

Digital educators teaching digital natives?

The challenges of developing digital capabilities in a Higher Education context

A Report on the Educator Survey Results from the project: Digital work practices: where are the jobs, what are they, and how prepared are graduates?

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ACKNOWLEDGEMENTS

This report presents the results from a survey of educators undertaken as part of the project: *Digital work practices: where are the jobs, what are they, and how prepared are graduates?* The project team would like to thank the Educators who completed the survey referred to in this report.



This is an Australian Technology Network of Universities (ATN) Excellence in Learning and Teaching funded project for scholarship, research and innovation. The [Australian Technology Network of Universities](#) is a collaborative partnership between five Australian universities which is committed to forging partnerships with industry and government to deliver practical results through real world research. The five universities are: RMIT University, Queensland University of Technology (QUT), University of Technology Sydney (UTS), University of South Australia and Curtin University.






The QUT Team's participation in this project was supported by the [Work Industry Futures Research Group](#), QUT Business School. The Work Industry Futures Research Group is a group of multidisciplinary researchers seeking to address complex problems in organisational settings in order to advance social justice goals. The group has expertise around three research themes which emphasise current trends and future developments in Australian and global environmental, economic and human challenges. These themes are *sustainable governance*, *employability and education*, and *just work*.

ABOUT THE PROJECT

Digital work practices: where are the jobs, what are they, and how prepared are graduates? is an Australian Technology Network of Universities (ATN) Excellence in Learning and Teaching funded project for scholarship, research and innovation. It was led by RMIT University, with Queensland University of Technology and the University of Technology Sydney.

This multi-university, cross-disciplinary project focuses on preparing graduates for digital work and considers how to embed the development of digital capabilities into university curriculum. The project team were drawn from the academic disciplines of Creative Arts, Communications, Business and Management, Engineering, and Education, and have research interests in employability, pedagogy, interdisciplinary practice and the future of work.

		
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The aim of the project was to create a learning model that supports the teaching of digital capabilities in Creative Arts, Communications, Business & Management, and Engineering, with future application to other disciplines. The intention was to meet new industry needs while positioning graduates for emerging digital work opportunities in the globalised world of work.

Stakeholders from both industry and the tertiary education sector were consulted in various ways. This report focuses solely on the findings of the data obtained through an online survey of Educators from across the ATN universities. The survey was available for completion during September and October 2017. Educators were asked to reflect on the digital capabilities they believe industry requires of graduates and how their University develops those capabilities.

SURVEY RESPONDENT DEMOGRAPHICS

	Frequency	%
University		
RMIT University	38	41.76
QUT	30	32.97
University of Technology Sydney	18	19.78
University of South Australia	4	4.40
Curtin University	0	0
Other	1	1.10
Employment Status		
Full-time	68	75.56
Part-time	3	3.33
Contract	7	7.78
Casual / Sessional Academic	12	13.33
Current Role		
Professor / Associate Professor	22	24.44
Senior Lecturer / Lecturer / Associate Lecturer	49	54.44
Casual / Sessional Academic	10	11.11
Professional Staff	2	2.22
Other	7	7.78
Discipline		
Business / Management	19	21.35
Creative Arts / Industries	34	38.20
Media / Communications	22	24.72
Science / Engineering	6	6.74
Education & Humanities	8	8.98
Higher Education Teaching Experience		
Less than 1 year	2	2.25
1 to 5 years	15	16.85
5 to 10 years	24	26.97
10 to 20 years	34	38.20
20 years or more	14	15.73
Industry Work Experience		
No related industry experience	13	14.44
Currently working in industry	14	15.56
Has worked in industry-related role in past 5 years	25	27.78
Worked in industry-related role over 5 years ago	38	42.22
Age		
Under 25 years	1	1.14
25-34 years	6	6.82
35-44 years	23	26.14
45-54 years	38	43.18
55 years or over	20	22.73
Gender		
Male	48	53.33
Female	37	41.11
Other	0	0.00
Prefer not to say	5	5.56

RESULTS AND DISCUSSION

The importance of developing digital capabilities

All respondents said that it was important that graduates develop digital capabilities during their university studies. The majority (78%) of educators stated that it was essential for graduates to develop digital capabilities during their studies, and particularly so for graduates in Creative Industries and Media/Communications

Figure 1: How important do you believe it is for graduates of your discipline to develop digital capabilities during their university studies? (N=65)

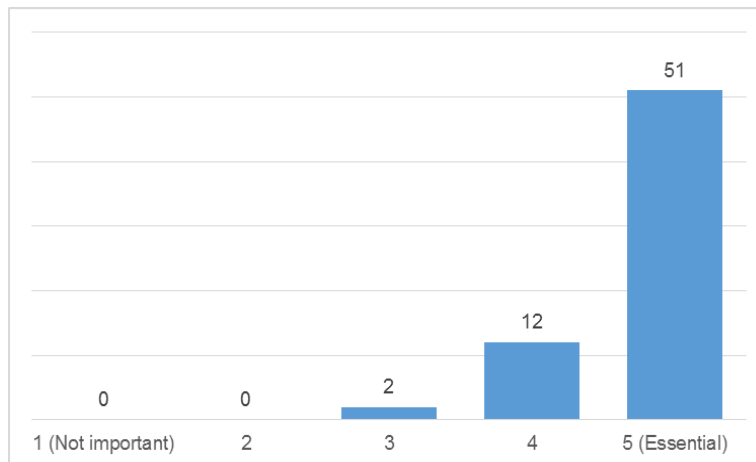
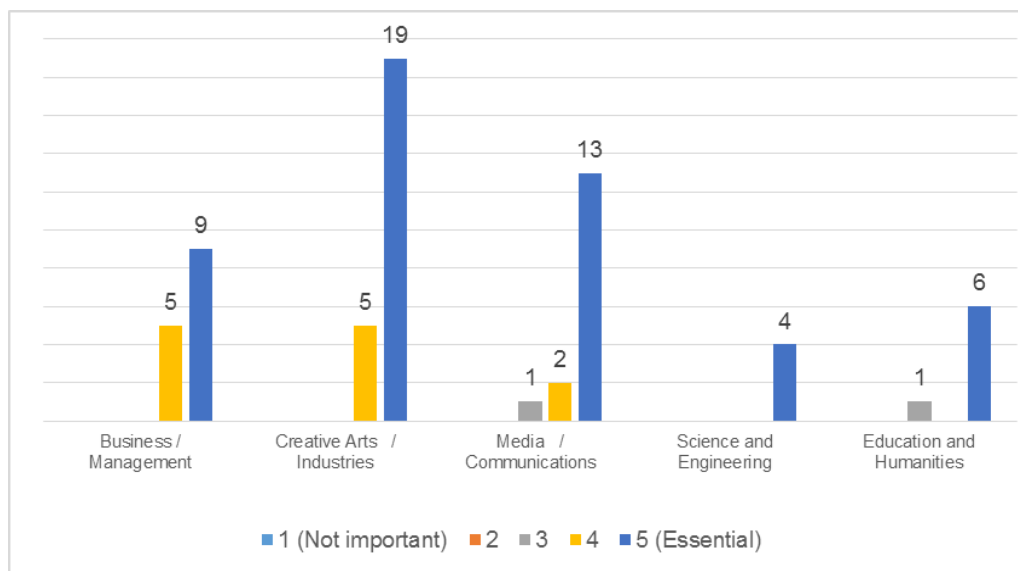


