

National conversations: listening to students' views of learning with technologies

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Abstract

The *Digital Education Revolution* is a key policy plank of the Rudd government. It is intended to develop students' capabilities to learn with technologies. Little Australian research though, has focused upon the views and expectations of students about their learning that includes technologies. This paper draws on the findings from the 2008 research project, *Listening to students and educators views of learning with technologies*. This Australian national research project, funded by the Department for Education, Employment and Workplace Relations (DEEWR) set out to listen to and analyse what Australian students in primary and secondary schools, in vocational education and training (VET) institutions, and pre-service and early career teachers, views and expectations are concerning learning with technologies. The research involved collecting data through online surveys and focus groups with each cohort of students. This paper presents some of findings from this research and raises some of issues and challenges facing Australian educators to prepare pre-service teachers to meaningfully include technologies into their future students' learning.

Introduction

Over the past two decades, the inclusion of technologies into school students' classroom practices has been proposed and supported in government and non-government policies and reports around the world (cf Abrioux & Ferreira 2009; Commonwealth Schools Commission 1985; Johnson, Levine, Smith & Smythe 2009; Organisation for Economic Cooperation and Development (OECD) 1998; Papadopoulos 1994; Standards Council for the Teaching Profession 1998; United Nations Information and Communication Technology (ICT) Taskforce 2003). In Australia, the inclusion of technologies into teaching and learning has been seen as a productivity measure and a way to modernize classroom practices. In November 2007, the Australian Labor Party (ALP) led by Kevin Rudd and Julia Gillard won the Australian Government Federal election. One of the policies the ALP took to the electorate at that time was the *Digital Education Revolution* (Rudd, Smith & Conroy 2007). As a result of the outcome of that election, overnight the *Digital Education Revolution* election promise became *Digital Education Revolution*, an Australian Government policy (Australian Government Department for Education, Employment and Workplace Relations (DEEWR) 2008).

The aim of the *Digital Education Revolution* is to
contribute sustainable and meaningful change to teaching and learning in Australian schools that will prepare students for further education, training, jobs of the future and to live and work in a digital world (Australian Government DEEWR 2008: 1).

In 2008, the Australian Government committed new funding of \$2.2 billion to 2012 to provide:

- new or upgraded information and communications technologies (ICT) for secondary students in Years 9 to 12, handled through the National Secondary School Computer Fund; and
- a contribution of \$100 million to support the development of fibre-to-the-premises (FTTP) broadband connections to Australian schools (Australian Government DEEWR 2008).

Other elements of the *Digital Education Revolution* include:

- the supply of online curriculum tools and resources to support the national curriculum for students and teachers across Australia;
- the supply of conferencing facilities for specialist subjects such as languages;
- access to training about the use of ICT, for new and continuing teachers that enables them to enrich their students' learning; and
- the development of and access to online learning sites which will enable parents to participate in their child's education (Australian Government DEEWR 2008).

Against this backdrop, the research project *Listening to students and educators views of learning with technologies* was undertaken. In this paper an overview of some of the views of Australian students about learning with technologies emerging from that research project, are outlined. The study was informed by a literature review (Moyle & Owen 2008) of blind peer-refereed publications since 2002 that reported research where data was collected directly from students about their views of learning with technologies. This literature review showed that many Australian young people have grown up knowing a life imbued with technologies such as automatic teller machines, computers, the Internet and mobile phones. The literature review also noted that at an international level data such as household access to computers and the population's access to telephones and the Internet are used as indicators of progress and of economic productivity by agencies such as the OECD (cf OECD 2007; 2006; 2005; 2003). Similarly in Australia, the Australian Bureau of Statistics (ABS) uses computer and Internet access by households and businesses as one of Australia's measures of progress (ABS 2004). The literature reviewed also showed that there is little recent Australian research about any cohort of students' views of learning with technologies.

Data collection

In 2008, data was collected from Australian students in primary and secondary schools, in vocational education and training (VET) institutions, and from pre-service and early career teachers, about their views and expectations of learning with technologies. Data was collected through online surveys and focus groups. Each cohort of students was asked questions about the same topics, although the specific language of the questions were adjusted according to the age of the students. In addition, the pre-service teacher education students and the early career teacher participants in this study were asked questions about their views and experiences of their preparations to become a teacher: one who can meaningfully include technologies into their teaching and learning. These participants discussed both their preparation in their university studies and in their practicum. Approval to collect data was provided by the University of Canberra, Committee for Ethics in Human Research. Access to individual institutions was approved by the authority governing that organisation.

