Computer-based Analysis and Visualization of Collaborative Learning Activities (CAViCoLA)

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CAViCoLA ERT

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Cavicola ERT composition

- **ERT Leader**
  - Andreas Harrer, University Duisburg-Essen - DE

- **Steering committee**
  - Andreas Harrer, University Duisburg-Essen - DE
  - Nikolaos Avouris, University Patras - GR
  - Yannis Dimitriadis/Alejandra Martinez, University Valladolid - E
  - Nikol Rummel/Hans Spada, University Freiburg- DE

- **Consortium**
  - *University Duisburg-Essen - DE*
  - *University Patras - GR*
  - *University Valladolid - E*
  - *University Freiburg - DE*
Background and objectives

- Reinforce existing strong bonds to previous and current projects (JEIRP) within Kaleidoscope
  - E.g. Duisburg and Valladolid teams participated in IA, ICALTS (and CCI-IA)

- Establish and consolidate existing common and complementary work among ERT teams

- Create and disseminate knowledge within the Kaleidoscope and TEL communities
  - Proposal of a new integrated process model for IA
  - Setup of new single-site and cross-site case studies
  - Creation of visualization techniques and tools
  - Cross analysis of IA data using coding schemes, common data format and tools
CAViCoLa process model
Cross-site studies (Patras-Duisburg)
Cross-site studies (Freiburg-Patras I)

- Adaptation of rating scheme
  - rating tool originally developed by Freiburg team (Meier, Rummel, & Spada, 2007) successfully adapted to fit the data from the Patras team’s studies with Synergo (Avouris, Margaritis, Komis, 2004)
  - result: new rating handbook, illustrated with examples from Patras case studies; collaboration quality assessed on six dimensions

- Joint experiment
  - goal: use rating tool as the basis for giving adaptive feedback to students with the help of a feedback scheme
  - adaptive feedback implemented in students’ regular courses, in the framework of a joint experiment (currently run in Patras)
Algorithm building activity using Synergo
Cross-site studies (Freiburg-Patras II)

- application of ActivityLens (Avouris et al., 2007) to analyze data from Algebra project (Diziol et al., 2007)
  - development of a rating scheme that evaluates students‘ collaboration in mathematics from two different perspectives
  - restructuring of activities’ dataset and modifications to ActivityLens tool enabling the integration of the rating scheme
- outcome
  - ActivityLens was successfully adapted to be used for interaction analyses based on a rating scheme
  - as the interaction analysis of 10 dyads shows, the developed rating scheme reliably assesses students‘ interaction
Screenshot of analysis with ActivityLens

- Logfiles
- Rating 1st perspective
- Rating 2nd perspective
- Video (screen capture)
Visualization techniques and tools
(Weaver: community and time info)

Projection into one time-slice using a filter

The authoring network in a timeline

www.LTEE.gr/IA_Kaleidoscope_Symposium
Visualization techniques and tools (Samsa: Role detection)

Teacher-guide

Teacher-collaborator
Coding data format and interoperable tools (I)
Coding data format and interoperable tools (II)
Coding data format and interoperable tools (III)
Lessons learned and future directions

- Interoperability and common process models
  - Need for common understanding and data-tool sharing

- Case studies
  - Real-life use of IA tools that provides evidence for their usefulness

- Visualization
  - Flexible tools for effective use
  - Importance of SNA representations
A sample of CAViCoLa publications

- **Cavicola Process model:**

- **Duisburg-Patras cross case study:**

- **Visualization tools:**

- **Freiburg-Patras cross case studies:**

- **Dissemination:**
  - Cavicola Workshop, CSCL SIG, Kaleidoscope Alpine Rendevous, Villars, Alpes, January 2007
CAViCoLA prospects on Interaction Analysis

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Research directions

- Common data format and interoperable tools
- IA-aware architectures for integration in TEL platforms
- Efficient and effective coding schemes
- Common conceptual models for interaction analysis
- New case studies for real-world use
- Understanding and effective use of multiple source IA indicators