

Technology to provide educational practitioners with the expertise they need

Porayska-Pomsta, Kaska; Preston, Christina; Weitze, Charlotte Lærke; Younie, Sarah

Published in:

Enhancing Learning and Teaching with Technology - What the Research Says

Publication date:

2018

Document Version

Early version, also known as pre-print

[Link back to DTU Orbit](#)

Citation (APA):

Porayska-Pomsta, K., Preston, C., Weitze, C. L., & Younie, S. (2018). Technology to provide educational practitioners with the expertise they need. In R. Luckin (Ed.), *Enhancing Learning and Teaching with Technology - What the Research Says* (Chapter 6.3, pp. 289-301)

DTU Library

Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Chapter 6.3 - Example 1

**Technology to provide
educational practitioners
with the expertise they need**

...

Charlotte Laerke Weitze

Example 1: developing innovative pedagogical space and practice

Global Classroom (GC) is a learning environment implemented in a two-year full-time upper secondary general education programme for adult students, where students can choose between in-class participation or learning through video conferencing (Fig. 6.3.1). GC has been introduced in the adult education centre (VUC) in Storstrøm, Denmark, to deliver learning support in a variety of different subjects. However, to date, there have been no guidelines available for employing best practice for supporting learning in this new context. Initially, when faced with this new learning environment, teachers reported that they:

1. lacked the competence to teach within it and that their previous learning designs could not be used

2. lacked the time to develop learning designs that would suit the new technological learning environment, and
3. had a need for extended support in pedagogical innovation from the educational organization.

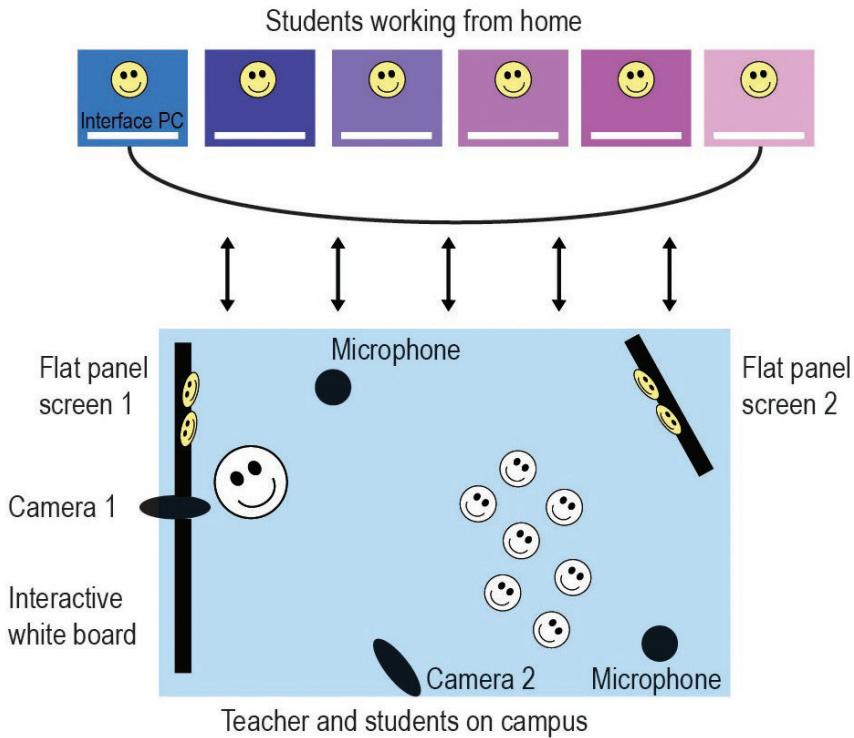


Figure 6.3.1: The Global Classroom – a hybrid synchronous video-mediated learning environment (Weitze, 2016).