Online surveys

Specifically designed online surveys addressing the same core topics were developed for each cohort of students. Additional questions about their practicum experiences were developed for the pre-service and early career teachers. Access to the online surveys was available throughout Australia for a three month period. A total of 1082 surveys were analysed, with survey numbers for the various cohorts indicated in Table 1.

Table 1: Participant numbers for online surveys

Participant cohort	Responses
Primary students	502
Secondary students	152
VET students	70
International students	23
Pre-service teacher education students	235
Early career teachers	100
Total number of responses	1082

Focus groups

Key issues emerging from the surveys were followed up in focus groups. The focus groups were conducted with each cohort group of students. Each focus group consisted of only one cohort of students at a time. That is, primary students participated in focus groups consisting only of primary students of the same age, and similarly with secondary students. Focus groups with VET students included participants from a range of different trade areas. Focus groups with the university students included both under-graduate and post-graduate students. The early career teachers' focus groups consisted of teachers in their first five years of teaching.

The focus groups were conducted to provide complementary data and to add richness to the data collected through the online surveys. Discussions in the focus groups enabled clarification of issues and allowed views to be both challenged as well as accepted. Technologies were integrated into the research method through the data collection for the focus groups, using the electronic *Zing* system.

Zing is an Australian tool that combines hardware with a software application to enable the connection of multiple keyboards to a single computer to create a shared working space. It allows individuals and groups to work together in the same space and time. *Zing* is used in face-to-face settings, with several cursors working on the same screen at once. Each cursor is allocated its own self-contained display space which presents as a common image to all participants.

The focus group participant numbers for each cohort of primary and secondary students, VET and tertiary international students studying education, pre-service teacher education students, and early career teachers, are shown in Table 2. Forty focus groups involving 299 participants were conducted.

Table 2: Participant numbers for focus groups

Participant cohort	Number of focus groups	Number of participants
Primary students	15	148
Secondary students	9	61
VET students	4	32
International students	2	6
Pre service teacher education students	5	25
Early career teachers	5	27
Total	40	299

Pre-service teacher education participants

The majority of the pre-service teachers who participated in this research were preparing to become either a primary or a secondary school teacher. Of the pre-service teachers who completed the online survey

- 74% indicated they were studying an under-graduate teacher education degree;
- 13% indicated they were studying a diploma of education; and
- 13% indicated they were studying a post-graduate education qualification.

Of the pre-service teachers' online survey responses, 86% indicated they were studying full-time and 14% indicated they were studying part-time; and 79% of the respondents indicated they were female, and 21% indicated they were male. The majority of the respondents had undertaken practicum in one (37%), two (21%) or three (23%) schools.

Some findings

Across all student cohorts, computers and the Internet were recognised as assisting with their studies. Over 70% of all cohort groups agreed the use of computers and the Internet assists them with their studies 'most' or 'all of the time'. Similarly all cohort groups indicated the computer and the Internet assist them with their studies at home, 'most' or 'all of the time', although primary and secondary students gave lower responses to this question than the other cohorts. The majority of all cohorts except the primary students, indicated that computers and the Internet help them to control their learning. Table 3 summarise these results.

Table 3: Percentage of respondents who indicated that 'most' or 'all of the time' computers and Internet assist their studies

% response Agree most or all of time	Computer+Internet help with studies	Computer+Internet help study at home	Computer+Internet help control learning
Primary	71	67	47
Secondary	87	73	54
VET	97	94	85
International	100	100	88
Pre service	94	92	80
Early career	90	90	77

Respondents to the surveys indicated they use the Internet for a variety of purposes including for:

- searching for information (range 91%-100%);
- finding locations (range 59%-94%);
- talking with friends using Instant Messaging (IM) (range 64%-94%);
- downloading music (range 42%-86%); and
- contributing to social networking sites (range 40%-69%).

Table 4 summarises these findings from the online survey results.