Figure 2: By discipline - How important do you believe it is for graduates of your discipline to develop digital capabilities during their university studies? (N=65)



When asked to comment on why they provided their rating, educators' open-text responses reflected their perception that digital capabilities were essential because:

- Digital capabilities are core components of contemporary jobs and work.
- Digital capabilities are demanded by industry.
- Digital capabilities are necessary to keep up with the pace of technological change.

What are the Digital Capabilities that Graduates need?

Digital capabilities include the knowledge, skills and attributes required for a user to interact productively with technology. Digital capabilities can also be specialised to a particular profession or general, applying across professions or industries (Beetham 2015).

Affordance theory defines a technology in terms of the uses, interactions and possibilities that the technology affords to its users. Affordances can be categorized according to their potential for achieving outcomes as functional, perceptual and contextual (Best 2009; Evans et al. 2017). A key strategy in the project was to reflect on affordances of digital technology and to identify whether industry needs and graduate capabilities aligned with this model. The focus was on examining three forms of digital affordance:

Functional affordances relate to the operation of technology; this includes naming, knowing and operating the features of a technology/technologies to perform tasks.

Perceptual affordances relate to interpretation and being discerning about technology tools and practices for their suitability and in-context operation for outcomes in known contexts.

Adaptive affordances relate to imagining, adapting and extending technology use in previously unexplored and emerging contexts for innovative outcomes; this requires functional knowledge/skills and perceptual experience.

Survey respondents were asked to list the digital capabilities that they believe employers in their discipline (or related industries) are seeking in university graduates.

Specialised Digital Capabilities

Just over half of the respondents (N=65) indicated that employers in their discipline required graduates to have specialised digital capabilities. Specialised digital capabilities are those capabilities that are situated within a particular profession and not easily transferrable (Beetham, 2015).

The specialised capabilities identified by educators (via open text responses) in each discipline are summarised in Table 2, on the following page. Although most of these relate to a range of functional affordances based on the knowledge and operation of digital technologies there are a small number that align with perceptual affordances. For example, reference to analysis and strategy is more about the perceptual affordance rather than the functional use of technology itself.

Generalised Digital Capabilities

Educators also believed that employers expected a set of general digital capabilities in all graduates. Generalised digital capabilities encompass familiarity and ease with a range of digital technologies and are transferable between professions and contexts; for example collaborating with others online (Beetham 2015).

Generalised digital capabilities identified from the open-text responses included communication and/or collaboration, social media/bloggging, word processing/office suite, analytical and statistical packages, basic web development, basic image creation (still image, video), ability to use communication and project management tools (email, google, cloud application) and adaptability to different software and programs. These are summarized in Table 3, provided in the following pages.

As with the specialised digital capabilities above, here the focus was also on functional digital affordances with an emphasis on the technical ability to use digital tools. However a small number of examples aligned with perceptual affordances emphasizing interpretation, context and the judicious application of tools.

Table 2: Summary of required specialised digital capabilities (by discipline)

Discipline	Specialised digital capabilities required by employers
Science/Engineering (N=4/6)	<p>Programming. Coding. Ability to use a range of relevant software and programs (for data visualization, data analysis, project management). Ability to use and work across different computer operating systems.</p>
Media/Communications (N=14/22)	<p>General digital literacy. Social media management and/or strategy. Audio recording and editing. Data visualization. Adobe Suite – Photoshop, InDesign etc. Digital file management / storage / archiving. Digital photography. Video recording and editing. Design skills and understanding. Understanding of mobile and web platforms. Digital communication tactics and tools. Search Engine Optimisation. Writing for online (posts, blogs, web content) Fact checking and verification. 3D animation and effects skills. Word processing.</p>
Creative Arts / Industries (N=23/34)	<p>Sound and/ or Video editing. Photo editing and manipulation. Social media analytics. Adobe suite – Photoshop, InDesign, Illustrator Computer-assisted Design (CAD). 3D printing and laser cutting. Word processing. Virtual and augmented reality. Open to embracing new software and digital platforms. Digital literacy. Comfortable with digital terminology.</p>
Business / Management (N=9/19)	<p>Software for project management. Data collection and analysis. Excel. Accounting software. Word processing. Adobe Suite. Client management systems. Bit data.</p>
Education & Humanities (N=6/8)	<p>Digital education support tools – Moodle, TurnItIn Word processing. Data management. Social media. Digital technologies – iPads etc</p>

Table 3: Summary of the required generalised digital capabilities (by discipline)

Discipline	Generalised digital capabilities required by employers
Science/Engineering (N=4/6)	<p>Word processing. Presentation skills. Collaboration tools. Bibliographic management tools. Electronic communication skills. Adobe suite. Internet search skills.</p>
Media/Communications (N=15/22)	<p>Computer skills. Social media skills. Adaptive to different technologies. Data analytics. Social media analytics. Project management tools. Online writing. Coding. Knowledge of digital media platforms. Ability to work in different operating systems (windows and mac)</p>
Creative Arts / Industries (N=20/34)	<p>Digital communication skills (e.g. email) Internet search skills. Social media skills. Word processing / Microsoft suite. Coding. Website building. Digital collaboration tools. Digital organisation tools. General digital competence. Computer-assisted design.</p>
Business / Management (N=11/19)	<p>Web design. Statistical packages. Adaptability with and willingness to learn new digital programs. Social media. Digital collaboration tools. Understanding of e-commerce. Word processing.</p>
Education & Humanities (N=7/8)	<p>Digital communication. Word processing. Being comfortable with digital technologies. Digital literacy. General computer literacy. Digital management tools.</p>

A Focus on Function

A comparison of the two tables makes it clear that capabilities identified as specialised within one discipline, were considered by other disciplines to be generalised capabilities. For example, coding was identified as specialised capability in Science and Engineering but considered a generalised capability in Media/Communications. This may reflect the depth of coding skill or knowledge required in each discipline – that is Media/Communications may require a basic general knowledge, but Science/Engineering may require a particular type of deep skill/knowledge beyond that required in other disciplines – or it may reflect the frequency and extent to which that capability is applied within the discipline.

