilities, from student choice between alternatives provided to them, through having their feedback included, to various forms of co-design of learning (goals, content, methods, assessment etc). These ideas take us beyond a literal meaning of 'voice' (in which students cede power to others) to emphasise the action that students themselves take, either individually or collectively.

Similar dilemmas exist here: about whether agency is individual or collective; about its tension with curriculum prescription; about its inclusivity.

Student Participation

Building on the ideas of 'voice' and 'agency', students work with others (teachers, principals, parents etc) to improve the ways in which schools and education happens: how schools operate, how we work with each other, and how we learn together (purposes, goals, content, methods, assessment, evaluation). This intends to change and improve outcomes for *all*: students and teachers. This is called **student participation** or, increasingly, **partnerships in learning**. Students, either directly or through representatives, share decision-making and implementation in collaboration with others. This occurs at classroom and whole school levels and, to some extent, within systems.

Definitions of participation include both the process of taking part in decision-making, and also the end of achieving change: *"Participation is a process where someone influences decisions about their lives and this leads to change."* (Tresider, 1997) Again we need to ask: 'which students?' and 'decisions about what?'

In practice, elements of these intentions usually co-exist and complement each other. For example, the expression of student voices can influence teacher practices, but also builds the competence and efficacy of the students themselves (if their voices are listened to), as well as establishing various forms of partnerships that change the educational landscape in ways that benefit all participants. So each of the terms can be used broadly and interchangeably, as well as narrowly and specifically.

Roles

The core ideas about student voice, agency and participation have implications for what students, teachers and others do and how they behave.

Students are:

- providers of information, views, advice and feedback;
- collectors, collators and contributors of other student voices;
- active participants in curriculum and learning approaches that they initiate;
- active participants and collaborators in decision-making alongside adults;
- active listeners, collectors and contributors of student views and voices in decision-making forums.

Teachers and adults are:

- listeners who hear, consider, adapt and respond to students' voices;
- advisers, proposers and intellectual leaders of active learning curriculum approaches in which they are primarily process focused;
- active participants and collaborators in decision-making alongside students;
- co-leaders, focused both on content and process;
- respectful challengers of students, particularly around mutuality, relationships and inclusion.

> One highly important issue is the capacity and willingness of all – teachers and students – to hear, listen to and respond to students' voices. To assist in this within classrooms and across schools, a **Listening Tool** has been developed. It is freely available at: **https://bit.ly/2rwBnTe** and is intended to assist individual (and group) reflection by teachers and representative students about their awareness and understanding of listening.

Practical examples

We can map our understanding of these intentions into practices at various levels (individual classrooms, whole schools and systems):

In our **classrooms**, listening to *student voices* means that student results, behaviours, views, and ideas explicitly influence teacher practice including lesson planning. This includes at least recognising students as data sources about their understanding, but extends easily to enabling more formal feedback to teachers, either initiated and carried out by the teacher or initiated and carried out by students.

Increasing *student agency* means that all students make decisions (alongside teachers and other students) about their own learning. This includes at least choosing between topics, but easily extends to deciding on content or approaches, and deciding how to reflect on and assess their own learning. They also learn in engaging and practical ways that provide valuable and useful things for them to do as part of their learning.

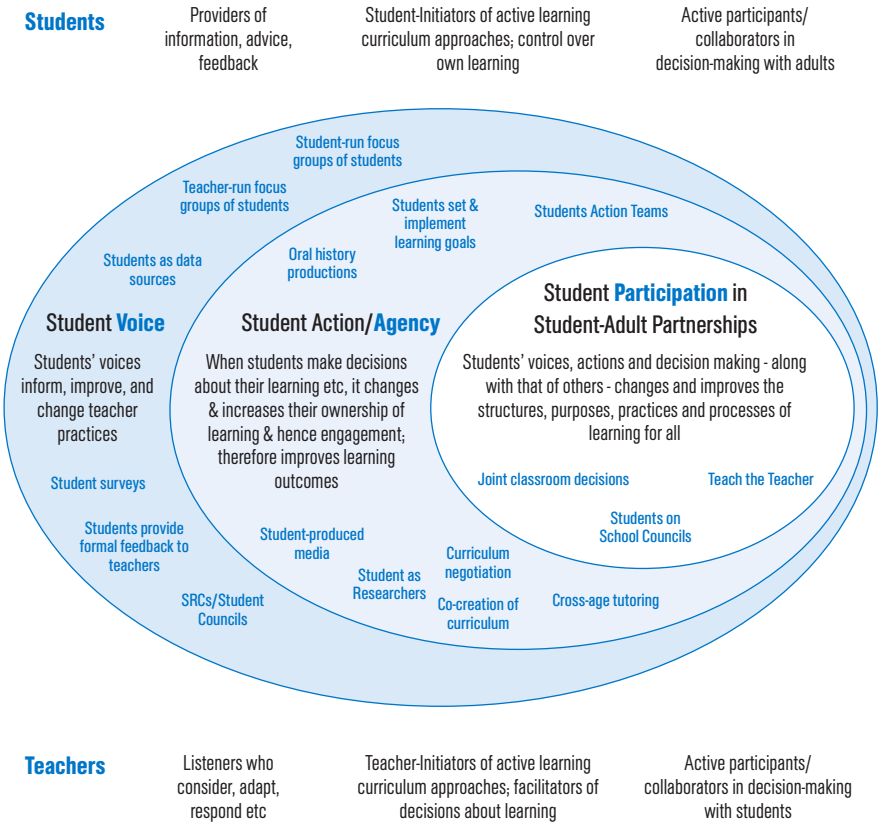
Student participation means that students and teachers together address issues such as class rules, relationships and structures, and make decisions on these. This also includes shared decision-making about learning, where students and teachers negotiate and co-construct learning approaches, and work together to investigate classroom issues.

At a **whole school level**, student results, attitude surveys and similar information is shared across the school and considered seriously. Student views (through surveys, formal student presentations, focus groups and other means) inform whole school discussions and practices. Student groups and teams (eg *Students as Researchers*, *Student Action Teams*) are involved in active learning approaches across the school and investigate and act on whole school issues. A student representative organisation exists, is inclusive and effective in leading such action on behalf of students. Students lead whole school discussions around matters of learning and teaching, relationships etc (eg through *Teach the Teacher*). Students are represented on school decision-making bodies (and other committees) and in staff selection and appointment panels and processes.

At a **system level**, student information and views are conveyed to and heard at system level (by Department, Minister etc). Students advocate directly around issues of concern, and these student concerns and views inform and help shape system policy and practices. Representative students are members of investigative and action initiatives across schools (eg within clusters, local networks, and at state level). They take part in system-level investigations with adults about important education issues. They attend state-level workshops and conferences for discussions, debate and decision-making – as well as skill development. Students have a representative organisation at a system level, and through this, are represented in system-level forums and on decision-making bodies.

The relationship between these ideas can be portrayed in a diagram:

Figure 1. Degree of Student Participation



To assist in thinking about the implications for classrooms and schools, an **Audit of School Practices** has been developed. This is based on the understanding of intentions outlined here, and helps recognise and celebrate practices that are already happening, but also see what further development and priorities are needed. It is freely available at: **https://bit.ly/2KWjnYZ** and is intended for use as part of teacher professional development.

Challenges

This area continues to pose many exciting challenges for our work with students, teachers, schools and systems. These include:

- How can we build the **understanding of all parties** about student voice, agency and participation? That might mean workshops for students to build communication and teamwork skills and confidence, professional development for teachers to build listening skills, opportunities for all to discuss and explore these ideas and their implications for practices, and the development of resources – including case studies - to illustrate possibilities.
- For **students**: how can we increase or amplify all students' capacity to express and present views and ideas, to take action around their learning and to share in decision-making in classrooms, schools and systems? How can we build the inclusivity of voices that are heard and listened to – including diversity in representation?
- For **teachers, schools and systems**: how can we increase the capacity of teachers and others to listen and respond to students? How can we integrate such approaches within externally determined curriculum?
- In particular, there is a continuing need for practical examples of various **'students as partners'** approaches eg co-planning of curriculum, students and school governance, student-staff research teams, joint reflection on and investigation of student attitude surveys. We need to be developing and disseminating guidelines for good practice in shared classroom and school governance.

> The practice journal *Connect* has been published bi-monthly since late 1979. It documents and shares practical examples from classrooms and schools, mainly in Australia (but some international). It is now freely available on-line at: **https://research.acer.edu.au/connect/** Contact me directly (**r.holdsworth@unimelb.edu.au**) to be added to the free mailing list.
>
> The on-line *Student Voice Research and Practice facebook* page (**https://www.facebook.com/groups/studentvoicepage**) links over 1,000 people internationally. Other international resources include the *International Journal of Student Voice* (**https://ijsv.psu.edu/**) .

To concentrate on just one meaning of these terms can lead to misunderstanding and restriction of what we do. To have limited ideas about 'student voice' risks simply encouraging some students to speak as informants or advisers – or of ignoring students' concerns when they are raised; to have limited ideas about 'student agency' risks trivialising student initiatives to SRC fundraising or social events, or students simply acting at adult direction; to have

limited ideas about 'student participation' risks misinterpreting this as only attendance or involvement in adult-directed activities. We must always be alert to these restrictions - and willing to challenge them, asserting the importance and breadth of all students' voice, agency and participation in decision-making.