Table 4: Specific uses of the Internet across cohorts

% yes responses	Search for information	Play online games	Contribute to social Sites (eg MySpace Facebook	Talk friends with Instant Messaging	Communicate with family members	Download music	Download media	Find Locations (eg Google earth)
Primary	91	88	40	64	50	55	26	59
Secondary	95	70	66	80	44	86	56	62
VET	100	18	48	70	71	42	42	85
International	100	6	50	94	100	62	81	94
Pre service	100	36	69	72	86	70	61	77
Early career	100	48	66	69	90	74	72	93

Asked about their use of social networking sites such as MSN, MySpace and Facebook, it can be seen from Table 5 that these sites are of interest to all cohort groups for learning purposes. The specific use of Facebook for learning purposes was reported particularly by pre-service and early career teachers. In comparison, primary and secondary students reported using MSN to assist in their learning. Indeed, the majority of respondents in these two cohorts indicated they use MSN ‘sometimes’ or ‘most of the time’ to chat with others to assist in their studies.

Table 5: Extent of use of social networking sites for learning

% Most of time/ Sometimes	Use MSN		Use Myspace		Use Facebook		Use Windows Live	
	Most of time	Some times	Most of time	Some times	Most of time	Some times	Most of time	Some times
Primary	35	15	5	8	5	7	22	15
Total	50		13		12		37	
Secondary	49	22	31	14	15	13	24	19
Total	71		45		28		43	
VET	10	24	5	10	12	17	15	10
Total	34		15		29		25	
Pre-service	21	24	9	13	43	19	9	20
Total	45		22		62		29	
International	14	24	0	0	33	14	5	14
Total	38		0		47		19	
Early career	10	19	0	13	38	23	9	9
Total	29		13		61		18	

These findings were reiterated in the focus groups. In addition, both pre-service teacher education students and early career teachers indicated they had self-initiated Facebook sites to foster discussion about aspects of their respective teacher education studies. They indicated they had initiated these sites to support discussions about their learning, albeit they were beyond the formal requirements of their courses.

While the research was focused upon students' views of learning with technologies, all cohorts of participants also emphasised more general characteristics of their teachers or lecturers. Students in all cohorts indicated the importance to them that educators be able to:

- form constructive relationships with their students;
- give simple explanations;
- structure relevant learning experiences for the outcomes to be achieved;
- use learning styles appropriate to both the content and the learners;
- ensure different learning styles are met;
- support students to learn the answers for themselves; and
- encourage activities that include technologies both for learning and assessment.

Pre-service teacher education students

In addition to the data collected from all student cohorts, data was collected from the pre-service teacher education students about their experiences and the opportunities made available to them on their practica, to learn how to include technologies into their classroom activities. There was a high level of commonality expressed by these participants about the main hardware and software available to teachers and students in the schools in which they undertook their practica. The most common forms of technologies reported were interactive whiteboards, laptops, digital projectors, intranets, digital learning objects, and commercial software applications such as Powerpoint and Photoshop.

The degree to which these participants' responses indicated they were afforded opportunities to include technologies in their classroom activities while on practica, varied according to the schools and the teachers with whom they were placed. Participants in the focus groups talked about disjunctures between what was taught at university as 'good' teaching practices and those practices evident in the schools into which they were placed. The following quote from a pre-service teacher education student is indicative of the sentiments expressed in the focus groups.

