

ECER 2006 Geneva

Main Conference: 13 - 16 September 2006

Post-Graduate and New Researchers' Pre-Conference:
11 - 12 September 2006

Proposal Form

A. Your contact details

Please note that the following details will be used as your correspondence address. Please inform the EERA Office by email if you cannot be contacted at that address during the summer.

Title (Mr, Mrs, Ms, Dr, Prof):	<input type="text" value="Mr"/>	First name	<input type="text" value="François"/>
Family Name/Surname:	<input type="text" value="Lombard"/>		
Name of Institution:	<input type="text" value="University of Geneva"/>		
Address of Institution:	<input type="text" value="54 Rte des Acacias"/> <input type="text" value="1227 Carouge Genève"/>		
Postcode:	<input type="text" value="1227"/>		
Country:	<input type="text" value="Switzerland"/>		
Email:	<input type="text" value="Francois.Lombard@tecfa.unige.ch"/>		
Telephone:	<input type="text" value="+ 41 22 379 93 86"/>		
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Will you be attending the conference? **Yes** /* Will you be presenting? **Yes** *

B. Contact details for the other contributors

Only names listed here will appear against the proposal in the final programme

Title (Mr, Mrs, Ms, Dr, Prof):	<input type="text"/>	First name	<input type="text"/>
Family Name/Surname:	<input type="text"/>		
Name of Institution:	<input type="text"/>		
Email:	<input type="text"/>		

Will this person be attending the conference? **Yes** / **No** * Will this person be presenting? **Yes** / **No** *

Title (Mr, Mrs, Ms, Dr, Prof):	<input type="text"/>	First name	<input type="text"/>
Family Name/Surname:	<input type="text"/>		
Name of Institution:	<input type="text"/>		
Email:	<input type="text"/>		

Will this person be attending the conference? **Yes** / **No** * Will this person be presenting? **Yes** / **No** *

**Please delete as necessary*

Title (Mr, Mrs, Ms, Dr, Prof): First name

Family Name/Surname:

Name of Institution:

Email:

Will this person be attending the conference? **Yes / No** * Will this person be presenting? **Yes / No** *

** Please delete as necessary*

C. Details of your proposal

Title of Proposal (use title case)

Wiki based knowledge co-construction by high school students : Analysis in the framework of *learning by writing* of an experiment spanning 4 years of biology curriculum in various degrees and curricula.

Language of Presentation (if not English)

French German Italian

Format of Presentation

Please choose ONE format only by indicating with an x in the box

Paper Poster Round Table Research Workshop Symposium

Where do you wish to place your proposal in the Programme?

Please choose ONE conference only by indicating with an x in the box

Pre-Conference **OR** **Main conference**
(Network 21, Postgraduate network only)

If the Main Conference, please indicate your preferred network by entering its number in the box (see page 9)

1st choice of Network **2nd choice of Network**

Audio Visual requirements

Overhead Projector **Yes/** ** Please delete as necessary*

Computer projector: **Yes/** ** Please delete as necessary*

NB: Equipment requirements must be specified here. We cannot provide equipment requested at a later date.

Proposal Information

Word Count - Paper, Poster, Workshop, Roundtable: total 400-600 words, Symposium: 400-600 word overview plus a 150-200 word abstract for each paper in the symposium. N.B. The total number of words applies to all the boxes.

Expand the boxes to include your text.

In order to evaluate the scientific quality of proposals, the following information must be provided

Description of the paper – e.g. topic, research question, objective, purpose, value, conceptual or theoretical framework, state of the art:

This paper reports on the design process of a preliminary, Wiki-based CSCL (*Computer Supported Collaborative Learning*) learning environment. This took place during close to 4 years within 6 science classes (Biology) for high school pupils aged 16-20 in Geneva. Typically students, guided by questions, investigated and experimented, in order to write an article in a Wiki then present it to - and discuss it with - the class. This pedagogical design is inspired by SEED project (Dillenbourg & Schneider, 1995) and draws a lot on *writing-to-learn* (Klein, 1999).

Writing has been often used to engage students in knowledge building, in the *writing-to-learn* paradigm (Klein, 1999) and in the CSCL paradigm. (Scardamalia & Bereiter, 1994). In addition research has shown that knowledge building can be enhanced through computer-supported knowledge building communities (Schneider et al. 2003). Writing by students contributes to building a larger collective body of knowledge whose elements can be edited, manipulated and put in relation. (Scardamalia & Bereiter, 2002).

Design Based Research believes that building a design "is central in efforts to foster learning, create usable knowledge, and advance theories of learning and teaching in complex settings" (Design-Based_Research_Collective, 2003).

The objectives were to create an efficient design to help biology students build a truly scientific capacity to think critically on experimental facts; to develop scientific literacy; to develop in-depth reasoning rather than learning by rote; to develop efficient knowledge-building techniques; to increase student autonomy in their learning. Also to promote a positive attitude to discovery and building their own knowledge.