All disciplines noted the importance (as either generalised or specialised) of capability in word processing, and social media, web design and other content creation tools (Adobe suite, photoshop, video). Online collaborative tools also featured in all disciplines. The consistency with which these capabilities were identified highlights the various modes of digital communication that now exist, and the need for graduates to be able to communicate and collaborate in a digital context.

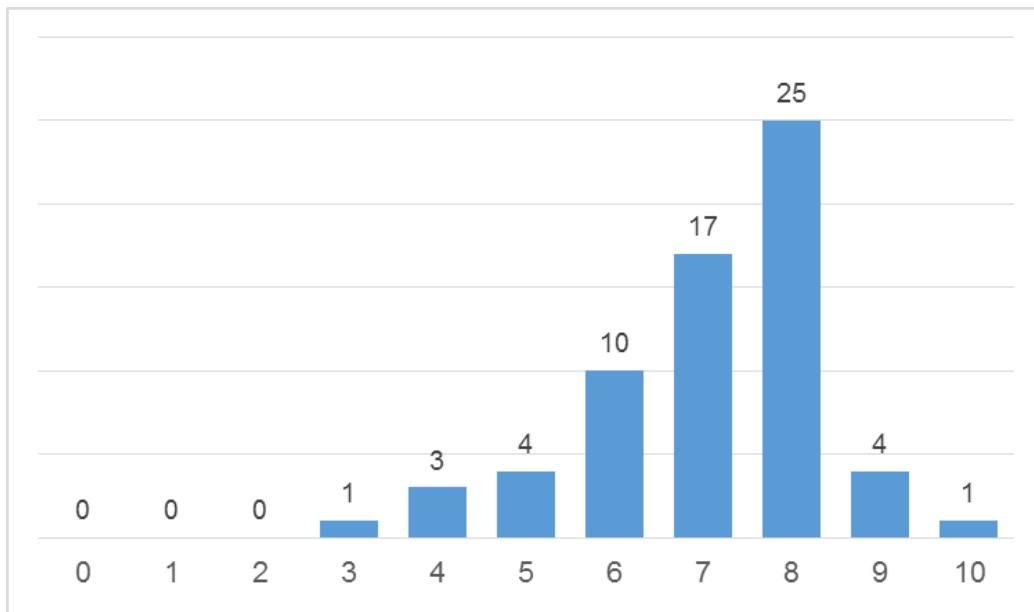
The capabilities identified by educators largely reflect technologies (or software) that educators believe students need to be able to use. The identified capabilities suggest the emphasis in higher education is currently on functional affordances with a focus on “the what and how-to” of technology. Perceptual (discerning when and why to use technology, in known contexts) and adaptive affordances (extending the use of technology in new and emerging contexts), did not feature strongly in the capabilities identified by educators.

Do Educators have Digital Capabilities?

Educators’ subjective rating of their own digital capabilities

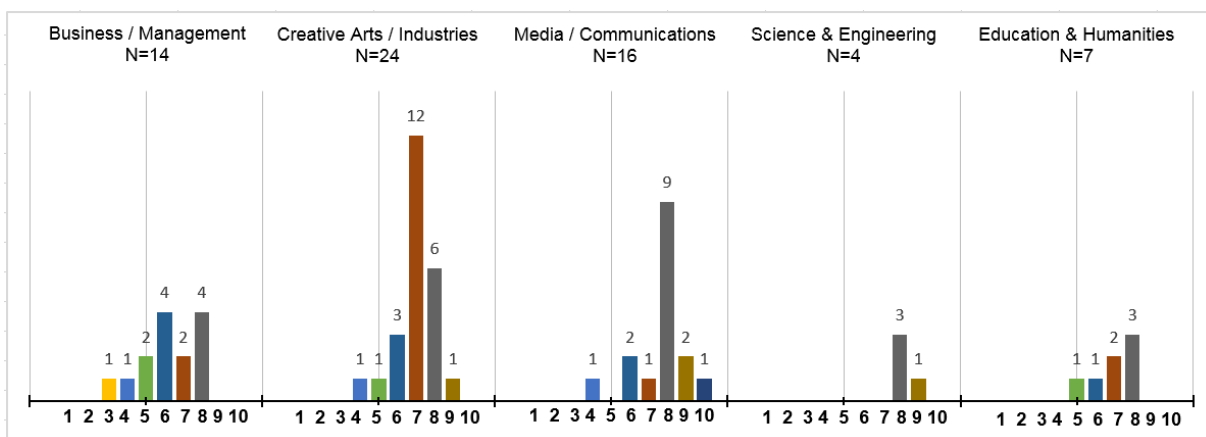
Educators were asked to rate their own digital capability on a scale from poor (1) to exceptional (10). The mean score for the respondents’ rating of their own digital capabilities was above average - 7 out of 10. Almost all of the Educators (97%) rated their own digital capabilities at 6/10 or higher (figure 3).

Figure 3: Overall, how do you rate your own personal digital capabilities? (N=65)



Educators in Creative Industries, Media and Science/Engineering were most confident of their digital capabilities. Educators in Business, were the least confident of their digital capabilities – more than half of respondents in Business rated themselves 6 or below (Figure 4).

Figure 4: By discipline - Overall, how do you rate your own personal digital capabilities? (N=65)



Teaching Digital Capabilities - Supported or Constrained?

Factors contributing to educators' capacity to develop digital capabilities in students

Based on responses to the open-text question, "What contributes to your capacity to support students in developing digital capabilities?", the factors identified included:



Many educators noted that access to expert knowledge or technology, (including collaborative tools), that improved their ability to support the development of digital capabilities in students was not provided by the university and was something they sourced themselves. They also noted that training in these technologies was often undertaken in their own time.