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What the Arts Teach and How It Shows (in the time of COVID-19)

Mark Selkrig, Kathryn Coleman & Abbey MacDonald

The place and role of the arts within school curriculum (and more broadly in society) has always been and remains fragile and contested (Selkrig & Bottrell, 2018). As we have re-positioned ourselves, readied our classrooms and laptops for a return to another term in stage 3 lockdown, we can again feel the weight on the arts to provide the play, wellbeing and creative space to support the anxieties and fears of students and their families across our schools. Our fragility is clearly manifested in this time of COVID-19 where, while living in a state that prides itself as the arts and cultural centre of the nation, the arts sector in Victoria closed rapidly, had a short stint at opening up and again has had to close the doors. The arts in 2020 have found themselves in dire straits, with artists and arts workers across industries continuing to wonder what the future of the arts could be like post-covid. While we have seen small glimpses of a new normal (**https://www.timeout.com/melbourne/art/art-in-melbourne-when-are-galleries-reopening-and-what-exhibitions-can-i-see**) for the arts between stage 3 first round and stage 3 second round, it is still the arts that buoy us with care and empathy (**https://www.ngv.vic.gov.au/**) as we head back into lockdown in metropolitan Melbourne. There is ample evidence from various parts of the world (including Australia) that highlight the value and benefits of the arts and arts rich learning environments for young

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Abbey MacDonald is an arts-based researcher, teacher, and Senior Lecturer in Arts Education at the University of Tasmania. She brings an interest in art making, Arts advocacy, teacher professional learning and community engagement to all aspects of her work. She enjoys working with Arts industry and philanthropic organisations in collaboration with education transformation stakeholders and has been recognised for her approaches to practice in online Arts teacher education contexts. Abbey is on Twitter **@AbbeyJMacD**

people (**https://www.teachermagazine.com.au/articles/the-arts-in-early-childhood-learning**) before and during COVID-19. Despite this, the arts can become diminished in school settings due to competing demands on time and space.

During this health crisis, there appears to be a heightened awareness and appreciation of the arts. In this article, we return to a key thinker in the field of arts education, Elliot Eisner (2002) and a seminal work authored by him. We use his work to reflect on and consider what the arts have taught and shown us in guiding (**https://www.artshub.com.au/news-article/features/covid-19/artshub/digital-art-guide-to-beat-coronavirus-closures-260067**) us through times of uncertainty, while keeping us hopeful (**https://www.fya.org.au/2020/03/31/young-artists-examine-life-in-the-time-of-covid-19/**) and reinforcing why there is the necessity for the arts within the school curriculum. Throughout the article we have linked and connected to various examples of how arts learning experiences are being offered by our communities. These hyperlinks [Ed. Readers can click on to the many links in this article by going to the online version at **https://www.aeuvic.asn.au/professional-voice-1324**] serve as resources for you to explore how the arts, arts education and artists are supporting each other such as this Art Education Australia link: collaborative digital learning and teaching space (**https://docs.google.com/document/d/1-F6ROpr0TzuMpcW57FAGMnYCHHM-_AUbcK1k2wM4_HQ/edit**).

The arts teach children to make good judgments about qualitative relationships.

It seems that art teachers have been resourceful in the ways to encourage young people to think about their home environment and the materials with which they can continue to 'make' and explore while in lockdown. In some instances **'**art packs**'** (**https://www.teachermagazine.com.au/articles/art-education-during-the-covid-19-lockdown**) were sent home or households were encouraged to experiment with the materials they have about them, for example exploring the back yard to locate sticks, twigs and leaves as the materials to make a collage or sculptures. In the arts, rules and 'correct answers' are not definitive, and by encouraging parents and carers to ask questions of these 'at home young artists' about their work such as: 'why did you choose those particular sticks or leaves?' and 'what sort of feeling did you want to create with the sculpture or collage?', it has been possible to hear about the judgements and arguments young people have constructed and considered rather than the 'rules' they followed in making the work. A disposition we would hope to foster at a time of uncertainty.

Pandemic zines fostering connections.

The following images are the work of preservice teachers at the Melbourne Graduate School of Education who alongside their weekly online seminars and workshops, co-authored a series of pandemic zines that were sent by mail from home to home across the semester. Anticipating the zine arriving in the mail each week was joyful, and a personal connection through art that captured their thinking and feeling about learning to be an art and design teacher from home.

Image 1: M.Teach Secondary Art & Design, MGSE Pandemic Zine by Ella Konrad-East, images by Stephanie Dimofski.

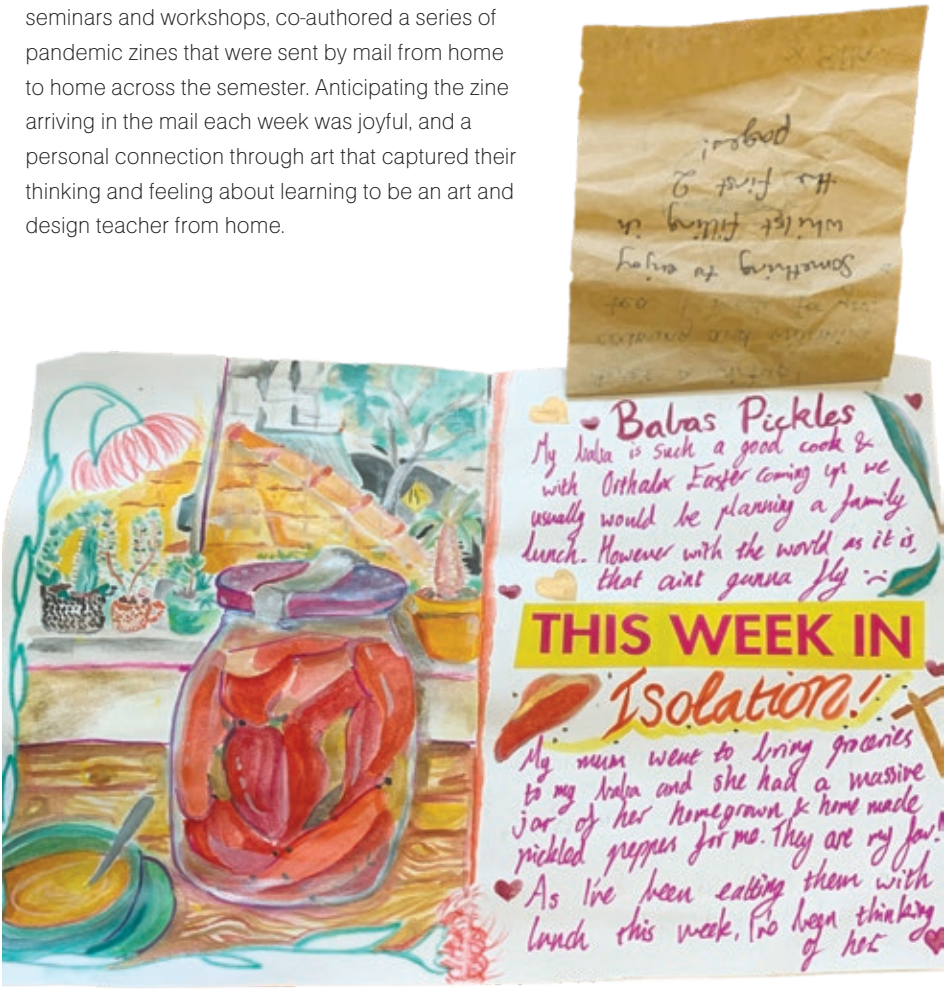
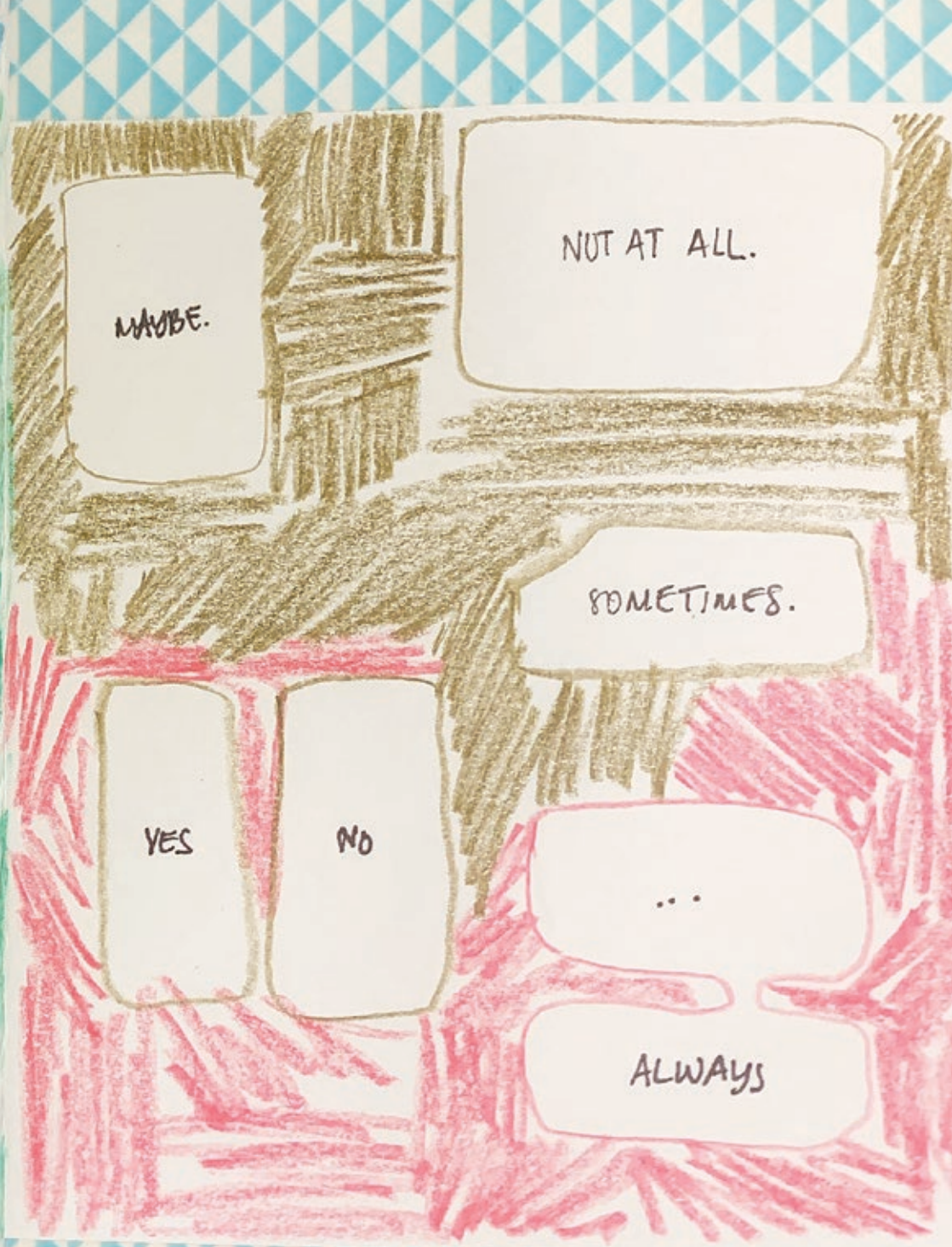