The pedagogical design iterative process will be described, and its results presented and discussed. The study reports how the framework of the design evolved along the design process: the evolving role played by the Wiki in which the writing occurred, and which supported the learning processes; the knowledge-building and conceptual skills acquired and discusses the main tradeoffs: *Locus of ideas* : Students / Formal; *Locus of control* Student / Teacher; *Teacher Role* : Guide / Authority (Sandoval, 2004) that had to be addressed in the design

Methodology or methods/research instruments or sources used:

An analysis of the different phases of this experiment used the following data:

- Wiki records of successive versions of the work of students,
- student survey forms,
- journal of discussion with co-teacher after each lesson in one course,
- exam results,
- interviews one year after (near the end of their first university year),
- other informal data that was collected.

Firstly we will describe how some of this data was used - informally triangulating multiple sources- along the process to iteratively improve the design.

Secondly we will use the available data to assess to which extent the objectives were met, mostly using structured qualitative data analysis (Miles & Huberman, 1994).

Namely we will try and draw out the outlines of an efficient design, in particular the various roles of the Wiki at different stages in supporting each teaching course; We will also focus on the effects of changes in design along the process on types of skills produced, notably the type of writing skills found in the Wiki , argumentation and knowledge-building techniques used by students; changes in involvement, autonomy and attitudes of students will be sought; implications on the role of the teacher, and type of interaction will be searched.

Conclusions or expected outcomes or findings:

Major findings include:

Dealing with the questions that guided the student's inquiry appears to be a critical aspect of the design.

Their focusing role as a guiding tool gives them a critical role in the design, and reveals autonomy: who selects appropriate questions, how are questions answered (Maulini, 2004).

The tradeoff between guaranteeing correctness of the facts and building a truly scientific capacity to think critically is a challenge for tuning the design.

Document role: The Wiki's role evolved from mainly supporting community memory to a space for building items of knowledge and then to a tool for synthesis and structure of student's knowledge.

Document status: The documents in the Wiki evolved from a rather private type of document to a definitely public document as it supported the presentation to the class.

The way feed-back was applied to student's work attempted to maintain student motivation and promote student's open inquiry, while respecting what we dubbed « textual territoriality »

Student skills: The evidence suggests that students were more motivated, developed more metacognitive skills, enjoyed increased freedom, and a greater autonomy needing less and less guidance, and of higher level. The skills developed include some scientific literacy, reasoning skills required of scientific writing. Students reported one year after the study having acquired really efficient knowledge-building techniques for (mostly medicine) university studies.

Some students reported that freedom increased their pleasure to study biology, and changed some of their attitudes towards building knowledge.

References (including own publications):

Dillenbourg, P., & Schneider, D. (1995). Collaborative learning and the Internet. Paper presented at the ICCAI 95.

Design-Based_Research_Collective. (2003). Design-Based Research: An Emerging Paradigm for Educational Inquiry. *Educational Researcher*, 32(1), 5-8.

Scardamalia, M. B., C. . (1994). The CSILE project: Trying to bring the classroom into world 3. In K. McGilly, ed., *Classroom Lessons: Integrating Cognitive Theory and Classroom Practice*. In (pp. 201–228). Cambridge, MA: MIT Press / Bradford Books.

Scardamalia, M., & Bereiter, C. (2002). Knowledge Building. In *Encyclopedia of Education*. In *Encyclopedia of Education (Second Edition. ed.)*. New York: Macmillan Reference, USA.

Klein, P. D. (1999). Reopening Inquiry into Cognitive Processes in Writing-To-Learn. *Educational Psychology Review*, 11(3), 203-270.

Maulini, O. (2004). *L'institution scolaire du questionnement. Interaction maître-élèves et limites de la discussion à l'école élémentaire*. Unpublished Thèse de doctorat en sciences de l'éducation, Université de Genève.

Miles , M. B., & Huberman, M. A. (1994). *Qualitative data analysis: An expanded sourcebook (Second ed.)*. Thousand Oaks, California USA: Sage Publications.

Sandoval, W. A., & Daniszewski, K. (2004). Mapping Trade-Offs in Teachers' Integration of Technology-Supported Inquiry in high School Science Classes *Journal of Science Education and Technology*, 13(2).

Schneider, D., Class, B., Frété, C., Girardin, F., Lombard, F., Morand, S., et al. (2003, Juin 2003). Conception et implémentation de scénarios pédagogiques riches avec des portails communautaires Les communautés virtuelles éducatives. Paper presented at the second colloque de Guéret.

Additional Information

Is your proposal part of a master or doctoral thesis? YES * *Please delete as necessary*

Is your paper intended for publication? Yes/ * *Please delete as necessary*

This paper develops preliminary work towards a doctoral thesis at Geneva University (Faculté de Psychologie et des Sciences de l'Éducation)

N.B. In the case of acceptance, delegates are required to provide a written text, summary or other documentation of their presentation at the conference. Please give one copy of your written summary to the Chairperson or Convenor of your session.

Please send ONE COPY ONLY of this proposal form as an e-mail attachment to eera@strath.ac.uk by 1st February, 2006 and include your first and second name in the filename.