In response to the teachers' reports, six workshops were organized with the purpose of exploring and establishing new practices of relevance to the VUC's GC and to allow teachers to engage in co-design of new practices of relevance to this new environment (Fig. 6.3.2). Three different teacher teams participated in the workshops over the six meetings. The overarching aims of the six workshops were to:

1. develop approaches which were both grounded in theory and that were feasible and effective at a practical level

Technology to provide educational practitioners

2. construct an agile working practice that enabled the teachers to change teaching strategies in relation to the dynamically emerging demands in specific learning situations and to any strategic changes of the organization
3. provide a structured, reflective means for teachers to experiment with different designs and to enable rapid adoption by VUC as an institution of the solutions proposed.

Learning goals were established to provide the basis for the professional development and for the creation of learning designs during the workshops. After the course, the team members will be able to do the following:

1. Describe own learning design and identify and formulate possible problem areas in the current educational context.
2. Select and plan the use of and create a process of collective reflection about relevant literature in relation to the team's experience of current issues.
3. Develop and carry out a process leading to individual goals for innovation, both in the short and long term.
4. Master innovative tools that can be used in the innovation process in a pedagogical team.
5. Be innovative concerning their own teaching, involving technology as well as new/innovative learning designs.
6. Organize and lead an innovative team process.
7. Choose a strategy and method for knowledge development, knowledge sharing and anchoring in the team.

The workshops were intended to allow the participating teachers to:

- Carry out appropriate planning, execution and theorising with respect to their own teaching in IT-based and video-mediated teaching programs.
- Make informed and relevant choices in the use of educational technology for their learning designs in a professional academic context.
- To investigate the means for knowledge sharing, communication and decision flow between the administration and the teachers.



Figure 6.3.2: A teacher team working together partly on-line during workshops made it easier to meet

An IT-pedagogical think tank for teacher teams (henceforth referred to as ITP4T) was developed as a consequence of the workshops. The ITP4T was a framework for facilitating reflection and learning design creation by teams of teachers at VUC. Teachers met every week for two hours over a six-week period to address specific pedagogical challenges of their own choosing. During this process they followed a specific procedure (described in detail later), requiring them to set the goals and milestones for their own continuous competence development and to collaborate with one another with respect to those goals.

To identify the goals and milestones, during the initial two meetings teachers clarified the problem areas through discussion and brainstorming. They recorded their problem areas both individually and as teams in a written form. They created a ‘problem-bank’ of all the challenges that they wanted to address and ultimately solve as well as a ‘wish-list’ of the specific competences they wanted to develop. They wrote this up in an online interactive project development tool called Trello (www.trello.com). This made it accessible for all team members and made it possible for teachers to jointly set priorities and to return and to alter them if needed. In this way the specific problem and competence development areas were turned into short and long term goals. This is illustrated as the black goal-dots on the coloured lines in Fig. 6.3.3. As time passed, new goals were set and the teacher’s level of competence increased. For example, teachers’ areas of interest included:

1. problematic themes from the technology enhanced learning environment (TELE)

Technology to provide educational practitioners

2. ways in which to create innovative learning designs for the learning environment
3. questions around innovative use of educational technology, and
4. issues and questions related to teachers having to study professional theoretical literature, new research, Edu-blogs, videos, etc.

Teachers discussed how to evaluate whether the issues and challenges identified were solved or the goals reached. By being very clear on their goals for competence development, learning and innovation, they became aware of how and when they gained new competences. Furthermore, they reported that the competences gained were relevant and inspiring for their daily teaching practices.

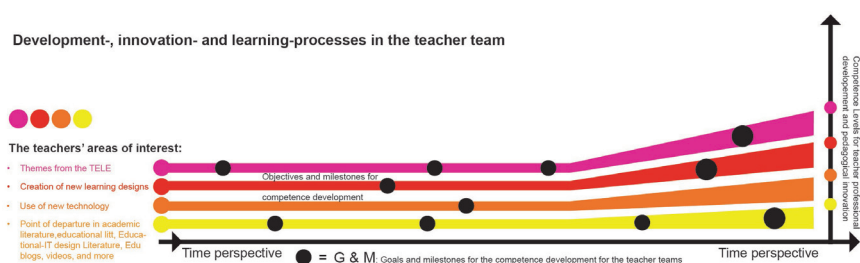


Figure 6.3.3: Goals, milestones and competence levels in four types of processes in professional development and innovation for teacher teams (Weitze, 2014)

The ITP4T think-tank process for reaching the goals was structured around a cycle involving five stages of design and reflection, including:

- (a) input/presentation
- (b) reflection/innovation/discussion
- (c) evaluation
- (d) anchoring/documentation/dissemination
- (e) 'I dare you'.