Image 2 (ovderleaf): M.Teach. Secondary Art and Design, MGSE Pandemic Zine by Felicity Young, images by Stephanie Dimofksi and Joanne Low.

IT'S ALL ANYONE CAN TALK ABOUT.

TIGER KING



CAN YOU FEEL IT?

Image 3: M.Teach Secondary Art & Design, MGSE Ella Konrad-East's Pandemic Zine note to the next author, Stephanie Dimofski.

Image 4: M.Teach Secondary Art & Design, MGSE Stephanie Dimofski's Pandemic Zine note to the next author, Ellen Collins.

The arts teach children that problems can have more than one solution.

This resonates for art teachers just as powerfully as it does for their students! Art teachers in Victorian schools model tremendous agility in their own practice, which students experienced last term and will again this term. From the development of resources and strategy sharing to help peers make pedagogic leaps, art teachers offered a masterclass in how to troubleshoot problems as opportunities to innovate. Artists and teachers are well accustomed to navigating the uncertainty of marginalisation; be it in curriculum agendas or meaningful recognition of the industry through investment (see Visual Communication Victoria (**https://www.vcv.asn.au/70-visual-communication-victoria/about4/56-welcome-to-visual-communication-victoria**)). Through their sharing of strategies and resources developed (**https://thebackartroom.global2.vic.edu.au/**), art teachers have shown us the many ways in which they stepped up to the COVID-19 problem.

The arts can celebrate multiple perspectives.

Teachers incorporate ways of knowing and doing integral to art as part of a holistic curriculum enactment repertoire. Bodkin-Andrews and Carlson (2016) remind us how, as "a multicultural country the future of Indigenous students is tied to the future of all Australians and their acceptance of the importance of Indigenous cultures" (p. 788). Art - as complexly connected in conversation with, and distinct to culture - plays a significant role as teachers must keep working to create safe spaces (**https://www.tandfonline.com/doi/pdf/10.1080/13613324.2014.969224**) for truth telling, deep listening and reconciling distorted and incomplete histories. Teachers' engagement with, recognition and inclusion of multiple perspectives continues to transform how young people take part in, obtain and benefit from Arts education. Ewing (2020) reminds us of the abundant evidence related to the critical role arts experiences play in engendering a multiplicity of distinctive skills and understandings that young people need to successfully navigate the fluidity of twenty-first century living. Drawing from their experience in and familiarity with practice, artists (**https://creative.vic.gov.au/coronavirus/creative-community**) and arts workers in Victoria (**https://docs.google.com/document/d/1u5o_1thMj_B4SeSloD2ALaM-qN1D9WS928K4wXOx_Vs/edit?ts=5ed9bd98#ACMWithYou**) were clearly already (and continue to show us just how) well accustomed they are to adopting processes of making meaning, decisions, and communication. Hashtags such as #ACMWithYou, #spreadartnotviruses (**https://www.artshub.com.au/news-article/features/covid-19/gina-fairley/spread-art-not-viruses-new-hashtag-gains-traction-259993**) and #NGVEveryDay (**https://www.instagram.com/p/B9yb7hFnUtY/?hl=en**) have offered a connection to celebrate the multiple perspectives and practices of the arts across Victoria in our classrooms. Inherently, these propensities saw

teachers and students put multiple perspectives to work in mapping and mobilising multiple solutions for the challenges COVID-19 created for teaching, learning, and making art.

The arts teach children that in complex forms of problem-solving purposes are seldom fixed but change with circumstance and opportunity.

A range of amazing, exciting, and necessary ways in which arts teachers work with young people continues to unfold alongside the expansion and contraction of COVID-19. We know how "creative and critical practice can bring experiential learning experiences to these challenges: immersing… learners in a space of play, making, iteration and reflection, that can scaffold the process of change" (MacDonald, Wise, Riggall & Brown, 2019, p. 79). The need for art teachers to practice and teach complex forms of problem solving that Eisner (2002) describes remains pertinent. Opportunities change as COVID-19 continues in the ebb and flow of lockdowns, alongside proposed changes for higher education funding models and support packages for the Arts industry in Victoria (**https://creative.vic.gov.au/grants-and-support/programs/vicarts-grants**). Shifting circumstances and priorities are inevitably felt on the ground by teachers, where less funding for resources and opportunities can manifest in teachers feeling compelled to work doubly hard to demonstrate their worth to a resistant audience (MacDonald, Barton & Baguley, 2016). Art teachers in Victoria are navigating the tension of changing circumstances in distinctive, interconnected, and expansive ways (**https://www.teachermagazine.com.au/articles/art-education-during-the-covid-19-lockdown**).

The arts make vivid the fact that neither words in their literal form nor numbers exhaust what we can know.

The arts have well and truly stepped up in these precarious times (**https://www.aare.edu.au/blog/?p=5463**). We have seen art as a vehicle to promote young people's sense making of the current situation. We have seen a plethora of opportunities emerge (**https://www.artscentremelbourne.com.au/community/content-hub/together-with-you/families/edition-5-top-5-picks-for-families**) for young people to engage in music making, drawing, painting, animation, sculpture, movie making to capture their reflections on what matters most to them, what they have learned or hopes for the future. During the first lockdown and remote schooling we saw projects such as Together we are making history (**https://www.oursharedstory.org.au/**) appear to support the creative and critical thinking of young people, while capturing and archiving this moment in time. Our galleries such as Heide, through Heide at Home #HEIDEATHOME initiated similar support for young artists encouraging them to make and create through lego (**https://www.heide.com.au/**

heide-home-lego-challenge-submissions), drawing (https://www.heide.com.au/heide-home-drawing-challenge-submissions) and clay (https://www.heide.com.au/heide-home-clay-challenge-submissions) challenges.

The arts teach students that small differences can have large effects.

We can all remember our experiences in creating that wonderful colourful painting where we just added a little too much black to our palette and everything turns to muck, or that magical moment by adding a flick of white to a colour on our paper and instantly the object becomes alive creating a glittering illusion. Similarly we all know that small difference when we are drawing and we press too hard with the pencil and we either tear the paper or make a mark that is far more pronounced than we had intended and will then impact on the whole composition. Our teaching and learning in the arts make these small differences that have lasting literacies and knowledges that are used every day. Eisner (2002) argued that a curriculum that included music, dance and art was essential in developing critical thinking skills in children to make-meaning and sense-make ideas about the world (https://www.ngv.vic.gov.au/whats-on/programs-events/?type=kidsandfamilies).

The arts teach students to think through and within a material.

