Collaboration and Role Taking in TEE

- The research field on Technology Enhanced Education (TEE) suggests that the collaborative dimension is one of the most important factors to take into account when thinking of ensuring a high level of sustainability of elearning.

- Although several scientific works confirm that in CSCL the spontaneous collaboration does not necessarily lead learners to play functional and complementing roles that foster group discussion, knowledge sharing and argumentation, we highlight lacks in this sector, mainly related to the role taking in collaborative group.
Collaboration Scripts

- In order to obviate this difficulty, the scientific community has sustained the validity of new theoretical approaches related to CSCL scripts.
- Collaboration scripts are instructional sequences that organize learning activities into phases defined by using five different items: activity (or activities) that learners have to perform, group composition, assignment of roles (to learners within the groups), interaction modes and phase timing.

- These scripts are fundamental to guide the collaboration and they are expected to facilitate learning by guiding peers’ collaboration and engaging all participants in roles and activities that trigger the activation of their cognitive and metacognitive processes.

Scripted and Emergent Roles

- With respect to CSCL roles identification, two perspectives emerge in the related literature: scripted roles and emergent roles.
  - The scripted roles are assigned by teacher (or other support actors) to structure the collaborative learning scenario, they improve both learning processes and their outcomes.
  - The scripted roles can be content-oriented or process-oriented.
  - The emergent are roles that spontaneously raise or are negotiated by group members.

Several roles for group discussion (Persico&Pozzi, 2010)
Modelling Collaboration Activities

- IMS-LD is a modeling language used for script definition and execution.
  - The concept of role, used in IMS-LD, conflicts with the semantics usually assigned to the concept of group in CSCL.
- The authoring tools (RELOAD, CopperAuthor, COSMOS, LAMS, COLLAGE) developed are examples of general purpose editors to formalize the collaborative activity flows.
  - These authoring tools have the limitations of IMS-LD, with respect to roles and groups.

The Proposed Approach

- A taxonomy for scripted roles and an extension of the IMS-LIP specifications in order to take care about roles played by learners during the CSCL scripts execution and the score of proficiency with respect to their performances.
- The use SIOC schema in order to simply link roles with collaborative environment.
- The application of SNA to evaluate the learners playing scripted roles within collaborative environments (represented with SIOC) in the context of a CSCL script described using IMS-LD.
The CSCL Script Lifecycle

- In Learning Design phase instructor designers map empty groups to one or more roles defined in the selected SIOC environment.
- The Profile Update phase that uses data (in SIOC format) produced during the collaborative session, in order to update Learner Profiles with new information (obtained by SNA).
- The LMS services are also used (during Execution phase) to execute the instantiated IMS-LD document and to activate the SIOC-enabled collaborative services.
- During Execution phase, the LMS services also tracks the actions/data (in SIOC format) of users in the collaborative environment.

Application of SNA and NTA

- This work deals with the case of collaborative sessions based on Discussion Forums, but the approach is general because SIOC is able to model data coming from several collaborative tools (e.g. blogs, wikis, instant messaging, etc.).
- At the same time, in SIOC data there is a registration of the messages’ content and this allows the application of Network Text Analysis (NTA) to messages’ contents. In particular, the analysis is focused on how the argumentations of a learner are central with respect to the treated knowledge domain.

Examples of Scripted Roles and their relative SNA/NTA indexes:
Conclusions

- The authors have extended:
  - the IMS-LD design phase
    - by exploiting SIOC in order to define collaborative environments and their admissible roles
  - the IMS-LD instantiation/enactment phase
    - by extending the learner profiles by using information on the ability of learners in playing some specific roles
  - the IMS-LD execution phase
    - by evaluating the learners’ role playing, using the Social Network Analysis.

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  www.aristotele-ip.eu and www.aliceproject.eu