Individual and Collaborative Reflection at Work: Support for Workplace Learning in Healthcare

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Abstract: One approach to integrate CSCL in the workplace is the support of collaboratively reflecting on work, aiming at developing and evaluating tools that support reflection at the workplace. As an example, we describe the "Talk Reflection App" and its evaluation. On a conceptual level we show the relevance of articulation, shared artifacts, and the strong interrelation between individual and collaborative activities. On the empirical level we give examples of learning outcomes.

Introduction: Learning at the Workplace by Collaborative Reflection

A large part of (life long) learning happens informally at the workplace. *Reflecting* on one's own or on others' behavior is a typical mechanism of learning at the workplace (e.g., Boud, Keogh, & Walker, 1985). In this paper, using the case of reflection in a hospital ward, we present an analysis of and socio-technical solution for (collaborative) reflection and learning.

The example of the "Talk Reflection App" for collaborative reflection in hospitals demonstrates how methods and concepts of CSCL can be successfully transferred to workplaces.

In its essence, reflection helps to transform daily work experience into learning (Boud et al., 1985; Daudelin, 1996; Knipfer, Wessel, & Cress, 2013). Through reflection, people step back from an experience and explore it in order to come to new insights. Reflection can be initiated when some change or problem requires work practices to be adjusted. It involves a re-evaluation of the situation with a focus on the situation and affective reactions to it. Reflection is not just individual but has multiple levels: Actors of reflection can be individuals, teams or organizations. Individuals can reflect about own experiences and about experiences made in a team or an organization. Likewise, groups can reflect on individual or group behavior. The processes of *collaborative reflection* can be well described with models about collaborative learning (Cress & Kimmerle, 2008; Herrmann, 2003; Stahl, 2006), which intertwine individual information processing and re-evaluation of understanding with shared understanding and negotiation of meaning in groups. By a process of inference and abstraction, new insights, learning outcomes and changes in behavior can emerge on individual and group levels (Kimmerle, Cress, & Held, 2010; Knipfer et al., 2013).

Technical support for reflective learning has only been explored intensively in the context of education. A major aspect of this work is support for the externalization of experiences by structured communication (Baker & Lund, 1997), note-taking (Kim & Lee, 2002), drawing visualizations (Lin, Hmelo, Kinzer, & Secules, 1999) or tracking one's own learning history (Scott, 2010). This shows that for collaborative reflection experiences need to be articulated (Bannon & Schmidt, 1992), shared with others, and that other people need to refer to them. However, in the context of *learning at work*, which happens mainly informally (Eraut, 2004) and cannot rely on upfront preparation (Prilla, Herrmann, & Degeling, 2013), such support has not been widely researched. Besides support for specific situations like project debriefings (e.g., Boud et al., 1985), research mainly proposes tools such as learning journals and portfolios to externalize experiences (e.g., Scott, 2010). In a current project (http://www.mirror-project.eu/) tools are developed to collect and reflect on information about work experiences in several formats, including input on specific experiences in a diary format and ratings on mood during an experience. This information can then be shared and used by its authors and other as a "mirror" to reflect upon own or others' work experiences. Prior studies show that supporting tools should address four different kinds of *articulation*, forming a *reflection cycle* (Prilla, Degeling, & Herrmann, 2012)*: the externalization of experiences, of individual and collaborative reflection, and of outcomes of reflection (Figure 1).

Case Study: Support for Reflection in a Hospital with the "Talk Reflection App"