Factors which constrain educators' capacity to develop digital capabilities in students

Based on responses to a similar open-text question, factors which constrain educators' capacity to support students to develop digital capabilities included:

Developing Digital Capability Constraining Factors

- Insufficient technology/resources
 - Not enough equipment or the limited availability of university equipment for students & teaching staff
 - Slow internet access
 - Limited access to teaching staff/experts in the technology for support
 - Inadequate technology in classrooms – poor facilities/technology interfaces
- Lack of organizational support as in:
 - Insufficient financial commitment/funding
 - Managerial support for improving teaching
 - Multiple blocks/hurdles that prevent the implementation of new technology
 - Existing support/training is not easy to access
- Structural constraints such as:
 - Lack of time to teach skills in a full curriculum
 - A reduction in contact hours
 - Large class sizes
 - Structure of the degree (no room to add more/change), not 'core'
 - University assumption that students already know how to use technology, social media and other platforms.
 - Lack of time or capacity to develop skills/learn new technology
- Personal knowledge/skill base
- Job insecurity

Viewed together, the survey responses to these two questions suggest that providing academics with access to the appropriate technology and time to master the technology, as well as time to appropriately integrate digital capabilities into classroom activities would support the development of digital capabilities in students.

The role of universities in developing the digital capabilities of students

Survey respondents were asked to provide comment on the role of universities in developing digital capabilities in students. Based on responses to that open-text question, educators commented that universities should *“play a leading/integral role”*, similar to the role they play *“in developing other employability skills”*. Educators also noted that universities should teach the fundamentals of digital technology;

“teach basic concepts for good digital decision making”,

“teach and assess students in digital capabilities such as use of hardware & software, coding, data analysis digital interactions, and these need to be embedded in curriculum”

“help contextualise digital knowledge of students and teach students how to engage professionally with digital technology or how to use technology for generic problem solving and work practices.”

To do this, educators commented that universities also need to *“provide good infrastructure with easy access for all students to learn basic capabilities regardless of prior knowledge/background/access”*. This may mean the need to *“employ and train more full time staff to teach and recognise workload implications”*.

One respondent also noted that in developing the digital capabilities of students, a key role for universities is to *“inspire self-learning”* – a point that is highly relevant given the pace of change in relation to digital work practices.

Current Teaching Practice – Are Digital Capabilities Already Being Developed?

The JISC Digital Capability Framework

JISC is the UK's expert body for digital technology and digital resources and undertakes research and development to support digitally-advanced higher education¹. The JISC Digital Capability Framework²³ identifies a range of skills and capabilities required to thrive in today's digital environment. It has been adopted by a wide range of institutions in the UK and used to provide guidance for educators and strategic direction for institutional leaders. The Framework outlines six elements of digital capability, which are further broken down into 15 individual digital capabilities (see Appendix 1). Figure 5 summarises the six elements.

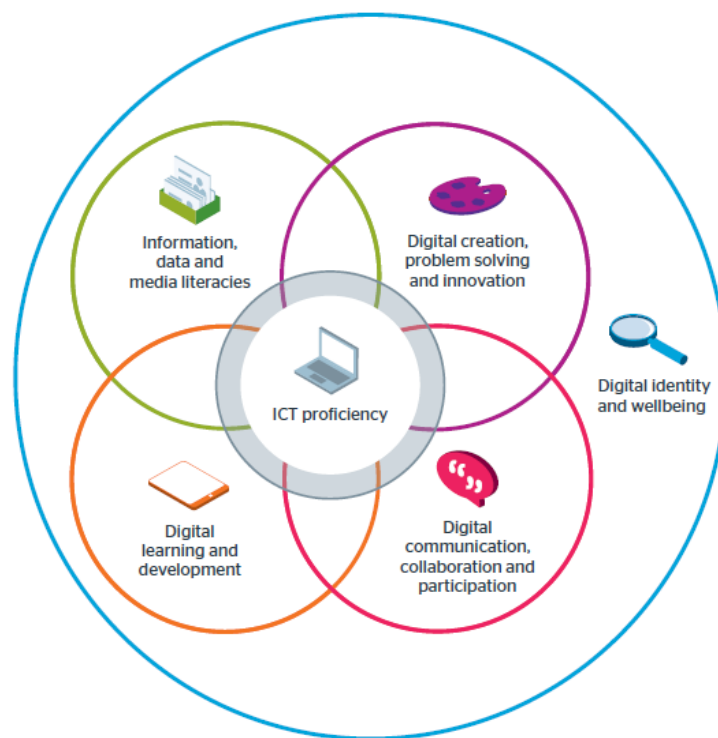


Figure 5: JISC Digital Capability Framework

Educator survey respondents were asked to indicate whether each of the 15 individual digital capabilities were **Taught** to students; if students had the opportunity to **Practice** the capability; and if students were **Assessed** on the capability.

¹ <https://www.jisc.ac.uk/>

² Beetham, H (2017) *Digital Capabilities Framework: An Update* retrieved from <https://digitalcapability.jiscinvolve.org/wp/2017/03/09/digital-capabilities-framework-an-update/>

³ JISC: *Building digital capabilities: The six elements defined.*
http://repository.jisc.ac.uk/6611/1/JFL0066F_DIGIGAP_MOD_IND_FRAME.PDF

Taught But Not Assessed

Educators indicated that all of the digital capabilities encompassed in the JISC Digital Capability Framework were, to varying degrees, being taught, practiced and assessed in their individual units/subjects. Overall, survey responses indicate that educators believe that digital capabilities are being taught more than they are being assessed. Figure 6, shows that in all but three of the JISC digital capabilities, more than half of the respondents believed the capability was being taught, but the percentage of respondents that assessed the capability was significantly lower. ICT Proficiency and Digital Creation were the only two capabilities where educators believed they were being assessed more than they were being taught. This perhaps reflects that each of these capabilities (proficiency in a technology and creation of digital content) can be more easily observed or demonstrated, and therefore more readily assessed. Given the widespread acceptance that assessment drives learning (see for example Boud 1995; Race 2010), the lack of assessment as compared to the teaching of digital capabilities, is potentially problematic.

Always Practiced

Interestingly, all digital capabilities (except Digital Identity Management) were being practiced, more than they were being taught or assessed. This is a finding that requires more investigation because it suggests that even when we are not teaching or assessing digital capabilities, students are practicing the capability. This may suggest that educators use technology as a tool that supports teaching other skills, knowledge or capabilities, rather than to develop digital capabilities, or it may simply reflect an assumption that students are “digital natives” who can naturally use technology and apply appropriate digital capabilities and do so to undertake their study. This result warrants further investigation in light of research that refutes the presumption of students as digital natives (Kirschner and De Bruyckere, 2017).