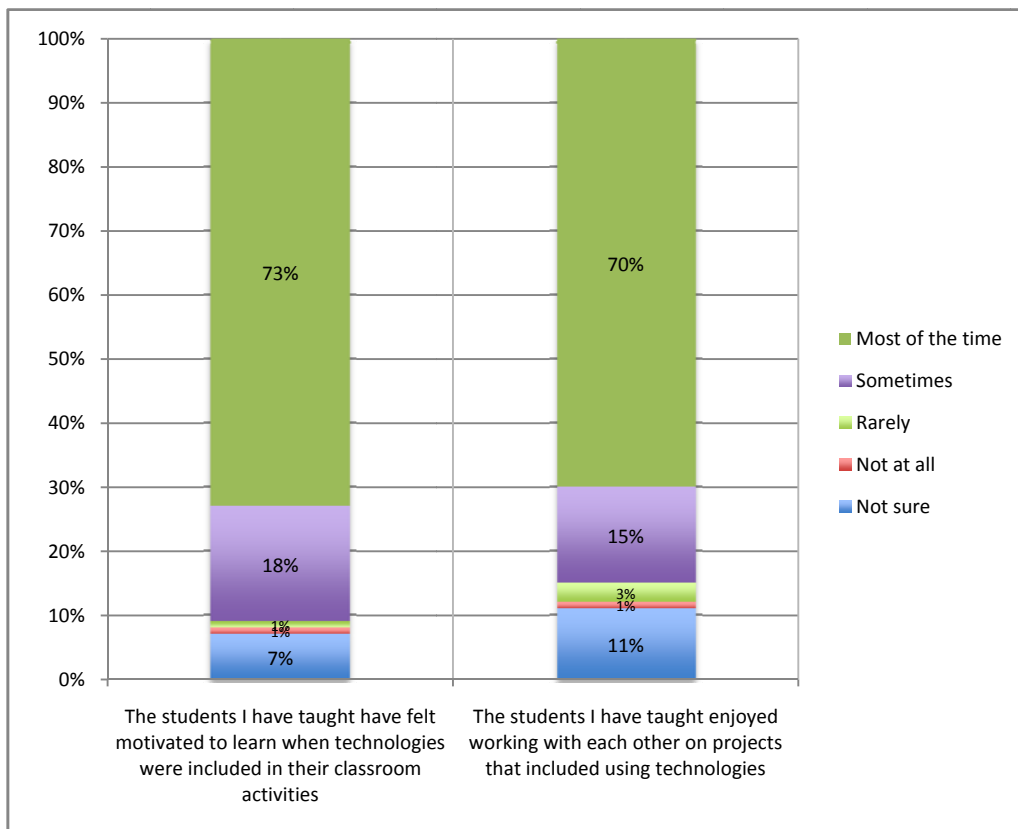
On a couple of occasions I borrowed a data projector from the library and I brought in my own laptop. I was told putting that much effort into a lesson is not worth it: stick to the whiteboard and textbook. I was told that the best strategy is to get kids to do rote learning by copying what is put on the overhead projector.

Participants also raised concerns about the lack of access to technologies in the classrooms in which they were doing their practica. But the barriers to including technologies into teaching and learning expressed in the focus groups by the pre-service teacher education students, also concerned their own skills and confidence with classroom and behaviour management strategies, as the following reflection from a pre-service teacher illustrates.

I am still learning behaviour management. I find computer lessons a bit difficult if students want to be loud, silly, need constant help and supervision. I also find time-wise it is more beneficial to get a heap of books out of the local library to use for class research rather than spend a heap of time looking up websites that are usually too difficult for year 4's to read.

These findings suggest that while the pre-service teacher education students were open to including technologies into their classroom activities while on practicum, they felt constrained in their ability to do so. Respondents to the online survey indicated though, that when they did include technologies into their classroom activities, they thought their students were motivated and enjoyed their learning. Figure 1 shows that the the majority of the pre-service teacher respondents believed the students they taught during their practica felt motivated and enjoyed working with each other on projects that included learning with technologies.

Figure 1: Extent of motivation and enjoyment by the students taught by pre-service teacher education students during their practica



There were concerns expressed by these participants however, about the ability of both their university lecturers and their supervising teachers to assist them to learn how to include technologies into their teaching and learning while on their respective practica placements. Only 26% of the pre-service teacher education students thought that ‘most of the time’ their supervising teachers’ skills with technologies were high enough to support them to include technologies into their classroom activities while on practicum. An additional 34% of respondents considered that either ‘not at all’ or ‘rarely’ were the skills of their supervising teachers high enough to support them to

include technologies into their teaching and learning activities while on practicum. Alongside of these findings, 74% of the pre-service teacher education students indicated to a 'medium' and 'high extent' that their lecturers' technical skills required improvement. Figures 2 and 3 illustrate these views of pre-service teachers, which are based upon their practicum experiences in one or more schools.

