

Work-related literacy education in the Fourth Industrial Revolution: An update on the Literacy 4.0 Project

By Trent Newman

A team of researchers in language and literacy education at Melbourne Graduate School of Education have been studying the effects of contemporary technological and social transformations in work on literacy and literacy education. Called the Literacy 4.0 Project, the research is aimed at understanding how new technologies, new arrangements for work and employment, and new possibilities for communication between humans, and between humans and machines, are shaping literate work practices. *Fine Print* readers may recall an article entitled 'Literacy Events in the Gig Economy' by Prof. Lesley Farrell and Dr Chris Corbel (2017), and those who attended the VALBEC conference in May last year will have heard Prof. Farrell's keynote presentation on preparing for new workplaces and literacy education practices.

Literacy 4.0 references the literate practices needed for work in Industry 4.0, a term often used as shorthand for the Fourth Industrial Revolution. Schwab (2017) explains the Fourth Industrial Revolution in relation to previous technological revolutions as follows:

The First Industrial Revolution used steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a

Fourth Industrial Revolution is building on the Third. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.

The technological transformations that characterise Industry 4.0 bring with them significant transformations in the social practice of work, with important implications for working knowledge, working identities, and working relationships. Jobs involving routine tasks are increasingly being done by robots and 'smart machines' instead of humans, work contracts are increasingly temporary and ad hoc, as in the gig economy – think: Uber drivers, AirTasker and Freelancer workers (Carey, 2019), 'workplaces' are transitioning to geographically dispersed work *spaces* connected in cyberphysical (offline + online) networks, and *all* work is increasingly mediated via digital technologies, involving the collection, movement and analysis of vast amounts of data. In this context, new possibilities are constantly emerging for the social production and mobilisation of both old and new forms of texts, unsettling traditional understandings of what counts as work-related literacy. How should educators prepare people for work in these conditions? What language and communication skills and competencies do people need?

Over the past year, members of the Literacy 4.0 Project team have been gathering a range of perspectives on the changes that are occurring, talking with industry experts, workplace trainers and adult literacy educators who are focused on preparing students and trainees for work. These discussions have spanned multiple levels of accreditation related to adult education and training.

We have spoken with teachers working at pre-accreditation level with refugee and migrant students who struggle even to master the technical skills of 'tap, swipe, select' involved in navigating touch screens, let alone mastering the written and oral English language competencies needed to create and to curate an online worker profile to become an Uber driver, or to read and navigate a customer service app as part of an entry level casual job in hospitality.



Some quite sophisticated literacy practices are required for work in the gig economy

We have talked with trainers of certificate and diploma level workers in factories where smart technologies and digitisation are increasingly the norm, and where traditional maintenance and repair work done up close on individual machines has transformed into reading, monitoring and analysing from a distance the data collected automatically about machines via smart sensors. We have sat with the designers of new advanced diploma and 'higher apprenticeship' programs (NCVER, 2019) to discuss the challenges of assessing workplace communication and teamwork in situations where work teams are globally and temporally dispersed and where problem solving is always an exercise in transcultural communication.

We have even spoken with those who design and train people in the cloud platform architecture and data retrieval and management systems that are directly shaping Industry 4.0, exploring issues of relationship and trust building between humans and robots, seeking to understand how machines are acquiring literacies for working with humans even as humans struggle to develop literacies for working with machines.

Across these diverse contexts of adult education and training, the consensus is that not only is Australia's workforce not ready for Industry 4.0, but – even more concerning – our education systems as well as our dominant ways of thinking about language and literacy education are not keeping up with the social transformations in work sparked by Industry 4.0. Adult literacy educators are struggling to find time and space within rigid curriculum guidelines for creative engagement with digital and online forms of communication.

Workplace trainers are often frustrated by the poor interpersonal communication and collaboration skills of trainees and apprentices coming with technical vocational qualifications, but many trainers are also at a loss as to how to develop these abilities in their workers. In general, the focus on individual assessment across all levels of education and training is at odds with what is most central to work in Industry 4.0: the establishment, maintenance and repair of (technologically mediated) working relationships.

One of the biggest problems we are seeing is that traditional understandings of literacy as the readily quantifiable and transferrable reading and writing skills of individuals continue to dominate approaches to work-related literacy education. While the ability to read and write will of course continue to be important, we need to understand



Geographically dispersed networks of humans and machines make up the cyberphysical systems that characterise Industry 4.0

that literacy is a social practice and that reading, writing, speaking and listening around texts always occurs in the context of social relationships, so that the relevant 'skill' only has meaning and value in connection with the relations that surround the text. With the social transformations in work occurring as a result of the Fourth Industrial Revolution, increasing demands are being made of workers to make and maintain connections via digitally mediated literate work practices. This increased focus on relationship building with and through technology emerges directly from the technological convergence that is the defining feature of Industry 4.0.

It is not enough (if indeed it ever was) for workers to learn to write and speak in a generic sense to produce fixed genres of texts. They need to be able to agentively adapt and apply flexible communication strategies for participation in specific, complex networks of human workers, smart devices, data collection and analysis applications, cloud platform architecture, and, yes, robots. Yet the specificities of context and the highly customised nature of these new relationship-oriented literate work practices demanded by Industry 4.0 tend to become obscured, diminished in relevance, in discussions and debates about workforce education that focus on 'basic literacy' alongside of 'soft skills', 'social skills' or even '21st century skills'.

Findings from the Literacy 4.0 Project reveal that it is getting more and more challenging to disentangle and separate work-related literacy from the social contexts of work in which it is practised. This means that a focus solely or even primarily on teaching measurable and transferrable literacy 'skills' will only become more problematic. If we are to better understand what it is that students and trainees need to know and to be able to do to find work in the digital age, if we as teachers are to better enable people to make meaningful contributions as employees and as citizens in worlds of human interaction increasingly mediated by cyberphysical systems, then we need to think differently about literacy and about literacy education. The social dimensions of literacy must be emphasised and the ways that literate work practices serve to establish and maintain the relationships that constitute digitally connected workspaces need to be understood.

Meanwhile, as teachers and trainers continue to work on developing the abilities of their students and trainees to read and write traditional texts within existing curriculum frameworks, there are opportunities to explore the creative and agentive adaptation of these texts across different modes of communication and different kinds of digital platforms, prompting discussion about how texts can 'travel' across both online and offline networks of humans and machines. Equally important is to encourage students to reflect on the social relations that surround the production of the text and to facilitate discussion around the relationships being built in and through the practice of literacy.

We hope to share more details of our findings from the Literacy 4.0 Project and their implications for literacy education in future editions of *Fine Print*, so stay tuned.

For more information about the Literacy 4.0 Project visit <https://education.unimelb.edu.au/research/projects/workplace-literacy-in-the-fourth-industrial-revolution-the-literacy-4.0-project> or contact Dr Newman at newman.t@unimelb.edu.au.

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