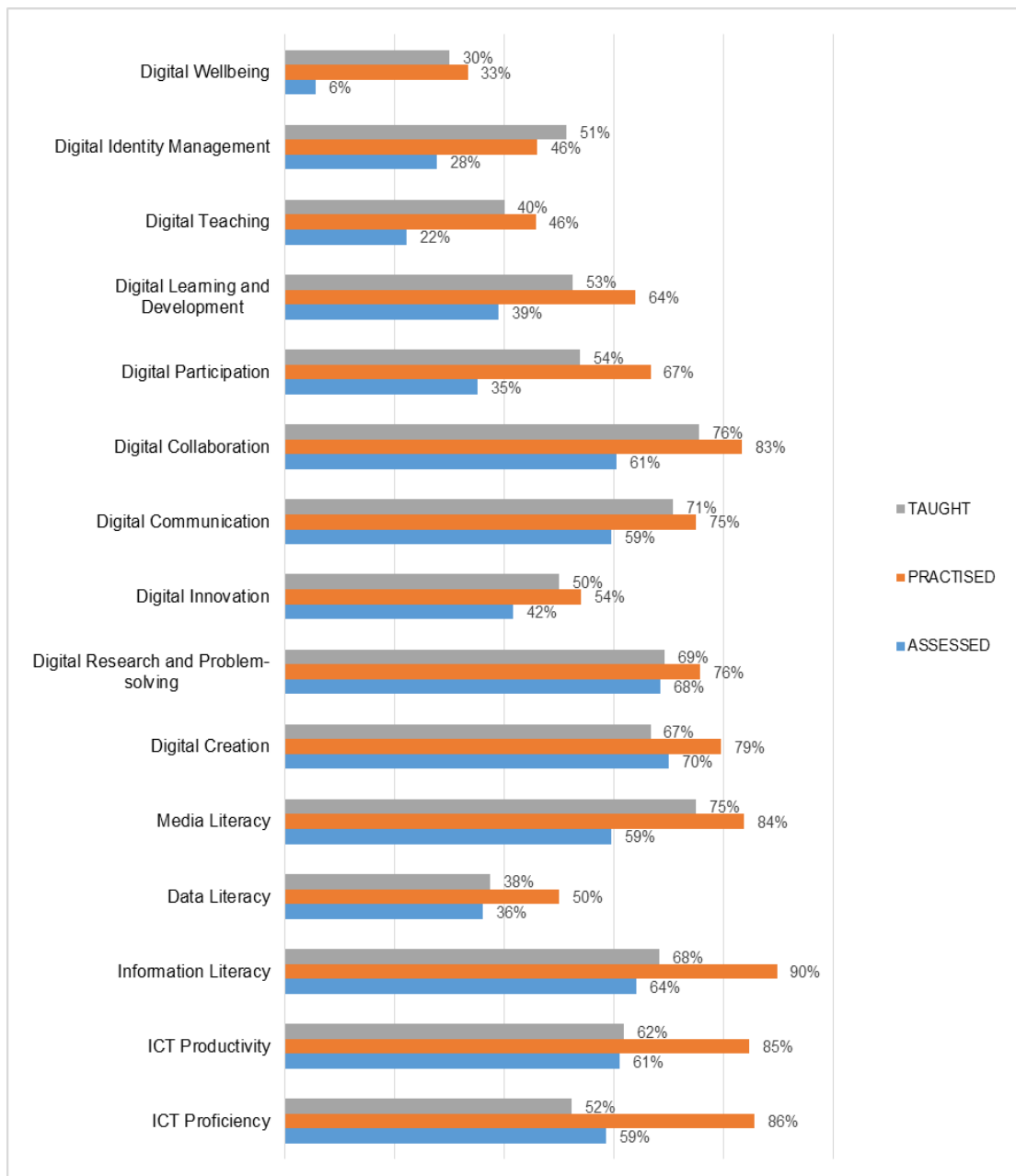
Functional Affordances Prevalent

Figure 6 overleaf indicates that educators focus on teaching and assessing the following digital capabilities:

Digital Collaboration	Media Literacy
Digital Communication	Information Literacy
Digital Research and Problem-solving	ICT Productivity
Digital Creation	ICT Proficiency

These results support earlier findings indicating that digital capabilities relating to communicating and collaborating in an online world were vital. They also suggest a focus on understanding and using existing technology or software – a functional affordances approach. “Softer” digital capabilities (such as digital wellbeing) or those more closely aligned to perceptual or adaptive affordances (such as digital innovation) receive less focus.