Because the arts curriculum in Victoria is designed to teach students through a practitioner lens; allowing learning, teaching, and assessment to be authentic; remote, hybrid and studio-based learning was able to shift according to the site of practice. During remote teaching and learning at home, the practice focus of the curriculum was supported by young people making and responding to art with a range of non-traditional materials in their own homes. Chalk on the streets, rainbows in windows (https://www.abc.net.au/news/2020-04-02/coronavirus-covid-19-chalk-messages-on-streets-around-australia/12102778) and bears in home entrances (https://www.abc.net.au/news/2020-04-02/coronavirus-covid-19-chalk-messages-on-streets-around-australia/12102778) were signs of placemaking and installations by young people across Melbourne who were thinking through material, and with materials.

The arts help children learn to say what cannot be said.

Within this COVID-19 precarity, the Victorian arts curriculum design has offered opportunities for students and teachers to show and think through their fears and anxieties, and for some the joys of being home during remote learning. The Laburnum PS Online Learn at Home Gallery (https://www.laburnumps.vic.edu.au/page/381) indicates how arts learning at

home was critical to the wellbeing, creativity and personal expression of students as they wondered what was happening and tried to make-sense and sense-make away from school, friends and the routine of term time. Over the last six months arts teachers and students have taken risks and challenged themselves to use a variety of digital spaces they had not used before to share their feelings about the world right now. Just this year, art has been a scope to channel our emotions about bushfires, climate change, the pandemic, and fears for an unknown future. Our arts students have been making, creating, presenting, and submitting work in a range of places, platforms, and new modalities (**https://www.monash.vic.gov.au/Leisure/Arts-Culture/Isolation-Inspiration-Arts-and-Culture**). Within initial teacher education, our arts educators too were making what could only be shared via art making (see pages 33-36).

The arts enable us to have experience we can have from no other source and through such experience to discover the range and variety of what we are capable of feeling.

This term is going to be a difficult one for many of us, but we know from experience that through making and responding we can wonder and wander, to be curious and imaginative (**https://www.ngv.vic.gov.au/kids/**) supported by our arts organisations, and to ask, *what if*. What we have learned in 2020 is that we are resilient. When the going gets tough artists, and the arts community work together to create new opportunities through possibility thinking. Our galleries and museums, theatres and performance venues have all challenged us to think differently about the role that we play in community, and to consider why the Arts are important and why the arts matter in schools.

The arts' position in the school curriculum symbolises to the young what adults believe is important.

The arts curriculum in Victoria explicitly locates the role of the artist and audience; together we learn through the practices, disciplines and traditions that have shaped cultures. We have art teachers who work with their students to develop ways of knowing through the different histories and cultures of Victoria, Australia, and the wider global community. At this current time and Post-COVID it is important that the art and education sectors (curriculum writers, professional learning providers, school principals, teachers and students of diverse race, ethnicity and cultural voice) actively engage in dialogue about the visioning, shaping and positioning and crucial role of art in the curriculum. Our current circumstance seems to have heightened a belief that change, resilience and hope are needed in schools. We know that learning in and through the arts enables students to develop creative dispositions and

expressive skills by learning about practices, materials, traditions, and cultures (Selkrig, 2018). This needs to be nurtured, supported, and reflected in curriculum so that our students can make and respond to their worlds, exploring their beliefs, values, and feelings toward global events like we find ourselves in today.

In returning to Eisner's (2002) work that champions the ways the arts benefit students, teachers, and schools to frame this article, his suite of key ideas about the importance of the arts seem to remain central, enduring and may have even more meaning now. For us, Eisner offered a pivot; a place to stop and reflect on what the arts have taught us and how the arts in the time of COVID-19 support our teaching practices and pedagogies. This year continues to unfold unlike any other we have experienced, and that you as teachers will feel the weight of providing play, wellbeing, and creative spaces to support the anxieties and fears of students and their families across our schools. Eisner maintained that the arts are not only crucial to the development of critical and creative thinking skills but they are also rigorous and sophisticated spaces of learning about the self and world. His views seem even more important now as a way of connecting our present circumstances in art education to our past, as well as our uncertain but hopeful futures.

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Attracting and Retaining Australia's Teachers

Amanda Heffernan, David Bright, Fiona Longmuir

It is difficult to reflect on the position and experiences of Australian educators right now without considering the impact of COVID-19 on their work. The global pandemic has reshaped and reframed not only how teachers feel about their work and their experiences, but also the way we think about and talk about education more broadly in the media, politics, and in our communities. We have seen articles and memes about the rise in public respect for teachers as a result of parents supporting their children to learn from home. We have seen teachers being referred to as frontline workers who are vital for a functioning economy. We found ourselves wondering, what does this say about the place of schooling in our society? Teachers are being hailed as heroes at the same time as they are being sent into workplaces with little hope of physical distancing. We have seen some states where teachers are being asked to take cuts in hard fought and won pay and conditions, and reports of teachers losing jobs (**https://www.theage.com.au/national/victoria/mentone-grammar-sacks-20-staff-as-virus-hits-finances-20200428-p54nwm.html**), as a result of the economic effects of the pandemic.

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We conducted research last year about teachers' experiences and about public perceptions of the teaching profession (**https://www.monash.edu/news/articles/study-shows-teachers-underappreciated,-overworked-in-classroom**). We were inspired to do this by concerns about issues related to the attraction and retention of teachers. We wanted to consider questions of how great teachers can be encouraged to take up the job and how they can be supported to thrive and stay in the profession.

We know that, more often than not, teachers go into the job as a calling and that this can have deleterious effects on their conditions and their day-to-day experiences (for example, doing significant amounts of additional labour 'for the kids' or for the 'love of the job'). We wanted to know more about the ways teachers were feeling about their work, and what might be affecting their plans to stay in the profession.

We surveyed 2,444 Australian educators (ranging from early childhood to senior schooling, including classroom and specialist teachers and school leaders) to ask them about their experiences and their perceptions of their work. At the same time, we conducted research across a nationally-representative sample of the public to ask them about their perceptions of the teaching profession. We were surprised to find how high public levels of trust for teachers were, while at the same time unsurprised about some of the particular challenges facing the profession today. While 93 percent of the public responded that they trusted teachers to do a good job, this is not translating to teachers' perceptions of how they are seen by the public, with 71 percent of teachers feeling that the Australian public does not appreciate them. This serious disconnect between public perceptions and teachers' feelings of appreciation is an important area for further investigation.

We focus in this article specifically on aspects affecting teachers' work and their intentions to remain in the profession. You can see more detail and other elements of the findings in our report here (**https://www.monash.edu/news/articles/study-shows-teachers-underappreciated,-overworked-in-classroom**).

Teachers' intentions to remain in the profession

Our survey paints a bleak picture of teachers' intentions to remain in the profession. When we asked how long they intended to remain, only 42 percent of teachers indicated that they had no intention of leaving. Many teachers (38 percent) indicated that they planned to leave after teaching for 1, 5, or 10 years. A further 18 percent of teachers stated that they would leave the profession if they could. Further, just over half of the teachers we surveyed (53 percent) said they would not recommend teaching as a career.

We asked those teachers who indicated that they planned to leave the profession to elaborate on their reasons for this decision. Their responses included:

- Excessive workload
- Increasing challenges and extended responsibilities of teaching
- Excessive hours worked
- Impact of teaching on health, wellbeing, family and relationships
- Lack of appreciation, recognition and respect for teachers
- Work conditions, including precarious and casualised employment

We have particular concerns about the impact of this on equity for students in schools deemed 'difficult to staff' (those schools in rural and remote locations, and schools that are particularly complex). Many of these schools are already understaffed and experience difficulty in recruiting and retaining teachers (**http://www.ruralteachers.com/wp-content/uploads/2011/03/placing-teachers.pdf**). Our research suggests that under current conditions, attraction and retention will remain a challenge, exacerbating educational inequity for these students.

The effects of teacher workload

Overwhelmingly, teachers described their current workloads as being unmanageable. Out of the 2,444 responses, 75 percent suggested that their workload was not manageable. Only 42 respondents (2 percent) strongly agreed that their workload was manageable. Participants described heavy workloads that had increased over time as a result of additional administrivia, data generation and reporting, planning and preparation, and the broad spectrum of responsibilities that schools hold in communities today (including pastoral care and supporting students and families dealing with challenging and complex circumstances). This reinforces findings from recent research with teachers from New South Wales that showed their work significantly conflicted with family responsibilities and achieving work-life balance (**https://www.nswtf.org.au/files/18438_uwis_digital.pdf**).