Figure 2: Pre-service teacher education students' views of their supervising teachers skills to support them to include technologies in their teaching and learning

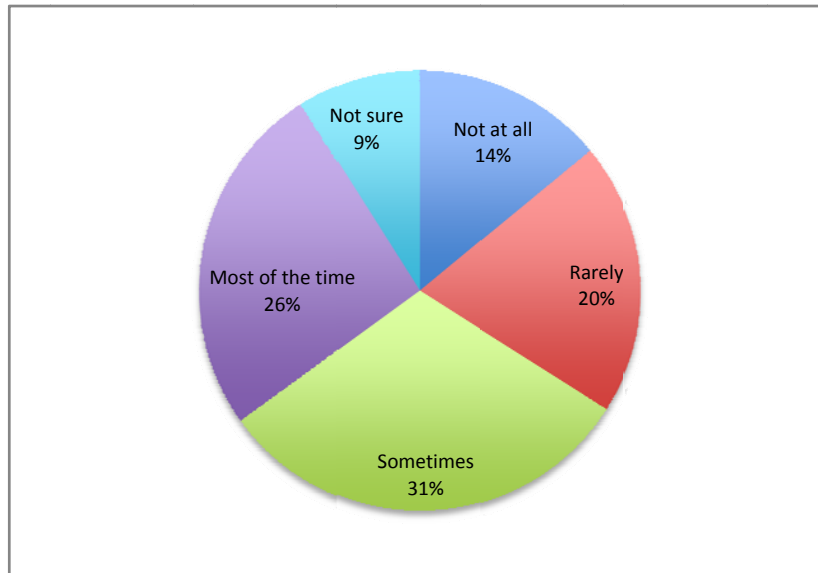
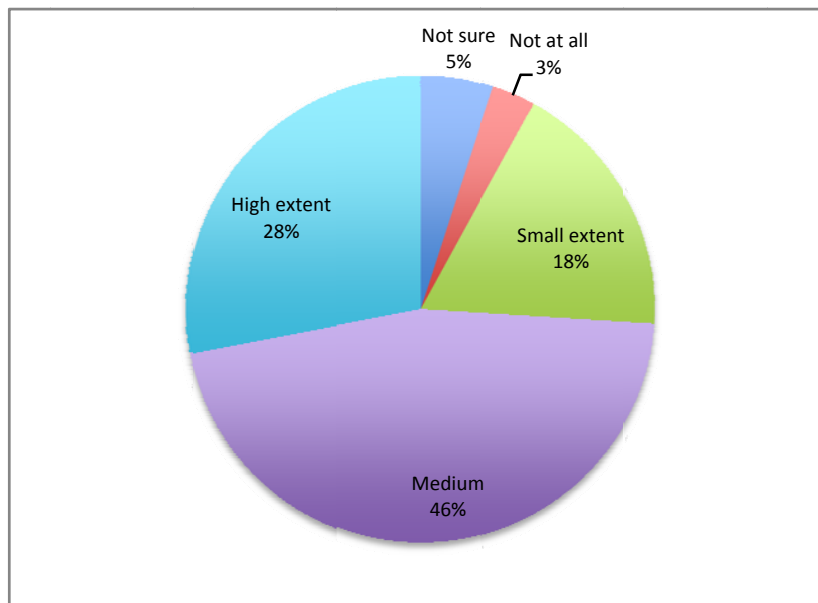


Figure 3: Pre-service teacher education students' views of the extent to which their university lecturers' skills require improvement



Similar findings emerged from the focus groups. The pre-service teacher education participants in the focus groups indicated that in their view, the skills of their supervising teachers varied in quality, with too many of their supervising teachers:

- having little knowledge about the pedagogical issues concerning the inclusion of technologies in teaching and learning;
- using little technology in their own teaching and learning; and
- having limited access to technologies in their schools and classrooms.

These participants also indicated they thought it was important for their practica, that they be placed into positive school cultures where there is a critical mass of skilled and enthusiastic teachers able to include technologies in their classroom activities, and able to be their role models. Unfortunately however, such sites for practica were not the common experience of the pre-service teachers in this study.

The pre-service teacher education students were also asked to respond to questions about what they expect of their lecturers' confidence and abilities with technologies. It can be seen in Table 6 they expect their lecturers to be confident in using technologies with their students and almost all respondents indicated they expect their lecturers to be able to use email to communicate with them. There was strong agreement expressed that pre-service teacher education courses should include units that specifically assist students to develop their skills about how to include technologies into their teaching and learning.