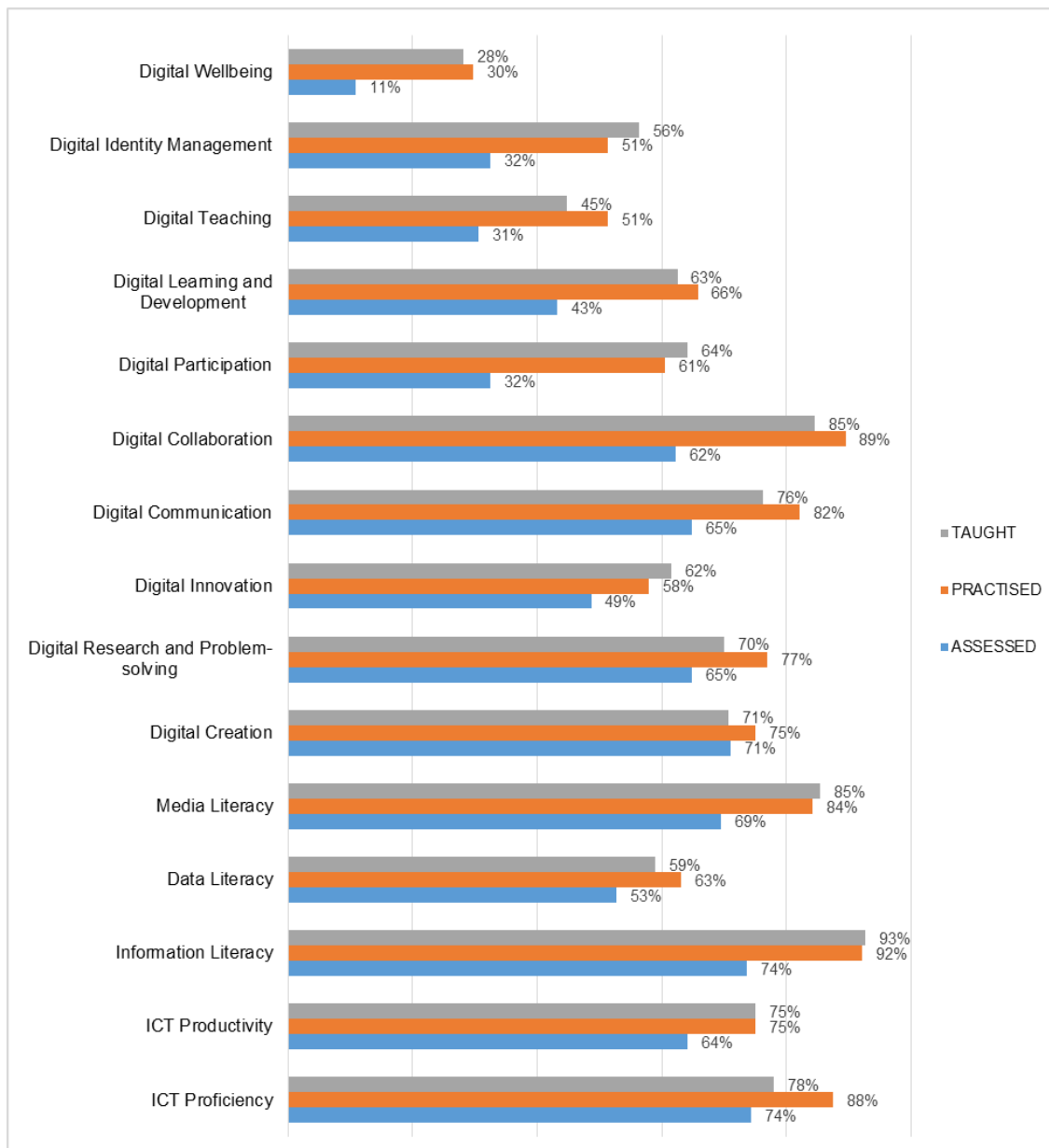
Figure 6: Educator perceptions of digital capabilities that are taught, practiced and assessed in their units/subjects (N=43)



Digital Capabilities Are Being Taught....Somewhere...

Figure 7, shows educators' perceptions about whether the digital capability is taught, practiced or assessed elsewhere in the program. These results indicate higher levels of confidence that digital capabilities were being taught, practiced and assessed elsewhere in the course/program rather than in the units/subjects taught by respondents.

Figure 7: Educator perceptions of digital capabilities that are taught, practiced and assessed elsewhere in the course/program (N=43)



Full tables of the responses to these questions are available as an Appendix to this report.

CONCLUSION

The educator survey results suggest that there is more that needs to be done in preparing university educators to support students in developing digital capabilities. Despite evidence of a reasonable degree of confidence amongst educators in their own digital abilities, the survey pointed to a disjointed alignment of digital capability development across curriculum, and, highlighted a concern that the development of digital capabilities was not constructively aligned in terms of assessment, intended learning outcomes, and teaching activities. There is also a clear need and opportunity to strengthen perceptual and adaptive digital capabilities and to support educators in moving beyond their current focus on functional capabilities.

The survey results further point to structural factors that educators perceive as constraining their capacity to support learners. These include time and workload pressures, competing demands, access to digital resources, and the skills and capabilities of the educators themselves. These findings create a platform for further research into how universities might support students in developing the digital capabilities that appear to be so central to successful employment outcomes.

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APPENDIX A

Full responses: Students are TAUGHT this in my subject(s)/unit(s):

Question	Yes		No		Don't Know		Total
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	52.27%	23	43.18%	19	4.55%	2	44
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	61.90%	26	35.71%	15	2.38%	1	42
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	68.29%	28	29.27%	12	2.44%	1	41
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	37.50%	15	62.50%	25	0.00%	0	40
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	75.00%	30	25.00%	10	0.00%	0	40
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	66.67%	28	33.33%	14	0.00%	0	42
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	69.23%	27	25.64%	10	5.13%	2	39
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	50.00%	20	47.50%	19	2.50%	1	40
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	70.73%	29	29.27%	12	0.00%	0	41
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	75.61%	31	24.39%	10	0.00%	0	41
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	53.85%	21	46.15%	18	0.00%	0	39
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	52.50%	21	45.00%	18	2.50%	1	40
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	40.00%	16	52.50%	21	7.50%	3	40
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	51.28%	20	48.72%	19	0.00%	0	39
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	30.00%	12	62.50%	25	7.50%	3	40

APPENDIX B

Full responses: Students have the opportunity to APPLY/PRACTICE this in my subject(s)/unit(s)

Question	Yes	No	Don't Know	Total			
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	85.71%	36	14.29%	6	0.00%	0	42
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	84.62%	33	15.38%	6	0.00%	0	39
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	89.74%	35	7.69%	3	2.56%	1	39
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	50.00%	18	44.44%	16	5.56%	2	36
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	83.78%	31	16.22%	6	0.00%	0	37
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	79.49%	31	20.51%	8	0.00%	0	39
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	75.68%	28	18.92%	7	5.41%	2	37
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	54.05%	20	40.54%	15	5.41%	2	37
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	75.00%	27	25.00%	9	0.00%	0	36
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	83.33%	30	16.67%	6	0.00%	0	36
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	66.67%	24	33.33%	12	0.00%	0	36
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	63.89%	23	30.56%	11	5.56%	2	36
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	45.71%	16	45.71%	16	8.57%	3	35
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	45.95%	17	48.65%	18	5.41%	2	37
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	33.33%	12	55.56%	20	11.11%	4	36

APPENDIX C

Full responses: Students are ASSESSED for this in my subject(s)/unit(s):

Question	Yes		No		Don't Know		Total
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	58.54%	24	41.46%	17	0.00%	0	41
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	60.98%	25	39.02%	16	0.00%	0	41
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	64.10%	25	35.90%	14	0.00%	0	39
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	36.11%	13	61.11%	22	2.78%	1	36
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	59.46%	22	37.84%	14	2.70%	1	37
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	70.00%	28	30.00%	12	0.00%	0	40
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	68.42%	26	26.32%	10	5.26%	2	38
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	41.67%	15	52.78%	19	5.56%	2	36
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	59.46%	22	40.54%	15	0.00%	0	37
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	60.53%	23	39.47%	15	0.00%	0	38
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	35.14%	13	64.86%	24	0.00%	0	37
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	38.89%	14	58.33%	21	2.78%	1	36
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	22.22%	8	72.22%	26	5.56%	2	36
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	27.78%	10	72.22%	26	0.00%	0	36
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	5.56%	2	83.33%	30	11.11%	4	36