One participant in our study described the challenges involved as a result of rising administrivia:

> *The biggest challenge would be the amount of administrative tasks that we are required to do. This leaves minimal time for planning for face to face teaching sessions and student feedback. There is a major lack of time for teachers to complete their work to a good/high quality unless much of it is done outside of working hours.*

Another participant commented:

> *Although I am able to get through my current workload with my current non-contact time allocation, more work quality could be drastically increased with more planning and preparation time. As it currently stands, to be able to really excel at my job and for the students to get the absolute best outcomes, my work significantly increases to far beyond my paid hours. With increased non-contact time for teachers, I firmly believe that student outcomes would be greater.*

We found that the **extension** (into outside of traditional working hours) and **intensification** (pace and intensity) of teachers' work were significant issues frequently reported by respondents. Participants described working long hours that extended into their evenings and weekends, leaving little time for personal lives and other commitments. One participant described the extension of their work as follows:

> *I am currently finding a distinct lack of balance between my work and family life. I take work home to mark every day, I plan, prepare and organise each afternoon for the following day and am exhausted after each day falling into bed. I work hours every weekend and during the holidays. There's little switch off time.*

Participants also noted their concerns about the long-term effects of working at high intensity for long periods of time. The implications of these heavy workloads were a recurring theme in participants' comments about their own health and wellbeing and the wellbeing of their own families. One participant commented:

> *I love spending class time with my students, but teachers now have so many other tasks that the actual teaching does not feel like a significant part of my job anymore. Coupled with that expectations of teachers, poor understanding by the Australian public of what school teachers do and periods of extreme workload, I don't think school teaching is a career that's good for wellbeing.*

Heavy workloads hold significant implications for teacher stress, burnout, and subsequent attrition (**https://www.researchgate.net/publication/235266506_Predicting_teacher_retention_using_stress_and_support_variables**), with heavy workloads cited as a contributing factor (**https://ro.ecu.edu.au/cgi/viewcontent.cgi?article=1745&context=ajte**) in teachers' intentions to leave the profession. Australia's

teachers reportedly work longer hours than teachers in other OECD countries (**https://www.aeuvic.asn.au/australian-teachers-have-higher-workloads-fewer-resources-oecd-report**) and there are lessons to be learnt from countries with lower hours and higher levels of teacher wellbeing.

Teacher satisfaction with their work

What stood out as an unexpected finding - despite what we had already discovered about teachers' intentions to leave the profession, the levels of workload and burnout they were experiencing, and the increasing intensity and pace of the role - was that teachers are largely still satisfied with their work. Knowing that job satisfaction is closely associated with intentions to remain or leave the profession, we asked teachers how much they agreed with the statement *Overall, I am satisfied in my role as a teacher*. We found that most respondents were satisfied in their roles (56 percent agreed, and a further 10 percent strongly agreed). However, we were concerned to see that a third of teachers were unsatisfied in their work (30 percent disagreed, and 4 percent strongly disagreed).

We have some theories about why satisfaction in the role is still high, even when intent to leave the role is higher. We believe that when teachers are able to do the work they went into the role to do, teaching remains rewarding and aligns with their goals and motivations. The problem that we keep returning to when discussing these findings is that the pressures of the role, the complexity of the work, and the personal and physical impacts of teaching are outweighing that level of satisfaction for many teachers. Participants commented that they could not see themselves as physically being able to continue in the job at the current pace, and having to make difficult decisions between their work demands and their personal lives (including time for their children, partners, or families and friends).

We do believe that this finding of satisfaction suggests that if some of the pressures of the role and the challenges associated with teaching can be addressed, subsequent reduction in intentions to leave the profession would follow.

Public perceptions of teachers and teaching

Despite these findings from the teachers we surveyed, our public survey found that there are generally positive perceptions of teachers in the community. Our public survey respondents felt that teachers in Australia were moderately (63 percent) or well-respected (19 percent) and moderately (60 percent) or well-trusted (33 percent). Despite this, the majority of public respondents indicated that they would not recommend (30 percent), or were unsure (29

percent) about recommending, teaching as a career to a young person in their family. When asked to elaborate on why they would not encourage a young person in their lives to take up teaching as a career, the most commonly cited reasons were negative perceptions of teachers' wellbeing, workload, and remuneration. When we consider this finding alongside that from our teacher survey where just over half (53 percent) indicated that they would not recommend teaching as a career (39 percent disagreeing and 13 percent strongly disagreeing with the statement *I would recommend teaching as a career*) our concerns about attracting future teachers are heightened. As discussed above, this stands in contrast to teachers' responses about generally being satisfied with their jobs, and supports our concerns that teaching in its current form is not seen as a sustainable career by those in it. We have been working closely with governments and policymakers to share these findings and advocate for the profession. We have shared participants' voices and experiences with the media and through other public channels, and have been overwhelmed by the interest and response. We hope that the events that have unfolded over the last six months have also reminded the public what important and complex work teachers do.

The National Exceptional Teaching for Disadvantaged Schools Program

Dianne Toe and Lynette Longaretti

Introduction

Students in vulnerable communities deserve the best teachers. This view resonates with the findings of the Gonski review (2011) and with John Hattie's mantra that teachers make a difference (2003). Attracting the best new teacher graduates to work in disadvantaged or low SES schools as graduates has not been easy in the past (Lampert & Burnett, 2017). Although some outstanding new teachers might be enthusiastic for what they perceive to be the challenge of working in schools in more vulnerable communities, many would fear they were underprepared for this work. Moreover, these new graduates are frequently wooed or "cherry picked" by both private and more affluent government schools (Lampert & Burnett, 2017).

Jo Lampert and Bruce Burnett, both then teacher educators at the Queensland University of Technology (QUT) grappled with this very issue back in 2009 and cleverly devised the Exceptional Teachers for Disadvantaged School program. They identified the highest academic achievers when they were half way through their 4-year Bachelor of Education course and invited them to join the Exceptional Teachers for Disadvantaged Schools (ETDS) program. For the remainder of their degree, these preservice teachers not only completed their regular ITE course but came together in a Community of Practice model to explore

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issues related to poverty and disadvantage. They also completed all of their remaining school experience placements in low SES schools. The program defines low SES schools as those with an ICSEA of below 1000 (What does the ICSEA value mean?, 2014). At the completion of their ITE undergraduate course they were strongly supported to seek graduate positions in low SES schools in Queensland. The program achieved a very high employment rate with approximately 90 per cent of these high performing NETDS graduates gaining employment in low SES schools in Queensland.

In 2013, Lampert and Burnett worked closely with Social Ventures Australia and successfully secured funding from the Origin Foundation to expand the program to other social justice-oriented universities in Australia including University of New England, University of Newcastle, University of South Australia, Victoria University, Western Sydney University and Deakin University. The program was renamed as the National Exceptional Teaching for Disadvantaged Schools. Deakin University joined the National Exceptional Teaching for Disadvantaged School Program in 2014.

The NETDS program at Deakin University

The NETDS program commenced on the Geelong (Waurn Ponds) campus at Deakin University in 2015. Preservice teachers in the Bachelor of Education (Primary) Course are identified at the end of their second year of their four-year degree on the basis of their high overall marks and placement reports and invited to join the program. They complete the same degree as the rest of their cohort but they come together for two of their core units as a single seminar group. In these seminars, in addition to the required course work, topics related to working with vulnerable communities are unpacked and these preservice teachers are prepared for their placements in low SES schools. This program is based on a Community of Practice model; strong relationships between the NETDS participants and with the program coordinators are established and maintained during Year 3 and Year 4 of their undergraduate course. In addition to the seminar work and placements in low SES schools, the staff who coordinate the NETDS program visit each PST on placement and run a "Yack after Prac" following each of their placements. These reflection sessions are a cornerstone of the program, enabling the group to share their experiences on placements, swap anecdotes and learn strategies from their peers. The first two Geelong cohorts joined the teaching workforce in 2017 and 2018 with 80 per cent of the 40 graduates employed in low SES schools.

In 2017, we added an additional NETDS cohort to the Bachelor of Education (Primary) course on the Burwood Campus and in 2020 we have piloted a small cohort in our combined

degrees; the Bachelor of Science/Master of Teaching (Secondary) and the Bachelor of Arts/Master of Teaching (Secondary) courses. This small pilot cohort of 8 preservice teachers will graduate as secondary teachers at the end of 2020 (COVID19 permitting!). We hope they will be not only keen to seek positions in low SES secondary schools but also be highly sought after by these schools.

The NETDS program has been financially supported by the Department of Education and Training in Victoria since mid 2017, both at Deakin University and Victoria University. This partnership has made the program viable at a time when universities in other states in Australia have struggled to sustain their NETDS program. The partnership with the DET highlights our shared commitment to social justice and providing the highest quality teachers for the students who need them most.

The strengths of the Deakin NETDS program

Building a Community of Practice

The NETDS program uses a Community of Practice model (Lave & Wenger, 1991) to build strong bonds within the group of preservice teachers, as well as further developing preservice teachers' skills, knowledge base and reflective practice skills. This has been a key strength of the program. After each school placement, PSTs come together to reflect on their experiences, learning new ways of thinking about students and families. Graduates report that engagement in the NETDS program has significantly impacted on their teaching identity, shaping their practice and attitudes to students with challenging home lives. These comments from graduates capture their experience (pseudonyms have been used).