Teachers worked in teams through this process during weekly two-hour meetings, at each meeting covering all five stages. Teachers reported that working within this structure provided the support they needed to achieve pedagogically innovative results. We now explain each of the stages in turn.

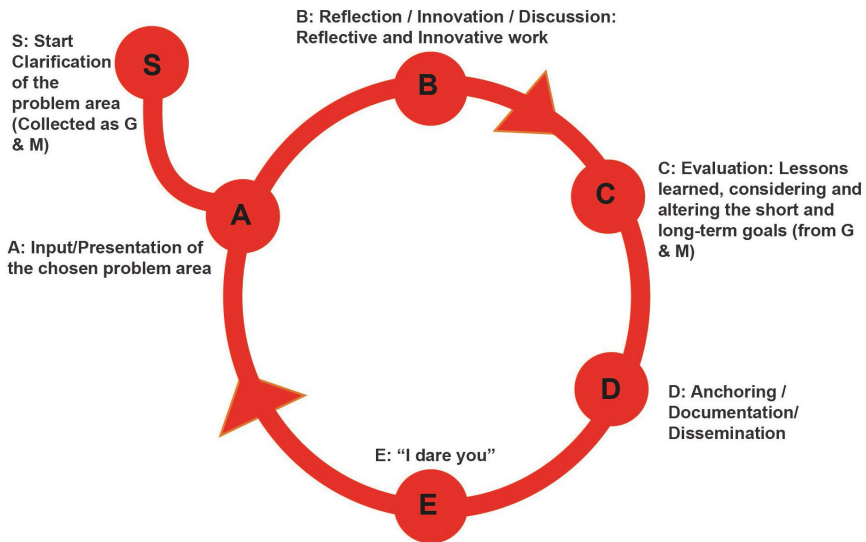


Figure 6.3.4: Weekly points consulted when working in the IT-pedagogical think tank for teacher teams (ITP4T) (Weitze, 2014)

Input/presentation

Input/presentation (this is indicated in Fig. 6.3.4 by the node A) of the chosen problem area/theme was conducted by the team leader of the day. The team members took turns at being team leaders. The problem area/theme chosen was always one that related to a real *burning problem* or to an idea for a solution to a burning problem, and it was inspired by the teachers' competence development goals (Fig. 6.3.3). Every week all team members prepared for an hour for the theme of the week, which was laid out by the team leader. By preparing and investigating the subject in advance, the team leader would become the expert in relation to the specific problem and the possible solution to it.

Reflection/innovation/discussion

Reflection/innovation/discussion (node B) relates to the ideation and development part of the think-tank. Grounded in theory and inspired by the team leaders' presentations, the teachers engaged in brainstorming and informed discussions about the theme chosen for the week. The team leader of the day had planned activities for how the team could work and discuss a given theme. For example, this could take the form of discussions about the burning problem, drawings of new learning design concepts, or experimentation with technological devices. During the sessions teachers came up with suggestions for new learning designs and were able to