APPENDIX D

Students are TAUGHT this elsewhere in the course/program:

Question	Yes	No	Don't Know	Total			
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	78.05%	32	14.63%	6	7.32%	3	41
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	75.00%	30	12.50%	5	12.50%	5	40
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	92.68%	38	0.00%	0	7.32%	3	41
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	58.97%	23	20.51%	8	20.51%	8	39
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	85.37%	35	9.76%	4	4.88%	2	41
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	70.73%	29	17.07%	7	12.20%	5	41
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	70.00%	28	15.00%	6	15.00%	6	40
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	61.54%	24	20.51%	8	17.95%	7	39
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	76.32%	29	13.16%	5	10.53%	4	38
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	84.62%	33	5.13%	2	10.26%	4	39
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	64.10%	25	20.51%	8	15.38%	6	39
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	62.50%	25	10.00%	4	27.50%	11	40
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	44.74%	17	18.42%	7	36.84%	14	38
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	56.41%	22	20.51%	8	23.08%	9	39
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	28.21%	11	25.64%	10	46.15%	18	39

APPENDIX E

Full responses: Students have the opportunity to APPLY/PRACTICE this elsewhere in the course/program

Question	Yes		No		Don't Know		Total
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	87.50%	35	5.00%	2	7.50%	3	40
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	75.00%	30	10.00%	4	15.00%	6	40
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	92.11%	35	0.00%	0	7.89%	3	38
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	63.16%	24	15.79%	6	21.05%	8	38
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	84.21%	32	10.53%	4	5.26%	2	38
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	75.00%	30	15.00%	6	10.00%	4	40
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	76.92%	30	10.26%	4	12.82%	5	39
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	57.89%	22	21.05%	8	21.05%	8	38
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	82.05%	32	7.69%	3	10.26%	4	39
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	89.47%	34	2.63%	1	7.89%	3	38
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	60.53%	23	18.42%	7	21.05%	8	38
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	65.79%	25	7.89%	3	26.32%	10	38
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	51.35%	19	13.51%	5	35.14%	13	37
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	51.35%	19	21.62%	8	27.03%	10	37
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	29.73%	11	29.73%	11	40.54%	15	37

APPENDIX F

Full responses: Students are ASSESSED for this elsewhere in the course/program

Question	Yes		No		Don't Know		Total
Information and Communication Technology (ICT) Proficiency: The use of ICT-based devices, applications, software and services.	74.36%	29	7.69%	3	17.95%	7	39
Information and Communication Technology (ICT) Productivity: The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality.	64.10%	25	12.82%	5	23.08%	9	39
Information Literacy: The capacity to find, evaluate, manage, curate, organise and share digital information.	73.68%	28	2.63%	1	23.68%	9	38
Data Literacy: The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports.	52.78%	19	19.44%	7	27.78%	10	36
Media Literacy: The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio.	69.44%	25	16.67%	6	13.89%	5	36
Digital Creation: The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites.	71.05%	27	15.79%	6	13.16%	5	38
Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods.	64.86%	24	18.92%	7	16.22%	6	37
Digital Innovation: The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to develop new ideas, projects and opportunities.	48.65%	18	21.62%	8	29.73%	11	37
Digital Communication: The capacity to communicate effectively in digital media and spaces such as forums, online video and social media.	64.86%	24	16.22%	6	18.92%	7	37
Digital Collaboration: The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media.	62.16%	23	13.51%	5	24.32%	9	37
Digital Participation: The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments.	32.43%	12	27.03%	10	40.54%	15	37
Digital Learning and Development: The capacity to identify and participate in digital learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings.	43.24%	16	18.92%	7	37.84%	14	37
Digital Teaching: The capacity to support and develop others in digitally-rich settings.	30.56%	11	22.22%	8	47.22%	17	36
Digital Identity Management: The capacity to develop and project a positive digital identity and to manage a digital reputation.	32.43%	12	29.73%	11	37.84%	14	37
Digital Wellbeing: The capacity to look after personal health, safety and relationships in digital settings.	10.81%	4	29.73%	11	59.46%	22	37

APPENDIX G

Digital Work Futures Educator's Survey

EDUCATOR SURVEY

Title	<i>Digital work practices: where are the jobs, what are they, and how prepared are graduates?</i>
Chief Investigator	A/Professor Fiona Peterson (RMIT University) A/Professor Elspeth McKay (RMIT) A/Professor Margaret Jollands (RMIT) Professor Abby Cathcart (QUT) Professor Wageeh Boles (QUT)
Associate Investigators	Professor Peter Fray (UTS) Dr Philip Pond (RMIT) Dr Ian Rogers (RMIT) Dr Alexandra Cosby (UTS) Dr Cathy Lockhart (UTS)

This survey has QUT Ethics Approval (No: 1700000520)

PROJECT DESCRIPTION

There is an increasing emphasis on developing graduates prepared for new and emerging digital work opportunities in the globalised world of work. The purpose of this research project is to develop and evaluate a learning model, which will help prepare students for digital work practices in employment settings. You have been invited as an educator who can help us understand the teaching practices that are needed to develop digital capabilities that graduates require in organisational settings.

This research has been funded by the Australian Technology Network (ATN) of Universities which includes: RMIT University; Queensland University of Technology; University of Technology Sydney; Curtin University; and the University of South Australia.

We would like to know how you support your students in developing digital capabilities.

Click on **THIS LINK** to view and read the Participant Information Sheet and Consent Form which tells you about the research project.

Participation in this research is voluntary. If you don't wish to take part, you don't have to. The Participation Information Sheet and Consent Form explains the processes involved with taking part. Please read this information carefully.

Please note this survey has ethics approval:

RMIT University (approval: CHEAN A 20765-03/17).

Queensland University of Technology (No: 1700000520)

University of Technology Sydney (Ref No: ETH17-1399)

By submitting this online survey, you are telling us that you have read and understood this information and consent to take part in this research.

If you have any questions about the survey please contact us:

Associate Professor Fiona Peterson: fiona.peterson@rmit.edu.au

Professor Abby Cathcart: abby.cathcart@qut.edu.au

Professor Peter Fray: peter.fray@uts.edu.au

Thank you for agreeing to complete the following survey.