> *The NETDS program definitely helped me.... not just your own placements, but being able to come back and have those discussions with others and yourselves as well, really helped solidify your own understanding of what someone might be going through, or how to support a child that might be having some sort of issues, or just even how to support a class that's from a low SES background in general.* (Zac, Deakin NETDS Cohort 2)

> *You're not going through it on your own, that it's a shared experience, that others have ... they're having similar experiences. Perhaps sometimes if it's challenging, I think it's easier to deal with when you can experience it through a shared experience.* (Samantha, Deakin NETDS Cohort 1)

School placement experiences

While some of our NETDS preservice teachers are inspired to be part of the program because of their own experience of growing up in a vulnerable community, the vast majority have no experience of living and working with disadvantage. Our task is to challenge their preconceptions and to develop a strength-based approach to education calling on research from sources such as the Fair Go program in Western Sydney. This project identified having high expectations and prioritising relationship building as two essential qualities of effective teachers in disadvantaged schools (Munns, Sawyer & Cole, 2013). It is, however, the professional experience placements in low SES schools that truly transform these preservice teachers. Quality mentoring and supportive school leadership is a crucial component of their experience. Their teaching placements build their resilience. They develop an understanding of the needs of diverse learners and the way that our great schools provide a range of differentiated programs to support more vulnerable families. Ruth, from our third NETDS cohort, helps to tell this story.

> *I think the school I had placement in was the third most disadvantaged school, I think, in Victoria, and it was very tough and then finishing that placement I felt like I could almost go into just any classroom and just deal with the pressures and be resilient*

The success of the NETDS program relies on the support of local schools which are willing to accept these preservice teachers for their placements, mentor them and help them to develop the skills they need to work as graduates in low SES schools. This is not always an easy road. Although the group has been selected on their academic performance in their teaching degree, it is their placement experiences, their teaching practice, and the opportunities to reflect on their learning that can really grow them into exceptional graduates. Strong partnerships with local schools are critical. This work is further enhanced by the Deakin Alliance program that has been a fundamental element of ITE at Deakin University since 2015. The Alliance program builds strong partnerships between networks of schools and the School of Education at Deakin University. The alliance program employs supportive "boundary crossing" academic staff members known as Site Directors (Toe, Ure & Blake, 2020). Many of the Deakin Alliances include substantial numbers of low SES schools and site directors provide additional opportunities for preservice teacher support and reflection.

Challenges for the Deakin NETDS program

Graduate employment

The NETDS program was originally conceptualised in Queensland, a state with a much more centralised approach to the employment of graduate teachers. In Victoria, our self-managed state schools advertise each graduate position individually. This creates significant challenges for the NETDS program. It is not always easy to match up these high performing graduate teachers with the low SES schools they are keen to work in. These high performing young teachers are often the keenest of all to secure a job for their graduate year and the jobs they want may not be advertised when they are job hunting. As a consequence, they apply for a wide range of positions and are often snapped up by more middle-class schools. Getting this timing right is a challenge for everyone. We have more work to do in this space by building stronger relationships with our school partners. This program has often flown "under the radar" in the school and university communities where it has been operating and it deserves a much more prominent position. We think it can also play a role in matching great graduate teachers with rural schools. We plan to encourage more of our NETDS preservice teachers to consider rural and regional graduate roles and, as a consequence, we are further exploring ways of enhancing the program with some more rural placement opportunities.

A last word from our NETDS graduates

The research we have undertaken with our NETDS Preservice teachers and graduates suggest the program is having a significant impact. More that 80% describe themselves as effective graduate teachers who are both resilient and well prepared for working with vulnerable families. They can articulate the strong pedagogical skills they adopt to meet the needs of diverse learners. Not all of our NETDS graduates find or seek employment in those locations and we have more work to do in that space. Nevertheless, the learning they have done about the impact of poverty and trauma on young people and their understanding of the foundational nature of relationship building for quality educational outcomes makes them an excellent asset in any school. The impact of the program is best heard from the graduates themselves.

> *Just from the perspective of being a NETDS graduate, I think the amount of confidence it gives you as a teacher. It does give you the skills needed to go into any classroom. I feel like you are exposed just to a lot more experiences that you wouldn't normally and that prepare you for situations that you won't necessarily experience, you might not ever experience them in your teaching career.* (Peta, Deakin NETDs Cohort 2)

The NETDS program helped expose me to a range of behavioural issues, even parent conversations. … having that exposure to just sit and watch restorative chats with students with the teacher, as well as restorative chats with the parents. The program really helped me to see … the child as a whole and see the child as a part of their family within our community at school. (Amy, Deakin NETDS Cohort 4)

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Remote learning in pandemic times

Steven Kolber

In education, 'context is king' and every response to the issues teachers face in remote learning will be different depending on the circumstances of the school they work in and the students they teach. My aim in this article is to highlight the issues which have arisen from the mass use of remote learning as a response to the COVID-19 crisis. These issues will be drawn from a blend of experience and theory. The element of personal experience is of crucial importance during this time, where clear data and relevant research is difficult to come by.

Education has always struggled with genuine evaluation of programs and initiatives. The current use of the language and practices of business for this purpose has consistently failed to provide relevant information to the 'wicked problem' (Cranston, et al. 2016) of education. The higher education sector and its capacity for research has been undermined by the increasing privatisation of its institutions and the increasing casualisation of its workers. For these reasons, education cannot fully rely on localised, institutional research output, or locally produced data (Popham, 2001) both during and following this period. The priority now is to listen to the voices of students and teachers about the realities of teaching and learning in the present climate.

What groups benefit least from remote learning?

Experiencing the COVID-created move from face-to-face to remote learning raises the idea of a society where schooling is no longer compulsory and where students are free to choose between what school they attend and what classes they go to. This might seem fanciful and indeed is almost certainly a bad idea, yet this is the reality of what has occurred. Some students learnt how to be adept 'digital loafers', putting forth just enough effort to be marked as 'present' whilst practising presenteeism. Whilst some schools may be able to proudly

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proclaim increased attendance, almost certainly each teacher will be able to present an experience of silent or uninterested, disengaged classrooms or students.

Online learning is difficult to do well, and benefits students who are already privileged, those with the expected tools and the self-motivation and agency to engage fully. PISA 2018 (Schleicher, 2020; Thomson, et al., 2019) revealed that only 88 percent of Australian students have a quiet place to study and this fell to 76.6 percent for low SES students (Lamb et al., 2020). Note the use of the singular and consider just how many 'quiet places to study' may have been required during remote learning and working from home modes. In addition, internet penetration is similarly only at 87 percent in Australia. The lack of universal access and the difficulties implicit within many students' homes mean that any suggestions of a long-term transition to online learning would only further ingrain Australia's well-documented education inequities.

In 2019, Watterston and O'Connell used statistical modelling and estimates to infer that 50,000 young people of school-age do not attend or are not enrolled in any formal schooling Australia-wide. This number is likely to climb as some students, freed from the habitual nature, and societal expectations of attending school, simply will not return. Further, access to support and teaching aides has been more difficult to achieve for students with a disability and those who have low literacy levels or have English as an Additional Language. Other forms of challenge such as poverty, indigeneity, rurality, or living remotely, will pose manifold additional problems particularly for those students who have intersectional identities across these categories.

Remote learning has the tendency to perpetuate and amplify existing problems within 'traditional' schooling through access limitations to quality digital tools. In a 'normal' classroom, teacher interactions tend to cluster around certain students from privileged backgrounds. This occurs as much in an online classroom, as in a standard, face-to-face classroom. This is especially important because students who are most privileged are most likely to have functioning video and audio and are therefore significantly 'easier' to contact in a video conference.

In the online learning space, the tension between asynchronous and synchronous learning is paramount (Murphy, et al., 2011). Asynchronous learning can be accessed at any point and is therefore more easily accessible for students for whose homes are not the sanctuaries that schools are. Synchronous learning allows for greater engagement, connection and collaboration, so is often preferable, when leveraged to those purposes. At the school level, expecting students to keep the same hours and timetable as during 'normal school' makes

access for students more difficult. As with many things in life, the key is balance and flexibility, things often lacking within schools and systems where teachers' voices aren't dominant.

What are the key challenges of online learning?

While research studies indicate the positive potential of online learning there are three key challenges which need to be addressed:

- Engagement (with set work)
- Collaboration (with peers)
- Connection (with teachers and students)

The implications of these online delivery challenges need to be understood in terms of the ways in which they can be met in an online context and augmented or replaced by face-to-face teaching.

Singh and Qi (2012) provide these forms of student interaction:

- learner - teacher interaction (how learners engage with teachers)
- learner - learner interaction (how learners engage with each other)
- learner - content interaction (how learners engage with content)

These primary forms of interaction can be augmented by technology, both analogue and digital, by including the following elements:

- Offline activities (Work packets, textbooks, worksheets and so forth)
- A Learning Management System (LMS) where documents and instructions are shared
- Video production skills and tools to allow the production and consumption of Instructional Video
- A phone or videoconferencing tool to allow for live, face-to-face interactions

While these four elements are not requirements for teaching in this mode, they represent a wide range of possibilities provided by online learning. Overlooking any of the elements means students may experience a less rich teaching and learning environment. However, the learning progress of students is not dependent on every lesson being as 'whiz-bang' or 'innovative' as possible and for many students being able to learn in a secure and healthy environment is paramount.

Online production of resources involves a significant time commitment (Bennet & Lockyer, 2006; Kearsley, 2000; Schrum, 2000; Weller, 2002), with some contemporary voices in this space suggesting it takes twice as long as the development of traditional classroom

resources. For this reason, it is understandable why teachers might prefer live conferencing and posting to an LMS, because they have less impact on their existing workload.