explore the pedagogical challenges that were familiar to them, and invent new ways of addressing those challenges. They engaged in reflective and innovative work (Dale, 1998; Darsø, 2011) in a way that corresponds directly to Dale's (*ibid*) third level of teacher competence (Comp3). This level involves teachers abandoning their daily practical routines and instead creating a professional space for pedagogical reflection. This space is a place for dialogues, indepth critical reflections, development and research. The participating teachers also kept track of *what they knew* and *what they did not yet know*, and they used structured methods to conceptualize and discuss the problem areas. They also aimed to create a friendly and open space for this conceptualization, reflection and innovation to take place. Teachers emphasized the importance of one person taking responsibility for keeping discussions at the Comp3 level of Dale's competence description in order to enable collaborative reflection; in this way they avoided a pitfall common to group work of focusing on high-level discussions about common projects or venting frustrations rather than creating new solutions and solving their own complex and burning problems (Tingleff Nielsen, 2013). Teachers emphasized the advantages of consciously developing positive team relationships within which asking provocative questions that went beyond the team members' established experiences and teaching norms was acceptable. For example, some team members believed that they had tried everything in the approach to solve a problem, but still failed to reach satisfactory results. By allowing themselves to ask challenging questions, the teacher teams were able to move beyond the frustrating experiences to finding and rehearsing new solutions to their burning pedagogical problems.

Evaluation

Evaluation is node C. Following the development part of the workshop, teachers discussed new learning designs or new concepts identified in relation to the challenges explored by them within the context of the GC learning environment. They both evaluated the various competence goals they had set themselves for the current day or the long term, and they discussed additional future aims and goals for competence development. These new goals were then added to the list of goals defined previously. The teachers found this evaluation process important and helpful because it forced them to formulate their new concepts in a language common to all participants. This in turn allowed them to critique and to receive the critique from other team members. The evaluation process also supported the team in prioritizing and formulating their future goals for competence development.

Anchoring/Documentation/Dissemination

Anchoring/Documentation/Dissemination is node D. For the benefit of memorization and common explicit conceptualization of the innovations and solutions, knowledge sharing took place in a structured way within an online platform that was available to all teachers and to the organization. When the teachers collaborated in the ITP4T to create new learning designs, one of the digital tools they experimented with was *Learning Designer* (Laurillard, 2012). The teachers often used this tool in the documentation phase in the ITP4T. The tool makes it possible to create ‘pedagogical patterns’ for learning designs that can later be shared and discussed with other teachers. Teachers could choose between a range of features, for example, various pedagogical approaches or activity types: (read–watch–listen, collaborate, discuss, investigate, practice and produce). This gave everyone an opportunity to participate in the creation and use of the new knowledge. This tool enabled collaboration during the creation of new learning designs, because teachers could easily compare and discuss approaches to good learning designs even though they taught different subjects.

Several of the teachers identified a need for *anchoring and dissemination* of the new knowledge at the school. They proposed to establish regular open workshops, during which all teachers would have the opportunity to meet and learn from each other. A continuous practice like this, with various participating teacher teams, could establish common ground and create a foundation for a community of practice in this area. Since well-designed communities of practice are forums that support the ‘living nature of knowledge’, the types of new practices explored within the ITP4T could serve to support sharing of new knowledge (Wenger, 1998). One suggestion about how to disseminate the new knowledge was that since each team leader had researched specific problems and solutions when working in the ITP4T they had hereby become experts in the subjects for which they had been ‘primary investigators’. Therefore, they could take a new role as disseminating experts within their specific area of interest in the educational organization. Another example of dissemination, suggested by one member of the ITP4T was: ‘[...] making small videos with each individual teacher’s new innovations and ideas. Then it would also be available for everyone to be inspired by, independently of time and place’. These are only two of several suggestions made by teachers about the possible ways in which to anchor, document, disseminate and share the new knowledge created by the teachers in the organization beyond the ITP4T.

'I dare you'

'I dare you' (node E) consisted of teachers having to create a *product* and to *reify* their thinking for the next team meeting to enable them to engage in a grounded and concrete discussion. This activity was initiated by the team leader of the following week. It was important that some of the tasks consisted of conducting experiments in the class since the main aim for this think tank was to create motivating learning designs for the students. The tasks also consisted of finding and reading new materials related to a specific problem area, or finding and experimenting with new educational technology. Teachers noted that this product creation or reification was crucial to their being able to move forward in their competence development (Wenger, 1998). They also emphasized that 'I dare you' made a big difference to them. As one teacher stated: 'this is a big difference from traditional team meetings – in *I dare you* we change roles, becoming students and innovators, and by studying or experimenting between the team meetings we meet each other on informed ground at the next meeting, and this gives us an opportunity to move beyond the experiences we have from our daily working life – this really provides tools to move in new directions'. Having experienced the value of such in-between-meeting activities to their creative competence development, teachers made a commitment to each other to dedicate as much time to such activities as possible. Following the completion of the 'I dare you stage', the ITP4T cycle involving the five stages of design and reflection would start all over again the following week using a different challenge, thus enabling continuous competence development for and by the teachers (Fig. 6.3.4).