Q2 QUESTIONS 1-8 ARE ABOUT YOU AND YOUR ROLE AS AN EDUCATOR

Q3 1. In which University do you currently work?

- RMIT University (1)
- Queensland University of Technology (2)
- University of Technology Sydney (3)
- Curtin University (4)
- University of South Australia (5)
- Other (please specify) (6) _____

Q20 2. What is your employment status?

- Full-time (1)
- Part-time (2)
- Contract (3)
- Casual / Sessional Academic (4)

Q4 3. What is your current role?

- Professor / Associate Professor (1)
- Senior Lecturer / Lecturer / Associate Lecturer (2)
- Professional Staff (3)
- Casual / Sessional Academic (4)
- Other (please specify) (5) _____

Q5 4. In which discipline do you do most of your higher education teaching?

- Business / Management (1)
- Creative Arts / Industries (2)
- Media / Communications (3)
- Science and Engineering (4)
- Other (please specify) (5) _____

Q6 5. How long have you been teaching in the higher education sector?

- Less than 1 year (1)
- 1 to (2)
- 5 to (3)
- 10 to (4)
- 20 years or more (5)

Q7 6. Do you have experience working in a related industry role (outside of the higher education sector)?

- No related industry experience (1)
 - Yes, I am currently working in industry (2)
 - Yes, I have worked in a related industry role within the last 5 years (3)
 - Yes, I worked in a related industry role over 5 years ago (4)
-

Q8 7. What is your age?

- Under 25 years (1)
- 25-34 years (2)
- 35-44 years (3)
- 45-54 years (4)
- 55 years or over (5)

Q21 8. Do you identify your gender as...

- Female (1)
- Male (2)
- Other (3) _____
- Prefer not to answer (4)

Page Break

Q9 THE FOLLOWING QUESTIONS ARE ABOUT DIGITAL CAPABILITIES

Digital capabilities include the knowledge, skills and attributes required for a user to interact productively with technology. Digital work practices apply digital capabilities in a work context. Digital capabilities and practices are both **specialised (situated within a particular profession and not easily transferrable)**, and **general, encompassing familiarity and ease with a range of digital technologies that are transferable between professions and contexts** (eg: collaborating with others online) [1].

[1] Beetham, H. (2015) “*Deepening digital know-how: building digital talent. Key issues in framing the digital capabilities of staff in UK HE and FE*”.

Q10 9. What **specialised** digital capabilities do employers require from graduates in your discipline?

- Please list all: (1) _____
- There are no specialised digital capabilities required in my discipline (2)

Q11 10. What **generalised** digital capabilities do employers require from graduates in your discipline? Please list all.

Q12 11. How important do you believe it is for graduates of your discipline to develop digital capabilities during their University studies?

	1 (Not important) (1)	2 (2)	3 (3)	4 (4)	5 (Essential) (5)
1 (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 Please comment on why you have provided the above rating:

Q22 12. Overall, how do you rate your own personal digital capabilities?

- 0 (0)
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- 7 (7)
- 8 (8)
- 9 (9)
- 10 (10)

Page Break

Q14 THE FOLLOWING QUESTIONS ARE ABOUT TEACHING DIGITAL CAPABILITIES

13. The JISC Digital Capability Framework[2] identifies a range of skills and capabilities required to thrive in today’s digital environment. Please reflect on both the subject you teach and the entire course curriculum within which that subject resides, then in the boxes below, please mark if the listed capabilities are *Taught* to students, if students have the opportunity to *Apply or practice* the capability, and if students are *Assessed* on the listed digital capability.

[2] Beetham, H (2017) *Digital Capabilities Framework: An Update* retrieved from <https://digitalcapability.jiscinvolve.org/wp/2017/03/09/digital-capabilities-framework-an-update/>

Students are TAUGHT this in my subject(s)/unit(s)	Students have the opportunity to APPLY/PRACTISE this in my subject(s)/unit(s)	Students are ASSESSED for this in my subject(s)/unit(s)	Students are TAUGHT this elsewhere in the course/program	Students have the opportunity to APPLY/PRACTISE this elsewhere in the course/program	Students are ASSESSED for this elsewhere in the course/program

Information and Communication Technology (ICT) Proficiency:

The use of ICT-based devices, applications, software and services. (1)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Information and Communication Technology (ICT) Productivity:

The use of ICT-based tools to carry out tasks effectively, productively and with attention to quality. (2)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Information Literacy:

The capacity to find, evaluate, manage, curate, organise and share digital information. (3)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Data Literacy:

The capacity to collate, manage, access and use digital data in spreadsheets, databases and other formats and to interpret data by running queries, analyses and reports. (4)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Media Literacy:
 The capacity to critically receive and respond to messages in a range of digital media - text, graphical, video, animation, audio. (5)

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Digital Creation:
 The capacity to design and/or create new digital artefacts and materials, such as digital images, audio and video, digital code, apps, interfaces and websites. (6)

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Digital Research and Problem-solving: The capacity to use digital evidence to solve problems and answer questions, and to share findings using digital methods. (7)

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Digital Innovation:
 The capacity to adopt and develop new practices with digital technology in different settings; the use of digital technologies to

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

Yes
 No
 Don't Know

develop new ideas, projects and opportunities. (8)

Digital

Communication:

The capacity to communicate effectively in digital media and spaces such as forums, online video and social media. (9)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Digital

Collaboration:

The capacity to participate in digital teams and working groups; to collaborate using shared digital tools and media. (10)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Digital

Participation:

The capacity to participate in social and cultural life using digital media and services; to behave safely and ethically in networked environments. (18)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Digital Learning and Development:

The capacity to identify and participate in digital

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

learning opportunities; to use digital learning resources; to organise, plan and reflect on learning; to manage own time and tasks in digital settings. (12)

Digital Teaching:

The capacity to support and develop others in digitally-rich settings. (15)

Digital Identity

Management: The capacity to develop and project a positive digital identity and to manage a digital reputation. (13)

Digital Wellbeing:

The capacity to look after personal health, safety and relationships in digital settings. (14)

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Yes
No
Don't Know

Q16 14. What contributes to your capacity to support students in developing digital capabilities?
(Examples: University support services, my background, access to technology)

Q17 15. What constrains your capacity to support students in developing digital capabilities?
(Examples: University support services, my background, access to technology)

Q18 16. What role do you think Universities should play in developing the digital capabilities of students?

End of Block: Default Question Block