The TPACK model (Schmidt, et al., 2009) pictured below suggests that modern teaching involves a combination of technological, pedagogical and content knowledge in equal proportions. This idea, however, does not fully hold in an online form of teaching and learning. It is more accurate to note that technological prowess can 'gate' the complexity and range of pedagogies available to teachers. In online teaching a technology-pedagogy nexus is emphasised and can pinch off some of the options for engagement, collaboration and connection. As the primary means of instruction is technological, students' options for lesson engagement are limited by the teacher's prowess with technology, and to a lesser extent, choices made by the school's administration.

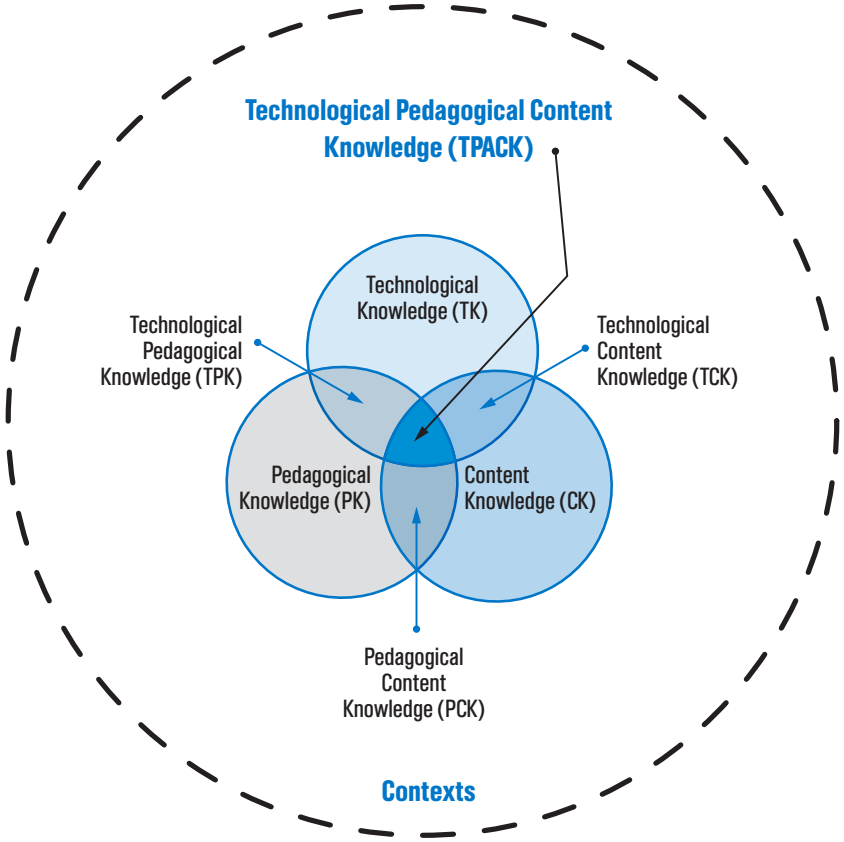

Figure 1: The TPACK model of teacher knowledge

Besides offline activities, the four practices outlined above require entrance into the realm of 'Big Ed Tech' as each of these practices involves selecting a 'platform' (Srnicek, 2017) and considerations about students and teacher data security and privacy. Platforms such as Microsoft's Office 365 and Google's 'G-suite for education' tie students into a 'walled garden' of online tools that allows for extensive data collection from both teachers and students (Bartlett, 2018; Srnicek, 2017). These platforms also open the levels of teachers' technological prowess, the 'T' in the TPACK model, to closer scrutiny. The familiarity of teachers with a selected platform will have concomitant effects on the types of engaging activities possible. Technology platform choice has an impact on the nature of teaching and learning and decisions to add tools or shift platforms during this period of remote learning may undermine student and teacher confidence.

The following table outlines the options available for remote teaching and learning and categorises what we know about their strengths and weaknesses.

Figure 2: Options for remote learning and effects on Engagement, Connection and Collaboration

	Engagement	Connection	Collaboration
Offline	Low	Low	Low
LMS	Low	Low	Low
Asynchronous Video	Medium	Medium	Low
Video Conferencing	Low	High	High

It is time now to 'build back better' (Winthrop, 2020), with online tools being a consideration for a newly shaped educational process. The above table shows that there are benefits to some means of delivery that have become common during online learning, with asynchronous video being the prime candidate for continued use, and video conferencing as a convenient alternative to be used in certain limited situations. However, we simply were not, and are not, fully able to transition to online learning due to the above limitations and because such a move would further disadvantage those students already significantly challenged by our existing system.

While we may need to lean into educational technology in the short term, what needs to be maintained is a 'human-centric agenda' (ILO, 2019) where teacher professionalism and

judgement are emphasised. Using educational technology more widely within our system offers greater flexibility, but comes with the warnings from the higher education sector, where flexibility has become code for the increasing casualisation and uberisation of educational delivery.

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Barbara Preston on public education, the digital divide and teacher professionalism

Interview by John Graham

JG *How did you first come to be employed as a researcher for the Victorian Secondary Teachers Association of Victoria (which later amalgamated with the Federated Teachers Union of Victoria and the Kindergarten Teachers Association of Victoria to form the AEU Vic branch) and what was it like working there?*

BP I was first employed by Victorian teacher unions late in 1979, when I was recruited as a campaign and research officer for the needs-based staffing campaign of the three unions: the VSTA, the Technical Teachers Association of Victoria (covering teachers in technical schools and TAFE) and the Victorian Teachers Union, (covering primary teachers). I was the first joint employee of the three unions and was a non-teacher among professional colleagues who all had been teachers in Victoria. I was based at the VSTA office and worked closely with a supportive, dynamic campaign team. I produced campaign material and research reports on staffing and attitudes to schooling during the six months of the project. I then worked for two years as research officer with the Australian Union of Students before joining the VSTA as Assistant Secretary, Research in 1982, returning to the same office and many of the same colleagues.

We worked differently in the 1980s, illustrated by the way the research officers in the three unions, located in different suburbs, worked together on research projects and submissions.

Barbara Preston is an independent researcher and consultant, working through her Canberra-based business, Barbara Preston Research. In the 1980s she worked as a research officer with the Australian Union of Students, the Victorian Secondary Teachers Association and the Australian Teachers Union (now the AEU). In 1991 she began independent research and policy analysis consultancy work. She was the inaugural executive officer of the Australian Council of Deans of Education and carried out influential research on teacher professionalism, teacher and nurse supply and demand, competency standards and regulation, and schools policy. She continues to work on education policy issues.

John Graham is editor of *Professional Voice* and works as a research officer at the Australian Education Union (Vic). He has been a secondary teacher, worked on national and state-based education programs and in the policy division of the Victorian Education Department. He has carried out research in a wide range of areas related to education and training. He has had particular responsibility for the many issues impacting on teachers and teaching as a profession, teacher education, curriculum change, and the politics, organisation and funding of public education.

We would prepare our separate, hand-written initial drafts, to be typed by our secretaries. We would then post our drafts to each other, following up with face-to-face meetings, which involved literally cutting and pasting to get a final combined draft to be then typed up. I still remember when the magic of fax arrived in 1986, and we could share our drafts almost instantaneously!

JG *What were the important education issues in Victoria that you worked on at that time?*

BP Public funding of private schools and the relationships between the sectors were major issues for the unions. I sought a way to better understand the impact of private school funding on public education and on the wider society. From the literature about social welfare I applied the concept of *residualisation* to public schooling in relationship with private schooling. Residualisation is a dynamic, vicious cycle: the more a service or sector becomes residual, the lower its status, apparent quality, influence, and attractiveness to those who can choose otherwise, to politicians who decide on funding, and the wider community. "Vertical fiscal imbalance" between the Commonwealth and the states is a crucial element in Australian schools funding, as the fiscally constrained states are responsible for public schools, while the fiscally free Commonwealth largely funds private schools. I developed the concept of residualisation in the context of an implicit Commonwealth Schools Commission view that stakeholders in public schooling were not entitled to be consulted on funding for private schools.

I also sought to interrogate the data underlying superficial views of the superiority of private schooling. This included the perennial matter of final year results, publicised in the media and purporting to reflect school quality. Once formal and informal selection and exclusion practices and the socioeconomic backgrounds of students are considered, the differences in school results are usually more than fully explained.

There were many other issues that were important to the VSTA that I worked on, including legal issues around federal industrial registration of unions; state and federal budgets; sexism as it affected teachers and students: senior secondary retention, and teacher education.

JG *After that you moved on to become a research officer at the Australian Teachers Union (the predecessor to the national AEU). What were the issues you spent most of your time researching there? To what extent do you think that progress has been made on resolving these issues since then?*

BP I continued the work on many of the issues I worked on at the VSTA, but often with a broader, national focus, as well as other issues, and I edited *The Australian Teacher* for a period. I will mention just two issues now.

