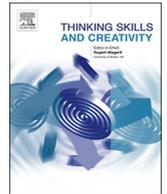




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Characterizing and unpacking learning to learn together skills in a wiki project in primary education



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ABSTRACT

Learning to learn together (L2L2) skills are widely acknowledged as some of the most important 21st century skills that enable learners to participate in a digital and global society. This paper examines how L2L2 skills emerged in a small-group wiki-based collaborative project and in the context of face-to-face real-classroom practice, in order to conceptualise L2L2 and identify the key features of the skills involved. To this end, our paper reports on an empirical study with primary school students who worked in two different modes of interaction, namely face-to-face in-pair discussion and on-line wiki-based between-pair discussion. The study identified and defined key features of four L2L2 skills, namely distributed leadership, mutual engagement, group reflection and group assessment, all of which emerged to a similar extent during the wiki project. It was found that a few distinctive features of L2L2 skills are related to different stages of task resolution, wiki affordances and different modes of collaboration. Therefore, this empirical study argues that technology and pedagogy are equally important and required to promote L2L2 skills in primary school classrooms and also it discusses some educational implications for the design of more effective technology-enhanced pedagogy.

1. Introduction

Learning to learn together (henceforth L2L2) has been defined as a complex competence that emerges in a group or collectivity with the goal of learning how to be an effective facilitator of group learning (Yang, Wegerif, & Pifarré, 2013). L2L2 skills will equip citizens for life in the knowledge society in today's global age, in which distributed teams working together to solve problems and inquiring into issues are increasingly common. Nevertheless, teaching how to learn collectively and how to develop skills that allow individuals to learn to learn with others is one of the greatest educative challenges (Mercer, 2013; Wegerif, 2015).

In the context of web-mediated learning, researchers argue that learning is also about how to learn together in an online community. Research in the area of computer-supported collaborative learning (henceforth CSCL) has resulted in an extensive account of how communication technologies can provide scaffolds to facilitate and support collaboration and learning (Jeong & Hmelo-Silver, 2016). Likewise, from an L2L2 perspective, technology can also be seen as an essential facilitator of collective thinking and actions because technology provides external representations of group work, enables multimodal interaction along with talk and can support rich new forms of dialogue that highlight differences between perspectives, and make ideas and reasoning processes more explicit (Hennessy, 2011; Mercer, Hennessy, & Warwick, 2017).

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Thus, the relevance of learning to learn with others using technology is critical in preparing children to adapt and become flexible in these fast-changing times. Apart from some preliminary work (e.g. the Metafora Project, <http://www.metafora-project.org/>), little research has been conducted in this area (Schwarz, de Groot, Mavrikis, & Dragon, 2015) and little is known about what L2L2 skills are, what distinguishing features L2L2 skills have, how they emerge in action and how they are used for solving collaborative challenges, how they unfold during a collaborative project, or how L2L2 skills are linked to specific technological features.

Our study lies within this line of research and our paper pursues a two-fold goal. First, our research attempts to provide evidence-based understanding of L2L2 skills by outlining features of these skills emerged from small-group wiki-supported collaborative work. Second, we intend to find out how these L2L2 skills are employed by learners in group work and the difference and relations of these skills between in-pairs face-to-face interaction and in between-pairs wiki-written interaction.

In addition, we hope to contribute to the discussion about pedagogical tools to be considered for directing technology-mediated peer interaction in order to support the development of L2L2 skills. To this end, the paper focuses on studying how the wiki facilitates L2L2 skills in two modes of collaboration: in-pairs face-to-face interaction and between-pairs wiki-written interaction.

2. Learning to learn together

There is extensive educational research arguing that the benefits of promoting learning to learn (henceforth L2L) skills are a set of capacities and meta-strategies that help the individual learner face new challenges. L2L skills have been emphasised to develop flexible and adaptable thinking (e.g. Resnick, 1987; Claxton, 2004; Fredriksson & Hoskins, 2007). However, the consolidation of a global networked knowledge society in which collaboration is a central tenet leads to the necessity to incorporate the role of the “others” as a key variable in promoting learning. In the same vein, Van der Linden and Renshaw (2004) conclude that, in order to understand how children learn collaboratively, researchers have to reduce the gap between cognitive aspects involved in collaborative learning in contexts where learning goals are relatively fixed, and collaboration in socio-cultural contexts with relatively open learning goals. Using this approach, and in the context of mathematics, Dekker, Elshout-Mohr, and Wood (2006) state that the challenge in promoting collaborative learning is to direct peer interaction towards four characteristics that include cognitive and social aspects, namely “talk about the concepts to be learned”, “elaborative contributions from the participants”, “a continuous attempt and regulation to achieve a shared understanding of concepts” and “making productive use of the meditation-means (tools) that are available”

Additionally, Rupert Wegerif has extended these arguments by coining the concept of learning to learn together (L2L2) skills as a key concept to prepare students for the knowledge age (Wegerif, 2015, 2013; Wegerif & De Laat, 2010). Wegerif and collaborators argue that L2L2 skills can be seen as an extension of the individual approach of L2L that incorporates a social conception of learning which combines the dimension of task management (how to organise complex inquiries with multiple stages and strands) with the dimension of social relationships (working with different personalities, expectations and identities in order to participate constructively in learning as a collective accomplishment).

These researchers also lay claim to the importance of designing pedagogy capable of promoting L2L2 in education. Wegerif and collaborators’ educational proposals are based on four theoretical axes: a) dialogic theory as an inclusive theoretical framework for describing, designing and evaluating collaborative learning; b) shaping and widening interaction dialogues through “thinking together” talk; c) the central role of technology in promoting inside thinking and L2L2 skills. Technology enables collective thinking because technology makes it possible for a dialogue to take an external form that allows one person or a collectivity to reflect on ideas; in this context, collective thinking combines the external visible technological moment of thinking with the internal, invisible and uniquely moment of reflection (Wegerif, 2015:437); and d) the promotion of cultural change by teaching skills and competences to groups. This cultural change involves people and tools, including, mainly, communication technology.

These theoretical and pedagogical principles served as working hypotheses in the R&D EC project entitled ‘Learning to learn together: a visual language of the social orchestration of educational activities – Metafora’. This project focuses on the design of a technological platform for supporting L2L2 in solving problems in Science and Mathematics, and served as a starting point in clarifying the unarticulated L2L2 concept (Schwarz et al., 2015). Based on literature review, Yang, Wegerif, and Jones (2012) identified four key aspects of L2L2:

- a) **Distributed leadership** was characterised as a social and situational process that can emerge through different forms of participation. Five different leadership strategies were highlighted: namely, turn management, argument development, planning and organizing, topic control and acknowledgement.
- b) **Mutual engagement** can be realised through and around shared objects. Learners are mutually engaged through critical discussions, creative design and manipulation. Therefore, shared objects are key referential anchors for mutual engagement and understanding.
- c) **Peer-group assessment** is about the evaluation of individual and group learning. Individual assessment focuses on judgment of peers’ feedback and experience and expressing personal emotions in line with the general atmosphere. On the other hand, group learning assessment refers to evaluating the work and directing it towards useful group outcomes, distribution of labour and expertise aimed at group goals and developing togetherness and trust in the group in order to lead to deeper discussion.
- d) **Group learning processes** dynamically proceed and evolve in relation to the group’s shared mental models. To make these knowledge procedures explicit to the group, three distinct temporal opportunities for group reflection around an online discussion map were identified: i) Beginning: planning group task resolution, reflecting on individual preferences, collective responsibility and intended level of participation; ii) Middle: ongoing reflection on group functioning, regulation and managing task resolution,

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