

The Effects of Rationale Awareness on Individual Reflection Processes in Virtual Group Activities

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ABSTRACT

Reflection is an important part of professional work. Researchers and education practitioners have explored various ways of promoting the reflective thinking process towards educating reflective practitioners. Although group work and group learning activities have become increasingly important in modern society and education systems, an insufficient amount of effort has been put towards cultivating reflective thinking processes in the group setting. In addressing this research gap, they examined one reflection technique, namely, the technique of documenting and sharing rationales, in a virtual workspace for group learning. The authors studied the impact of this technique on the group activities through an exploratory classroom study focusing on the effects of one's awareness of the others' rationales, i.e., rationale awareness. In this paper, they reported the findings about the effects of rationale awareness on individual reflection processes in the activities. The authors' findings suggest that when rationales are articulated and shared in such an explicit manner (e.g., having a dedicated group space to present shared rationales), the development of individual members' reasoning skills seems to be very much influenced by the other members' capability or willingness to reason.

Keywords: Group Learning, Rationale Awareness, Rationale Sharing, Reflection Skill, Virtual Workspace, Visual Group Activities

INTRODUCTION

In this paper we discuss an exploratory study that helped us better understand a member's reflection process in teamwork. Schön described professional workers as reflective practitioners (Smith, Fitzpatrick, & Rogers, 2004). He ob-

served that during problem-solving processes, professionals take time to reflect on their approaches, and modify and improve the methods if necessary. Schön (1983) called this *reflection in action* and argued its important role in the process. Schön (1983) also emphasized the importance of teaching and learning reflective

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practice in the education context, and investigated how to coach students in higher education to become more reflective (Smith et al., 2004). Informed by his work, there have been many HCI studies about support for reflective practitioners in different disciplines such as teacher education (Jay & Johnson, 2002; Lee, 2005), software engineering (Fischer, 1994), and design (Baumeister, 1982; Smith et al., 2004).

Although researchers have explored various techniques to promote individual reflective thinking processes (see Moon's article (1999) for a comprehensive list of techniques for supporting reflection), previous studies have not paid enough attention to ways of fostering individual/group reflection in the group setting. This is surprising because working in groups has become an increasingly important part of knowledge workers' professional activities in many fields. Virtually shared workspaces removed the constraint of co-presence from group activities (Dourish & Bellotti, 1992) and it is common practice for knowledge workers to work in shared virtual workspace with their group members. It is meaningful and urgent to explore ways of cultivating practices on reflection in modern society.

Although there are many techniques for promoting reflection in individual workspaces, the different working contexts make it unfeasible to directly apply these to the shared virtual workspace for at least two reasons. First, environment plays an important role in reflective thinking processes (Song & Grabowski, 2005). Individual workspaces and virtually shared workspaces are very different environments. The former affords privacy and emphasizes personal space (e.g., interruption is often considered negative in such an environment and should therefore be avoided), whereas the latter supports sharing, coordination, and co-operation, and puts an emphasis on knowledge co-construction. These different characteristics put different requirements on the reflection techniques to be used in these environments. Secondly, group activities are often complex and dynamic. People influence each other in many ways in group work. These mutual influ-

ences often affect group performance such as outcomes of group decision-making processes. Hence techniques successfully used to promote reflective thinking process in the individual workspace may have an unexpected impact on group activities.

Just as group work has become pervasive in professional activities, group learning activities have become popular choices in pedagogy for higher education (Bratitsis & Dimitracopoulou, 2008; Lipponen & Hakkarainen, 2004). Various kinds of collaborative systems have been designed and investigated for supporting group learning activities (Arinze, 2012). There is however an insufficient number of studies about promoting reflective thinking processes in group learning activities. Motivated to foster reflection in group learning activities, we are interested in examining different reflection techniques in virtual workspaces and studying their impact on group learning activities. In this paper, we report our investigation of one such technique, namely, the technique of documenting and sharing rationales in the virtual group workspace. A rationale is an explanation of the reasoning underlying decisions, conclusions, and interpretations. Prior studies have shown that rationale articulation is beneficial to one's performance of cognitive tasks (Kolodner & Simpson, 1989; Riesbeck & Schank, 1989). Documenting rationales is considered to be a common technique to promote reflective thinking (Fleck & Fitzpatrick, 2012). Documenting these rationales externalizes one's reflective thinking process, and the documented rationale is the evidence and outcome of this process. It is therefore reasonable to assume that the effects of these shared rationales on group activities imply the impact of an individual's reflective thinking process and outcome on the group. Taking this perspective, our investigation has focused on understanding the effects of these shared rationales in group learning activities. Specifically, we conducted an exploratory classroom study in which we designed an idea generation task and an idea evaluation task that required the participating students to document and share their rationales in virtual group workspace;

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