Work on the relationships between public and private schooling was integrated with work on the public sector as a whole. Public sector union research officers were meeting to research and develop strategies around developments in the public sector: privatisation, corporatisation, contracting out and residualisation. We worked with academic and other experts on the role of the public sector, addressing common myths such as the public sector being "unproductive", and critiquing the politically influential "public choice theory" and the all-pervasive neo-liberal approach. The unions provided funding for the Public Sector Research Centre at UNSW, which collaboratively researched, published, and ran seminars and conferences. We undoubtably had some impact, but the underlying issues will never be fully resolved, and the work continues — by many organisations and individuals.

I also worked on explaining the role of education as social infrastructure, an investment and foundation for culture, society, and the economy. It is much more than the development of individual human capital; it plays a collective role—we are all affected by the quality, extent and nature of the education of others, and that effect is enduring, permeating society over the long term in a way that is more profound than the road or rail network. Public schooling strengthens social cohesion through the development of relationships and understandings among people from diverse backgrounds.

JG *After the ATU you eventually became an 'independent' researcher providing research services to various organisations. Why did you decide to work in this way? Do you believe you can provide a different perspective because you are not tied into an academic or corporate employer?*

BP I did not make a deliberate choice to become an independent researcher. Early in 1991 I took leave for three years from my ATU position to work in the secretariat of the National Project on the Quality of Teaching and Learning, a public service position in Canberra. However, the NPQTL position did not work out for me and I left at the end of the year, but could not then go back to the ATU. Before I left the NPQTL I was offered consultancy work researching teacher competencies and teacher supply and demand by the then president of the Australian Council of Deans of Education. I sometimes thought I would look for a "real job", but the consultancy work continued to be offered, especially by the ACDE, the deans of nursing and midwifery, and the unions and regulatory authorities of teachers and nurses and midwives.

The independent role was important, but I had to be aware of commissioning organisations' perspectives while maintaining research integrity, which has similarities with union research. Independence meant that I could research and write (unpaid) on many issues that I thought important. One example was the misleading conclusions drawn from the use of an area-based (rather than school-based) index of disadvantage to measure the socioeconomic level of schools for the purpose of comparing NAPLAN results in the early version of the My School website. The use of such an index inflated the apparent socioeconomic level of public schools (except selective schools) relative to private schools, and thus made public school results appear much lower than those of private schools with supposed similar socioeconomic levels.

Another area I worked on was teacher professionalism, including clarification of the differences between teachers' professional representative organisations (such as unions and other membership organisations) and professional regulatory bodies that perform functions such as registration. I was responding to the then influential view that teacher representation and regulation (registration), should be done by one body, and that body should *not* be a union.

JG *You have done a great deal of work on the social make-up of schools. What are the key variables in the social make-up of schools? To what extent do you think that its social make-up predicts the student outcomes of a school?*

BP My reports on the social make-up of schools, prepared for the AEU (federal) since 2003, are based on ABS Census data. Data items included type of school attended (primary or secondary; government Catholic or independent); family income; religion; languages spoken and English proficiency; housing tenure and sufficiency; Indigenous status; geographic mobility, and, in recent years, internet connection at home. Each of the variables can be important for particular policy purposes, and are associated with student outcomes in different ways. But the most important general indicator from the census associated with outcomes is family income, and the change over four decades reflects the residualisation of public schooling I referred to earlier. In 1976 the family incomes of public school students was much the same as that of Catholic and independent schools combined. This had changed by 2016, with students with low family incomes increasingly concentrated in public schools, and students with high family incomes increasingly concentrated in Catholic as well as independent schools.

There is no doubt that in Australia overall student outcomes have been influenced by factors such as family income, parental education and school remoteness. But this is not necessarily

so, as the experience in some other countries, as well as particular schools, communities and individuals in Australia attests. Ensuring that such factors do not lead to lower student outcomes requires substantially increased funding on a needs basis, as well as a responsive and inclusive curriculum and school culture and practices.

JG *What is your view about the current health of Australian public school systems?*

BP My view is mixed. There are no longer the virulent attacks on public schools and teachers that were so demoralising in the 1970s and 1980s. There is greater recognition and sharing of brilliant work occurring in many schools, and there has been strong public attestation to the quality of public schooling generally and at a local level. There has also been some recent slowing, even reversal, of the public sector's decline in enrolment share, and in the increasing concentration of disadvantaged students in public schools.

However, the situation is fragile. Many public schools serving the most disadvantaged communities are currently struggling with insufficient resources and support, and with very severe localised residualisation relative to private schools and some more advantaged public schools. In addition, Catholic and independent schools are now usually much better resourced than public schools, and the Commonwealth's schools funding arrangements for the coming decade locks in continuing and substantial real funding increases for private schools. In contrast, the future appears potentially catastrophic for public school systems as their major funders, the states, have fiscal constraints unknown to the Commonwealth and which are sure to be in a dismal state post-COVID-19. There is hard work ahead for public school supporters.

JG *You have recently published research about the gap in digital access experienced by many public school students from disadvantaged backgrounds. This became particularly important as schools turned from face-to-face to remote learning. What is the extent of that gap and what are its implications for student learning? What needs to be done to address it?*

BP The census data I analysed indicated that in 2016 around 5 per cent of public school students (more than 125,000 students) did not have internet access at home—not even via a smart phone, gaming console or smart TV. Of public school students with the lowest third of family incomes, 9 per cent did not have internet at home; of the more than 50,000 public school students living in remote or very remote areas, one in five did not have internet access at home; and more than one in five Aboriginal and Torres Strait public school students did not have internet at home.

Ensuring physical access to the internet is possible with the provision of appropriate devices and data at low or no cost. However, that is insufficient for successful remote learning, whether it is complete schooling or homework and independent study. What is needed is *digital inclusion*, and that includes *digital ability* as well as physical access. Digital ability includes enthusiasm, confidence and a sense of control when using the internet, as well as experience, skills, and knowledge in use of devices and the internet. The digital ability of parents and carers is especially important for younger students. Without digital ability, there cannot be successful remote learning relying on digital devices and communication.

Developing effective digital ability requires sustained, individualised support for students and their parents or carers. It also needs to take account of the other commitments of parents or carers, language spoken and English proficiency, and other circumstances, such as overcrowded or insecure housing, and household stress or conflict. It takes time and dedicated resources to ensure all students develop the digital ability necessary for full digital inclusion. In the meantime, those without should receive additional and alternative intensive, personalised support during and after periods of remote learning, which might include paper-based materials and work, direct telephone communication, and one-to-one tutoring.

JG *You have written about effective teaching being 'democratic and collaborative' and referred to the 'democratic professionalism' of teachers. Can you explain what you mean by this and why you think the profession of teaching should be 'democratic'?*

BP I worked on the concept of teacher professionalism while developing the 1991 ATU policy on teacher education. At the time there was scepticism about the application of 'professionalism' to teachers and their work, and it was important to make clear that teacher professionalism, as democratic professionalism, "does not seek to mystify professional work, nor to unreasonably restrict access to that work", but "facilitates the participation in decision-making by students, parents and others, and seeks to develop a broader understanding in the community of education and how it operates". This participation in decision-making and the treating of students and their communities with respect are integral to effective teaching practice. It is possible to have other models of teacher professionalism. However, effective teaching of all students (not just the "already taught" and "easily teachable") requires the respect and personal connection of a democratic approach.

National policy work on teacher professionalism and competency standards progressed in the early 1990s, and I was concerned with the individualistic conceptualisation of teacher professionalism associated with competencies, and with the internationally influential

view that unions were not proper professional representative organisations for teachers. I argued that the *collective* and *strategic* nature of teachers' professional practice needed to be recognised, developed and valued. Teachers' work is not primarily the aggregation of discrete, one-to-one relationships between professionals and clients; rather, students' education depends not only on good relationships with their immediate teachers, but also on the intentional inter-relations among many teachers and students over many years, occurring within and forming the institutions of schools and school systems. In addition, teachers' collective organisation through their unions (and other organisations) is a significant part of the professional practice of the profession as a whole. Democratic, collaborative, collective and strategic professionalism is integral to the effective practice of teaching in a way that does not occur in most other professions.

JG *There is a growing realisation about the value of good quality evidence in determining the important policy issues in education. Do you think that there are sufficient accessible sources of necessary data to provide that evidence? If not, what is missing or could be improved, and what needs to be done to remedy this situation?*

BP A major problem is failure to access or properly interpret and use the data that is available. That said, there have been initiatives to address deficiencies in data collection and availability under the auspices of AITSL, and academic researchers appear to be more connected with schools and systems than in the past. However, the collection and management of policy-useful data is likely to have limitations because of the autonomy of school systems and the self-sufficient complacency of parts of the private sector. In addition, without greater national support, effective university research will be limited even if recent practices are developed and enhanced. And now potentially serious problems loom: the recent government decisions on university funding and the likely post-COVID-19 situation of universities are likely to damage the nation's educational research capacity well into the future. Ensuring there is the best quality evidence for good policy will be a continuing struggle.

Much of the material referred to by Barbara in this interview is available at **http://www.barbaraprestonresearch.com.au/**

Learning in the shadow of the pandemic