To explore reflection in in the field, we conducted a series of studies in different workplaces (Prilla et al., 2013). One was a hospital, where we worked with the staff of a ward caring for patients suffering from acute strokes and other neurological emergencies. Our work included interviews and observations on reflection and its role in daily work. It revealed that although there is a strong need for reflection, there is only little support for capturing experiences (e.g. quick notes), systematically revisiting them and following up on them afterwards (Prilla et al., 2012). In many situations, ideas for solutions were lost after reflection and it was difficult and time-consuming to remember experiences. In these cases, learning opportunities were lost. Based on these observations we developed a technical pilot, the "Talk Reflection App", to support medical staff in reflecting their conversations with relatives (Prilla et al., 2012). This topic was chosen because physicians stated repeatedly that although they felt a need to more systematically about think them (as they often had to convey bad news to relatives while keeping calm and acting professionally) their education did not prepare them for such situations and they therefore often sought help from other colleagues.
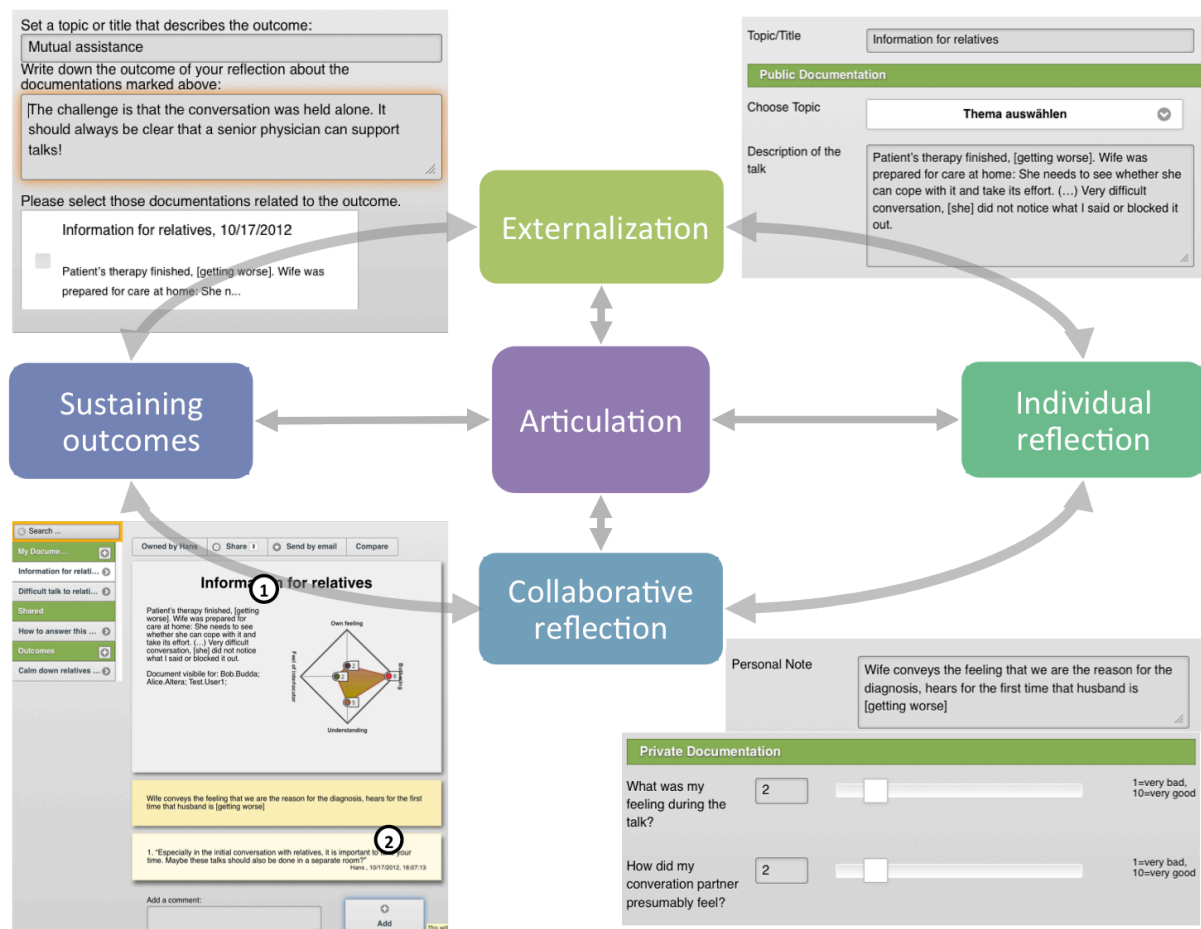

Figure 1: Tool support for articulation: Screen shots of the Talk Reflection App

The Talk Reflection App supports all forms of articulation mentioned above. First of all, medical staff can document problematic *experiences* ("public documentation", Figure 1, upper right corner). As this generates further effort for staff, this documentation was also used to replace the (mandatory) documentation of conversations with relatives in the hospital information system. To stimulate *individual reflection*, the tool asks the user to add own thoughts about the situation by answering questions such as how they felt during it and how worried they are about the situation ("private documentation", lower right). This externalization leads to thinking about the situation and considering why the experience was negative. A user can share this documentation (Figure 1, no.1) with others, who may document their own interpretations or experiences with similar issues (Figure 2, no. 2). This triggers *individual* and *collaborative* reflection among colleagues with similar experiences. Through the combination of own attributions to the situation and others' experiences, ideas or comments, the group can come to a new understanding of a situation and how to deal with it in future work. To preserve these *outcomes*, the app contains a section to document outcomes of reflection (Figure 1, upper left).

Reflection Support Applied: Observations of Talk Reflection App Use

The Talk Reflection App was used by five physicians in a four-week trial at the hospital. During this time, we conducted two reflection meetings to observe how the content in the app was used to reflect. Before the first meeting, adoption was low, but after this meeting, in which the notes of one physician were successfully used for reflection, the physicians started to use the app more intensively. In the 12 days between this meeting and the meeting closing the trial period, they documented seven conversations, made seven comments (some documentations had no comments) and wrote down four outcomes of reflection – all outcomes were documented during the final reflection meeting. Given that problematic conversations do not occur every day and that using the tool was new to the physicians, we consider the amount of documented conversations and outcomes as sufficient for the short period, although we had expected more comments annotating one's own and others' content.

