

Grand Challenge Problem 5: Bringing the Information and Communication Society to Vocational Education and Training

Daniel Schneider and Jessica Dehler Zufferey

Abstract Can we imagine that learners, in particular in the vocational education and training (VET) sector, could become active “connectivist” information workers that are able to manage information density, to contribute to organized knowledge and be part of extended communities of practice? As it stands today, social practice is fragmented, e.g., workplace, school, and research do not communicate very much. There are few “places” and opportunities where actors can connect, share, and build knowledge. But even if there were, very few would jump on the opportunity. How can we transform educational, workplace, and research practice to foster knowledge sharing and co-construction?

Keywords Connectivism · Knowledge building community · Expansive learning · Information working · New scholarship · Use-inspired research · Design research

Since the advent of the Internet, society is slowly moving toward an information society that requires new skills, for example, being able to deal with information density or contributing to virtual communities of practice. The so-called “digital generation” possesses good communication skills that are focused on networking and sharing/trading of simple digital artifacts. However, it lacks information working skills (Selwyn 2009). It does not use technology to manage, acquire, share, and co-produce new knowledge. In addition, the traditional separation remains between the ones “that know” (teachers and supervisors) and the ones that “reproduce”. Could we imagine that learners, in particular in the vocational education

D. Schneider (✉)

TECFA/FPSE, University of Geneva, Boulevard du Pont d’Arve 40,
1211, Geneva 4, Switzerland
e-mail: Daniel.schneider@unige.ch

J. Dehler Zufferey

CHILI Lab, EPFL, Rolex Learning Center, Station 20, 1015, Lausanne, Switzerland
e-mail: jessica.dehler@gmail.com

© The Author(s) 2016

J. Eberle et al. (eds.), *Grand Challenge Problems in Technology-Enhanced Learning II: MOOCs and Beyond*, SpringerBriefs in Education,
DOI 10.1007/978-3-319-12562-6_6

25

and training (VET) sector, could become active “connectivist” information workers? Could they be given a larger role in a community of practice that extends their school or immediate workplace? How can we adapt the research and development system so that it could address such a challenge?

Problems of the European Education System Addressed and Long Term Benefits for Society

The European education system reflects a pre-information society where stable explicit knowledge dominated. In vocational education, school is supposed to teach stable concepts; the workplace has to convey applied procedural knowledge, and the learner should bridge the gap and integrate. Large digital learning communities where both new and informal knowledge could connect do not exist. VET could benefit from the body of knowledge that exists in the heads of participants, made explicit. Teaching could draw on real-world experience. Professionals and apprentices could profit from new trends emerging in other locations. In other words, all stakeholders could interact more and better.

Main Activities to Address the Grand Challenge Problem

The first tasks are building a conceptual framework and launching long-term design studies. Connectivist learning and teaching frameworks (Siemens 2004; Downes 2012) that are, for example, implemented in so-called cMOOCs could be merged with theories on collective learning (De Laat et al. 2007), knowledge building community (Bereiter and Scardamalia 2003), and community of practice learning models (Wenger 2000). To insure adaption to vocational education, expansive learning projects (Engeström 2001) must be carried out in partnership with all interested stakeholders, including professional organizations, schools, teachers, learners, and researchers.

Vocational teacher and trainer education must be radically adapted to include technical and conceptual aspects of Internet use in education and practice. For starters, schools must be reorganized as a learning community that shares and connects experience among itself and with the workplace. Teachers and supervisors cannot teach with new models if they did not experience those themselves.

In the same vein, research must adapt to the problem and new ways of scholarship must be found to allow for long-term use-inspired basic research (Stokes 1997) as well as serious design research (Järvinen 2007). Scholars involved in the project must adhere to connectivist practice or else they will fail connecting theory to practice.

Timeframe for the Grand Challenge Problem

Design research studies can be done within the next 10 years. However, full implementation at the system level could be managed in 25 years from now, but may likely last longer (Burkhardt and Schoenfeld 2003).

We could identify the following milestones:

- Milestone 1 (5 years): Models that integrate learner activities with online sharable knowledge have been designed and implemented in some sites.
- Milestone 2 (10 years): Researchers and practitioners use “connectivist” means to co-create knowledge.
- Milestone 3 (25 years): Infrastructures where learners and professionals interact both in schools and at the workplace are designed, implemented, and used.

Measurable Progress and Success Indicators

Indicators for milestone 1: Knowledge co-construction activities represent a significant chunk of the curriculum and are conducted during the whole school year.

Indicators for Milestone 2: Researchers, teachers, and professionals use ICT for themselves and contribute actively to shared knowledge spaces. Isolated conference and journal publications will be shunned and evaluation of scholarly work will use new criteria, e.g., reputation systems for connected and open online contents.

Indicators for milestone 3: At least 20 % of professionals, apprentices, and classes in at least three VET sectors should be part of this new framework.

Attraction of Funding

In order to be successful, the funding scheme must encourage transformative design-based bottom-up research approaches and put in place new forms of academic recognition for new forms of knowledge co-construction.

National and regional systems should take part in the program and engage in educational reforms that take into account the changing nature of society and knowledge.

The challenge requires long-term financing of many relatively small projects that, however, must exchange through a common infrastructure. Therefore, we suggest lobbying for a different new research and design framework that is supported by both the EC and the main political education bodies in participating countries, for example in the form of some extension to the EC “Lifelong learning programme”.

References

- Bereiter, C., & Scardamalia, M. (2003). Learning to work creatively with knowledge. In E. De Corte, L. Verschaffel, N. Entwistle, & J. van Merriënboer (Eds.), *Unravelling basic components and dimensions of powerful learning environments*. EARLI Advances in Learning and Instruction Series. Pergamon.
- Burkhardt, H., & Schoenfeld, A. H. (2003). Improving educational research: Toward a more useful, more influential, and better-funded enterprise. *Educational Researcher*, 32(9), 3–14.
- De Laat, M., Lally, V., Lipponen, L., & Simons, R.-J. (2007). Online teaching in networked learning communities. *Instructional Science*, 35, 257–286.
- Downes, S. (2012). *Connectivism and connective knowledge, essays on meaning and learning networks*. National Research Council Canada. ISBN 978-1-105-77846-9. Retrieved Aug 1, 2013, from http://www.downes.ca/files/Connective_Knowledge-19May2012.pdf.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133–156.
- Järvinen, P. (2007). Action research is similar to design science. *Quality & Quantity*, 41, 37–54.
- Selwyn, N. (2009). The digital native-myth and reality. *Aslib Proceedings*, 61(4), 364–379.
- Siemens, G. (2004). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 3–10.
- Stokes, D. E. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington, D.C.: Brookings Institution Press.
- Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, 7(2), 225–246.