A FIELD STUDY ON SCRIPTED COLLABORATION IN A VIDEO-BASED LEARNING ENVIRONMENT

Scripted peer annotation and peer assessment

CSCL-scripts aim to guid collaborative learning processes. The presented script scaffolds peer annotation and peer assessment tasks about instructional videos. To achieve a deeper understanding of the learning content active learning is stipulated through tasks like adding semantical annotations or defining time-based assessment questions that peers subsequently will have to answer.

Phase	Group A	Group B	ToC	Tag	Comment	Question	Answer
1. Annotate video	video 1	video 2	●	●	●		
2. Generate questions	video 1	video 2	●	●	●	●	
3. Run assessment	video 2	video 1	●	●	●		●
4. Open discussion	all hypervideos		●	●	●		●

Hypotheses

The aim of this study is to prove whether the conceptualized CSCL-script can be applied to instructional videos in a way that the occuring collaborative group interactions are effective. Therefore disadvantages of open group collaboration [3], e.g. unequal participation, and the passive perception of eLectures have been taken into consideration. The following four hypotheses are based on a methodological framework to determine and monitor effective interactions in online groups [1]. The covered variables refer to two main dimensions: participation and cohesion (see figure 2).

H1: The CSCL-script primarily enables effective interactions in collaborative groups.

H2: Effective group collaboration is independent of the video.

H3: The scripts contributs a balanced task load among group members.

H4: The script fosters an intensive engagement with the video content.

Method

Two tutorial lessons in Supply Chain Management (SCM) of a master program in business administration at the International Institute (TU Dresden) were substituted by online instructions of the CSCL-script. 32 international students were obliged to participate in order to get credit points for passed tutorials and to prepare for the exam one month later. For the first two script phases 10 German and 22 participants from abroad were separated in groups of two or three persons following the pattern of the pre existing tutorial groups that consisted of four to five persons. In the third phase two groups a time were merged into the original tutorial group. We selected seven instructional videos (lecture recordings as narrated slide presentations, 8 - 75 minutes long) from universities world wide that represented the learning content of the course. The videos as well as the script and group management was implemented in the newly developed video-based learning environment.

SCM-Lab: Video-based Learning Environment

The Multiuser edition of the blogging software Wordpress has been extended to facilitate CSCL-scripts and interactive videos. Each group became its own blog that comprised temporal annotations (e.g. to add tags, questions and answers) directly in the frontend (see figure 1).

Used open source components:

- **Wordpress MU:** Content and user management extended by a plugin to define and play the script;
- **VI-TWO:** Javascript framework and HTML5 player for interactive videos;
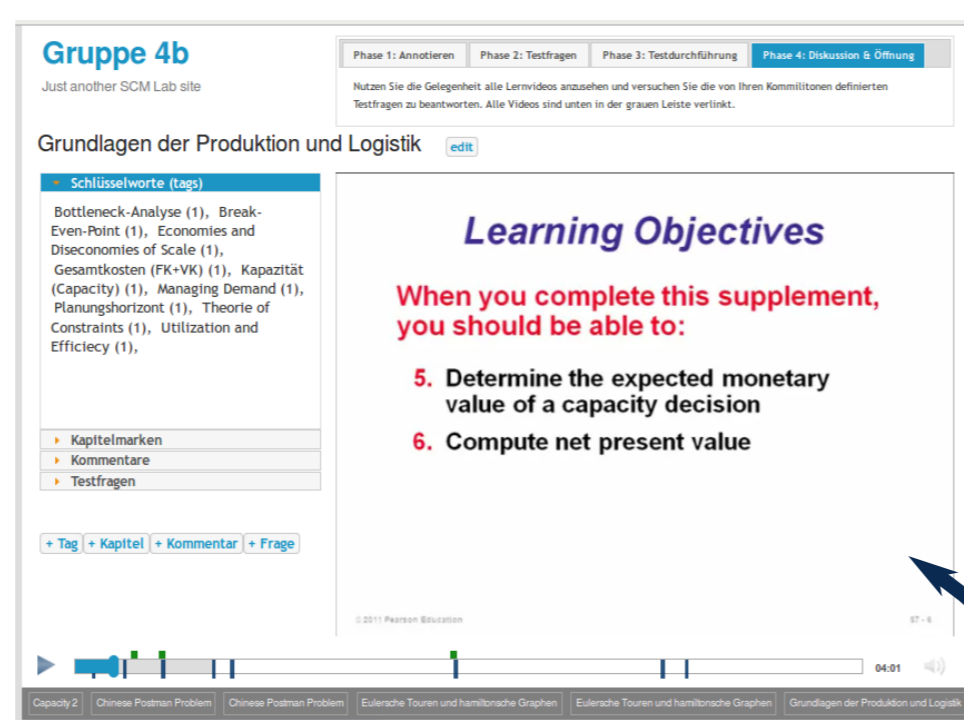- **Mozilla Popcorn Maker:** multitrack timeline video annotation tool.

Figure 1: SCM-Lab video player interface.

Evaluation

For quantitative measures process data has been captured during the runtime of the script. About 104.000 log file entries were collected. Each entry contained user name, group name, date, time and the user interactions, especially regarding the video playback behaviour and the editing of annotations and peer assessment. Further more the structure of the 16 resulting hypervideos indicated a qualitative measure. Due different groups were charged with identical video footage the number, content and temporal position of annotations could be compared. Also the anchored discussions [2] and item difficulty of the user generated assessment tasks were evaluated.