While the ITP4T proved a good frame within which to enable teachers to engage in developing and evaluating new learning designs and in trialling the possible ways in which knowledge sharing and co-creation could be facilitated at the VUC, these innovations would not have gained much traction within their real practices without buy-in from someone with executive powers within the organization. This is why the workshops also involved the manager (the head of the department) who participated for ten minutes in every workshop. He reported that it was valuable for him to get insight into how and what the teachers discussed and innovated on. By participating in ITP4T sessions the manager was inspired to find new ways to share knowledge in the organization, and also learned about the teachers' new skills. The teachers reported that the manager's participation made them feel that he was interested in their new designs and that this was motivating for them.

To conclude this example, the teachers participating in the ITP4T found that the relatively tight structure of the five stages worked well insofar as it enabled them to develop many new ideas. They all used their new learning designs with the students, and some of the designs were used by several of the teachers. One teacher working in ITP4T said that: ‘pedagogically, it’s very much about how to think new thoughts and how to think outside the box, and this is perhaps what we have come a long way doing. This also means that in the future we will be able to explore different places than we normally would’.

The teachers agreed that it would be valuable to go through four or five ITP4T workshops twice a year, depending on the number of team members. This would make the foundation for continuous competence development and would meet the teachers’ continuous need for pedagogical innovation. As a consequence, the organization has decided to educate a member of the pedagogical IT staff to co-ordinate the initial phases for new ITP4T teams as they learn to work in the model.

This example illustrates how innovation, knowledge-development and knowledge-sharing processes may be supported when teachers create learning designs in a concrete model such as ITP4T and how this process might contribute to the organizational learning process. When using this framework, the teachers became innovative learning designers developing new knowledge about learning designs, new use of technology and new ways of sharing knowledge in their educational institution. All teachers engaged in developing new pedagogical strategies, exploring and applying new technology and new learning designs in their existing practices. All teachers contributed to reflections on how to design a strategy and method for knowledge development, knowledge sharing and anchoring at the organization. They co-designed and tested the development of a practice for a new organizational learning design. Using this new practice enabled the teachers to transform non-knowledge or problems into ideas and pedagogical innovation and then back into new anchored knowledge. They acted as team managers for each other and were able to design and create pedagogical processes with collective reflection using relevant tools and methods to facilitate the common ideation phases for the team, leading to individual as well as team-based goals for innovation (Brown, 2009; Dale, 1998; Darsø, 2011). Their technological literacy (Hasse and Storgaard Brok, 2015), i.e. their ability to choose, use and evaluate specific technologies in the context of particular pedagogical approaches in given learning designs, was developed through experiments, theory and practice-based discussions with peers. The teachers became able to identify and formulate possible problem

areas in their educational contexts, always with the central aim of creating motivating learning designs for the students. The teachers and the principal found it motivating and effective to work in the ITP4T; it provided them with a new framework and the support needed to take responsibility for their own learning processes. The ITP4T experience showed that teachers and organizations must develop an understanding of the need to allocate resources for ideating and developing new learning designs involving the use of technology.

The relation between innovation and learning could be observed in the following processes. When the teachers found a satisfactory solution (a new innovation) for one of their stated problems or goals, at a later stage they could examine how they had arrived there, tracing the learning trajectory to their solution (Dewey, 1933; Weitze, 2015). By reflecting on their decisions during the collaborative design, the innovation turned into knowledge again, making the new learning design, the new learning process or the new way of sharing knowledge in the organization possible to repeat. This new knowledge could then be communicated to other teachers in the organization making the whole organization benefit from these innovative processes.