Table 1: Example for reflection among physicians (translated from German by the authors)

Phase	Contents
Externalization of experiences	"Patient's therapy finished, [getting worse]. Wife was prepared for care at home: She needs to see whether she can cope with it and take its effort. (…) Very difficult conversation, [she] did not notice what I said or blocked it out."
Own comment (individual reflection)	"Wife gives me the feeling that we are the reason for the diagnosis, hears for the first time that husband is [getting worse]"
Comment of colleague (collaborative reflection)	"Especially in the initial conversation with relatives, it is important to take your time. Maybe these talks should also be done in a separate room?"
Discussion in group reflection meeting	Physicians remembered similar situations and stated that they are often also affected when they have to convey bad news. The reporting physician was also asked whether she had thought of asking a senior physician to help her.
Joint outcome	"The challenge is that the conversation was held alone. It should always be clear that a senior physician can support talks!"

Table 1 shows an example of how the app was used to reflect. A physician documented an emotionally challenging situation of a communication with a patient's wife. Her *own comments* show that she was emotionally affected, including a first idea for a reason (the wife had not been told about the state of her husband before). A *comment of a colleague* proposed to use a more appropriate room as a solution based on his experiences from own conversation. This indicates that the problem was not only be caused by the severity of the diagnosis, but also by the way the conversation was carried out. In the *group reflection* during a meeting, other physicians reported similar experiences and proposed that a senior could have been asked to join the critical conversation. They agreed on this proposal and documented it as a joint outcome. This shows how documentation of an individual experience turned into a change of team routines and how it affected individual practice as well as the whole team.

In this and other examples, the physicians were able to reconstruct their experiences in later situations, using the documentation as a memory aid. In meetings, verbal reports and additions to the content in the app triggered collaborative reflection, although the physicians had been reluctant to use the commenting feature in the app before the meeting. Afterwards, they stated that they found it valuable if others commented on their documentation, but that they had not known what to comment on others' documentation. Furthermore they liked the opportunity to write down reflection outcomes, but had to be reminded to do so during meetings – outside meetings, they did not document any outcome. This shows a gap between the value the physicians generally attributed to the features of articulation support and their usage. Obviously, guidance is needed within the app to use these features. Further work will address this need, the enhanced integration of the app into work practice, and user activation.

References

Baker, M. & Lund, K. (1997). Promoting reflective interactions in a computer-supported collaborative learning environment. Journal of computer assisted learning, 13, 175–193.

Bannon, L. & Schmidt, K. (1992). Taking CSCW Seriously: Supporting articulation work. Computer Supported Cooperative Work, 1(1), 7–40.

Boud, D., Keogh, R., & Walker, D. (1985). Promoting reflection in learning: A model. Reflection: Turning experience into learning (pp. 18–40).

Cress, U. & Kimmerle, J. (2008). A systemic and cognitive view on collaborative knowledge building with wikis. IJCSCL, 3(2), 105–122.

Daudelin, M. W. (1996). Learning from experience through reflection. Organizational Dynamics, 24(3), 36–48.

Eraut, M. (2004). Informal learning in the workplace. Studies in continuing education, 26(2), 247–273.

Herrmann, T. (2003). Learning and Teaching in Socio-Technical Environments. In T. J. van Weert & R. K. Munro (Eds.), Informatics and the Digital Society. Boston: Kluwer Academic Publishers.

Kim, D. & Lee, S. (2002). Designing Collaborative Reflection Supporting Tools in e-Project-Based Learning Environments. JILR, 13(4), 375–392.

Kimmerle, J., Cress, U., & Held, C. (2010). The interplay between individual and collective knowledge: technologies for organisational learning and knowledge building. Knowledge Management Research & Practice, 8(1), 33–44.

Knipfer, K., Wessel, D. & Cress, U. (2013). Reflection as a catalyst for organizational learning. Studies in continuing education, 35(1), 30–48.

Lin, X., Hmelo, C., Kinzer, C. K., & Secules, T. J. (1999). Designing technology to support reflection. Educational Technology Research and Development, 47(3), 43–62.

Prilla, M., Degeling, M. & Herrmann, T. (2012). Collaborative Reflection at Work: Supporting Informal Learning at a Healthcare Workplace. Proc. of Group 2012, (55–64). ACM.

Prilla, M., Herrmann, T. & Degeling, M. (2013). Collaborative Reflection for Learning at the Healthcare Workplace. In S. Goggins, I. Jahnke, & V. Wulf (Eds.), CSCL@Work: Case Studies of Collaborative Learning at Work. Springer.

Scott, S. G. (2010). Enhancing Reflection Skills Through Learning Portfolios: An Empirical Test. Journal of Management Education, 34(3), 430–457.

Stahl, G. (2006). Group cognition: Computer support for building collaborative knowledge. MIT Press.