Results

Participants reported several technical interruptions that influenced their overall feedback negatively. Nevertheless they annotated on average 7.4 chapter marks (std: 5.0), 8.3 tags (std: 4.6), 2 comments (std: 4.2) and 2.6 questions (std: 1.7) per video. **H1** could not be confirmed because only one group collaborated effectively and five groups collaborated roughly effective so that the majority of groups is behind the expectations. **H2** is neither valid nor invalid. The correlation (Kendalls tau) between all variables and the video is neither significant for H2, nor significant for the counter-thesis. **H3** could be verified. Figure 2 states an equal participation of group members. This applies throughout all script phases where participants fulfilled their tasks. **H4** could be stated as valid. In average each Participant watched the video three times for a average duration of 99 minutes. Captured click activity rates prove that everyone watched the entire video at least one time.
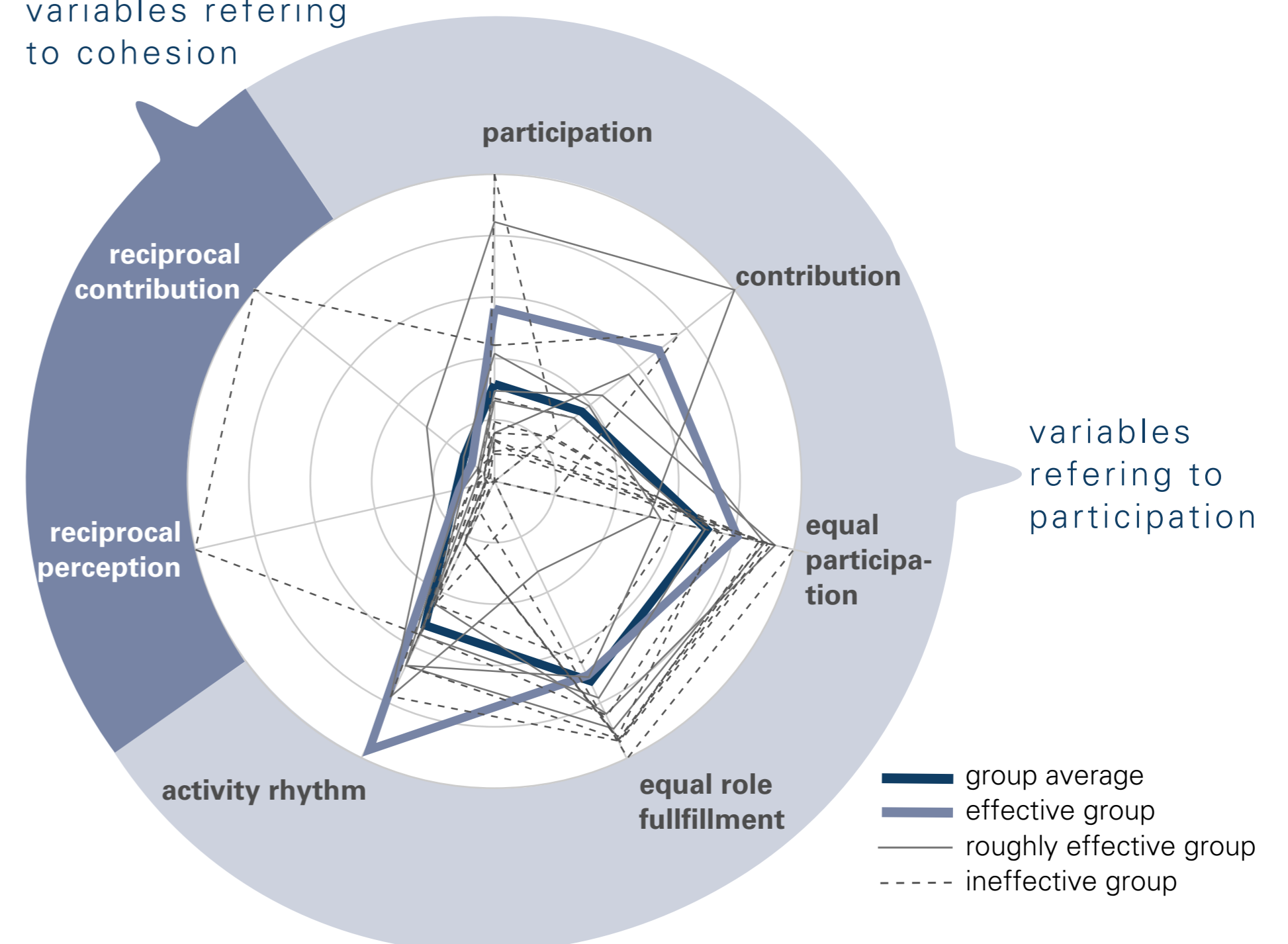Further results can be obtained from **http://tiny.url/scripted-video**

Figure 2: Radar chart on effective group interactions.

Literature

[1] **Calvani, A., Fini, A., Molino, M., & Ranieri, M.** (2010). *Visualizing and monitoring effective interactions in online collaborative groups.* British Journal of Educational Technology, 41(2), p. 213–226.

[2] **Trahasch, S.** (2006). *Skriptgesteuerte Wissenskommunikation und personalisierte Vorlesungsaufzeichnungen.* Berlin: Logos Verlag.

[3] **Weinberger, A., & Fischer, F.** (2012). *3.5 Computergestützte Kooperationsskripts.* In J. Haake, G. Schwabe, & M. Wessner (Eds.), CSCL-Kompendium 2.0: Lehr- und Handbuch zum computerunterstützten, kooperativen Lernen (2. ed., pp. 234–239). Oldenbourg Wissenschaftsverlag Verlag.

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