The contribution of the ITP4T model is its ability to provide a theory-based learning design that supports a continuous practice and a structure focused on pedagogical innovation and reflection, with a foundation in teachers' and organizations' relevant professional challenges. This enables change and structured anchoring of the new concepts and may result in a visionary contribution to the educational institution.

The use of this new practice inside the VUC school empowered the teachers and created a new organizational learning design that could support innovation, help interrogate complex questions, create new organizational knowledge and anchor new knowledge and practices. These findings address the need for new knowledge in this area (Hasse and Storgaard, 2015; Laurillard, 2012; Law *et al.*, 2005; Somekh, 2007). The team practice gave teachers an identity not only as teachers but also as self-regulated learners, and the teachers had a more positive perspective of their own abilities to create change after participating in the workshops. In addition, the teachers valued the professional support they gave and received when developing new learning designs and when innovating together in teams. Though the example presented in this section represents a small-scale design-based research experiment, the pace at which the teachers progressed through the issues and came up with pedagogical innovations indicated the great potential for use of the model in other new educational

Charlotte Laerke Weitze

environments involving technology. The principles of the ITP4T have been developed into a course for master students at Aalborg University, where students are taught how to create pedagogical practices for teacher teams in their respective organizations. The intention is that this course will serve to impact prospective teachers and support them in becoming creators of pedagogical innovative teacher teams in their educational institutions.

Currently, six projects are taking place at various educational institutions in Denmark, using the ITP4T. These institutions include primary schools, vocational schools, Bachelor Universities, technical colleges and high schools/upper secondary schools. The humble hope is that the ITP4T model will inspire future teacher teams to innovate and learn together.

References Chapter 6.3 Weitze – Example 1

- Brown, T. (2009) *Change by Design: How design thinking transforms organizations and inspires innovation*. New York: HarperCollins.
- Dale, E.L. (1998) *Pædagogik og Professionalitet*. Århus: Forlaget Klim.
- Darsø, L. (2011) *Innovationspædagogik: Kunsten at fremelske innovationskompetence*. Frederiksberg: Samfundslitteratur.
- Dewey, J. (1933). How we think: A restatement of the relation of reflective thinking to the educational process. Lexington, MA: Heath.
- Hasse, C. and Storgaard Brok, L. (2015) *TEKU-modellen: Teknologiforståelse i professionerne*. København: U Press.
- Laurillard, D. (2012) *Teaching as a Design Science: Building pedagogical patterns for learning and technology*. New York: Routledge.
- Law, N., Kankaanranta, M. and Chow, A. (2005) 'Technology-supported educational innovations in Finland and Hong Kong: A tale of two systems'. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, 1 (2), 176–201.
- Somekh, B. (2007) *Pedagogy and Learning with ICT: Researching the art of innovation*. London: Routledge.
- Tingleff Nielsen, L. (2013) *Teamsamarbejdets dynamiske stabilitet: En kulturhistorisk analyse af læreres læring i team*. København: Forlaget UCC.
- Weitze, C. L. (2016). *Innovative Pedagogical Processes Involving Educational Technology: Creating Motivating Learning Through Game Design and Teacher Competence Development in a Hybrid Synchronous Video-Mediated Learning Environment*. Aalborg Universitetsforlag. Ph.d.-serien for Det Humanistiske Fakultet, Aalborg Universitet
- Weitze, C.L. (2015) 'Pedagogical innovation in teacher teams: An organisational learning design model for continuous competence development'. In A. Jefferies, & M. Cubric (eds.) *Proceedings of 14th European Conference on e-Learning ECEL-2015* (629-638). Reading, UK: Academic Conferences and Publishing International. Proceedings of the European Conference on e-Learning.
- Weitze, C. L. (2014). 'Continuous Competence Development Model for Teacher Teams: The IT-Pedagogical Think Tank for Teacher Teams (ITP4T) in Global Classroom'. *Proceedings of the 13th European Conference on e-Learning ECEL-2014* (578-588). Copenhagen: Academic Conferences and Publishing International.
- Wenger, E. (1998) *Communities of Practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.