Chapter 8

Structuring CSCL through Collaborative Techniques and Scripts

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ABSTRACT

This paper is rooted in the research field of Computer Supported Collaborative Learning (CSCL), where the debate is lively around whether and to what extent structuring the interactions among students enhances the effectiveness of the collaborative process. The paper discusses two different design approaches to structuring collaboration: the former approach, adopted in the context of an Italian online course, is based on the use of a set of collaborative techniques, while in the latter, proposed in a German context, collaboration scripts are used to guide students step-by-step. The study describes and then compares the strengths and weaknesses of the two approaches. What can be learned from the two experiences? Is there any possibility – and with what advantages – of integrating the two approaches, so as to gain from both?

INTRODUCTION

In CSCL contexts, the debate around how to support students’ collaboration is quite lively (Pozzi & Persico, 2011). In particular, the focus is on whether and to what extent structuring the interactions among students can enhance the effectiveness of the collaborative process. The debate is generically referred to as “scripted vs. free collaboration” (Demetriadis, Dimitriadis, & Fisher, 2009).

Demetriadis and colleagues have recently stressed the need for an international arena addressing the issue of whether and to what extent
it is worthwhile structuring and guiding collaboration in CSCL. Indeed, on the one hand there are studies claiming that free collaboration may fail to engage all team members in productive interactions (Hewitt, 2005; Bell, 2004; Liu & Tsai, 2008; all cited in Demetriadis et al., 2009); on the other hand, there is a hypothesized danger of over-scripting the activities (Dillenbourg, 2002), in that too much guidance (or an excessively structured activity) may hinder learners’ creativity and freedom, thereby causing a loss of flexibility (Dillenbourg & Jermann, 2007).

As a matter of fact, the level of structuredness of a collaborative activity may vary considerably, ranging from unstructured or moderately structured activities to highly structured ones.

Some instructional design approaches suggest that the level of structuredness should be determined by choosing among different collaborative techniques at macro design level. Each technique usually specifies the nature of the task, the time schedule and the group composition. An example of moderately structured technique is the Discussion, where groups are required to perform a common task (for example collaboratively writing a document) within a given time schedule.

Apart from time constraints – this is a technique where interactions among students take place freely, without pre-determined procedures. Highly structured techniques, such as for example the Jigsaw, are those where the social structure of the groups, or the kind of task, and/or even the time schedule of the activity, are more strictly defined, so that interactions are “guided”. Examples of such techniques are the Case Study, Role Play, Brainstorming, Peer Review, Pyramid, etc., each one presenting different degrees of structuredness. The techniques are usually chosen by the designer and adapted to the setting prior to the educational event, through an instructional design process taking into consideration various variables, such as course objectives and content, characteristics of target group and context constraints. They also meet specific learning needs and match different teaching methods, in just the same way as in face-to-face settings (Persico, Pozzi, & Sarti, 2009). Techniques are then communicated to the tutor / teacher, who will be in charge of both proposing them to students and facilitating the interactions as the process winds on.

Other finer structuring approaches aim to guide students step-by-step through the use of collaboration scripts within a given activity. Scripts may determine even at the finest grain the social interactions of students (social scripts), the contents to be discussed (semantic/content scripts), or the structure of the argumentation (argumentative scripts; e.g., Stegmann, Weinberger, & Fisher, 2007). The theoretical idea behind the use of scripts is that learners may have different prior collaboration competence and experience. If this competence is sufficient (e.g., they know how to attack an argument in a counter-argument in a given domain), then no scripting is required. If it is not sufficient, learners will need external guidance on the micro level to optimally benefit from working on the task (Kollar, Fischer, & Slotta, 2007) – a problem that can be called under-scripting.

In this paper two CSCL approaches are described. The former is oriented to provide a structure to the activities at “macro-design” level, by choosing more or less structured techniques and communicating them to students by simply describing them with natural language; the latter is based on the idea to further structure interactions through the use of scripts (at a “micro-design level”) to guide students’ interactions step by step.

The paper originates from a study conducted within STELLAR, the NoE on Technology Enhanced Learning funded within the 7th FP. The aim of the network is to integrate and unify the research efforts in the field of TEL. In line with this, the paper is a first attempt to juxtapose the different approaches adopted by two distinct research teams with two main aims: on the one hand, to reflect on the pros and cons of these approaches in such a way as to derive instructional design principles; on the other, to study the feasibility of a “contamination” between the two approaches and explore the possible consequences of blending them.