Table 6: Extent to which pre-service teachers agree about their lecturers' skills with technologies in their courses

To what extent to do you expect ...	% responses Agree most or all of time
Lecturer confidence in using technologies	91
Lecturers using email to communicate with students	99
Courses building student skills using technologies	88
Courses incorporating technologies in teaching and learning to build skills educators ability to include technologies in their own teaching and learning in the future	88

Furthermore, findings from the online surveys summarised in Table 7 below, show that pre-service teacher education students in this study suggested that teacher education courses would benefit from the inclusion of computers and the Internet in their lectures, and from the greater use of social networking sites. They also indicated that the knowledge of their lecturers about current directions in online games would improve pre-service teacher education studies. About half the pre-service teachers also indicated they had not received any guidance from their lecturers about how to stay safe on the Internet.

Table 7: Pre-service teacher education students' views of their teacher education courses

Extent of agreement to the following questions	Not at all	Small extent	Medium	High extent	Not sure
To what extent should pre-service teacher education classes include computers and the internet in lectures?	1%	10%	44%	44%	1%
To what extent could pre-service teacher education benefit as a result of greater use of social networking sites?	3%	17%	45%	31%	4%
To what extent do you believe lecturers' knowledge of current directions in online games would have improved your pre-service teacher education?	10%	27%	28%	23%	12%
Did your lecturers assist you with strategies for keeping safe on the internet?	52%	28%	11%	3%	6%

In summary then, some of the issues raised by the pre-service teacher participants in this study include the quality of the skills and capabilities of both their practicum supervising teachers and their university lecturers, in relation to supporting them to learn how to include technologies into their classroom practices. The majority of pre-service teacher education students in this study indicated they expect their lecturers to have confidence to include technologies in their own teaching and learning. The data also shows that a majority of respondents indicated either to a 'medium' or 'high' degree that their classes at university should include computers and the Internet, and that their studies would benefit from greater use of social networking sites. Just over half the participants also thought their lecturers' knowledge of online games would improve the quality of their pre-service teacher education.

Conclusions

This study shows that for all student cohorts involved in this study, that computers and the Internet form an integral part of the suite of resources that support their learning. Technologies are used for a range of purposes including for communication with other students and their teachers. Indeed all cohorts reported using social networking sites to assist in their learning, although the particular sites used varied with the age of the students.

This paper however, has also pointed to some of the issues and challenges facing Australian educators to prepare pre-service teachers to meaningfully include computers into their future students' learning. Data from the focus groups suggests that the pre-service teacher education students included technologies in their practicum activities in spite of the support they received from either their lecturers or in school supervising teachers, rather than because of it. The pre-service teacher education students in this study indicated that in their experience, there is often a lack of access to technologies in the classrooms in which they were doing their practica placements. These concerns about infrastructure and equipment should be dealt with over the next few years, with the roll-out of computers and associated infrastructure through the *Digital Education Revolution*. However, now that there is in place a national plan and funding to provide information technology (IT) equipment to schools, the complex challenges of upskilling current teachers, and developing the next generation of teachers comes into full focus. Concurrent strategies in the schools' and higher education sectors are required to support new and existing teachers to be able to thoughtfully include technologies into their classroom practices. To achieve such an outcome however, requires time for reflection about the curriculum and assessment processes of teacher education; and to reframe the nature and processes of practica placements.

The pre-service teacher education students in this study also indicated though, that they feel they have to build their student behaviour management strategies in order to confidentially include technologies in their teaching and learning activities. One way for pre-service teachers to gain confidence in their capabilities in classrooms is to have opportunities to practice different teaching and learning approaches within risk-free environments. Indeed, the importance of being located in schools where the culture supports and develops a critical mass of skilled and enthusiastic teachers was emphasised by many participants in this research.

Including technologies in teaching and learning requires educators to rethink how and what they do, and to include technologies as an integral part of the activities being undertaken. It requires change at the levels of pedagogy, curriculum, policy, infrastructure, organisation and governance: both at the local institution as well as at the system or sector levels. The concerns of the pre-service teacher education students in this study however, did not rest on how to make the IT work per se, but rather upon understanding how to include technologies in authentic, integrated and meaningful ways for their students, so that the technologies add value to their learning. Including technologies into classroom practices then, requires teachers and teacher educators to consider the intersections between teaching and learning with technologies, curriculum, assessment and reporting. Challenges for educational leaders rest in how to have strategic plans that lead to actions at local and systemic levels, that are sufficiently thorough that they address the challenges highlighted in this paper, in coordinated and wholistic ways.

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