Scientific Quality Criteria for Technology Enhanced Learning Research

Lone Dirckinck-Holmfeld & Diana Laurillard

Kaleidoscope Symposium, Berlin November 26, 2007
Program

- Lone Dirckinck-Holmfeld: Framing the discussion on scientific quality criteria
- Presenting the work of the scientific quality committee:
  - Diana Laurillard: Scientific quality criteria within the field of technology enhanced learning
- Invited discussants, who open the floor for a wider discussion of scientific quality criteria within technology enhanced learning
  - Judith Schoonenboom
  - Berner Lindström
- Discussion of TeLearn
  - Nicolas Balacheff: The open archive, a tool against fragmentation and an incentive for quality building
  - Lone Dirckinck-Holmfeld: Kaleidoscope quality stamp criteria and TeLearn open archive
- Diana Laurillard: Closing the session
Scientific Quality Committee

Framing the discussion on scientific quality criteria

Lone Dirckinck-Holmfeld

Kaleidoscope Symposium, Berlin November 26, 2007
Terms of reference for SQC

To shape a body of reference at a scientific level for the European TEL research communities

- to support a policy for the enhancement of TEL research in Europe in this field,
  - The added value of the European perspective
- to survey the development of the field,
  - National and European
- to build scientific collaboration on top of the shared TeLearn Open Archive (dissemination / impact)
  - Peer review, stamps, web 2.0
‘Scientific Quality’ Task Force

**Results**

- Membership agreed, international scholars from 15 countries worldwide
- Terms of reference and plans agreed
- Collaborative online development of recommendations and quality criteria for TEL scientific research & number of f2f discussions
- (Draft) Report due for Berlin conference
  - policy and criteria for Europe wide TEL research
  - scientific collaboration on top of the shared TeLearn Open Archive
‘Scientific Quality’ Task Force

- **Chair**: Lone Dirckinck-Holmfeld
- **Executive**: Diana Laurillard
- **ex officio**: Sten Ludvigsen
- **ex officio**: Nicolas Balacheff

**Technical team**
- James Bligh, Dublin
- Yishay Mor, LKL
- Tim Neuman, LKL
- Brian Møller Svendsen, AAU, DK
Thanks to the SQC-members

Core group
Angelique Dimitrakopoulou, University of the Aegean
Ulrich Hoppe, University of Duisburg
Judith Schoonenboom, University of Amsterdam
Pierre Tchounikine, University of Lemans
Claudio Dondi, Scienter, Italy

Outside core group
Freidrich Hesse, University of Tubingen
Rosamund Sutherland, University of Bristol
Marta Turcsanyi-Szabo, Eotvos Lorand University
Roger Säljö, University of Goteborg
Stella Vosniadou, University of the Aegean
Pedro Pinto, Cnotinform, Portugal
Richard Noss, University of London

Outside Kaleidoscope
Gerry Stahl, Drexel University
Naomi Miyake, Chukyo University
Gordon McCAlIa, University of Saskatchewan
Michelle Selinger, Cisco, UK
Katherine Maillet, Institut National des Télécommunications, France

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Tel research: Scientific quality criteria - challenges

- Tel research characteristic
  - Multidisciplinary - interdisciplinary - transdisciplinary
    - Social science
    - Experimental psychology
    - Computer science
    - Learning science
    - Educational research
    - Design research
    - Participatory design
  - Various methodologies
  - Various validity claims
Scientific Quality Committee

Scientific Quality Criteria for Research in TEL

Diana Laurillard

December 10, 2007
SQC Criteria for Research in TEL

Terms of Reference 1: To shape a body of reference at a scientific level for the European TEL research communities

Set up international scientific committee

Carried out collaborative online discussions, proposals, contributions and revisions

Analysed research calls and criteria

Developed recommendations and quality criteria for TEL scientific research
Suggested questions on criteria

Further questions proposed by committee members
Recommendation 1: High quality TEL research should meet distinctive criteria

- Interdisciplinarity
- Robust project management
- Development of interdisciplinary research capacity
- Sustainability and product adoption
- User engagement in design and implementation
- Methodological renewal using technology
- Technical expertise
- Pedagogical expertise
- Impact, delivery
- Partnerships
  - Design research as the iteration between the social, cognitive and technological sciences

Not appropriate for other kinds of research, therefore will not feature in most research calls

Important for the quality and effectiveness of TEL research and therefore an essential baseline for the progression of the research field

- from Committee members

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TEL: Ways of knowing & interests - same scientific quality criteria?

- **Natural & technical science**
  - causal explanations, controlled experiments

- **Humanities**
  - interpretations, qualitative and hermeneutic tradition

- **Social science**
  - social transformation, social experiments & interventions, quantitative, qualitative, and action approaches (critical-self reflective sciences)

- **Design research??**
Design research as a feature of TEL

- R&D that uses ‘scientific research’ of the kind that tells us about human behaviour and cognition
- Uses current research findings to design a ‘tool’, and iteratively test with users
- Refines and improves it to work as well as possible in terms of the human activity it is designed to enhance
- TEL research often sets out to design such tools in order to enhance learning
- It has an essentially iterative character also in terms of the interplay between the disciplines involved, each impacting on and influencing the other
- Design principles act as the equivalent of scientific findings
  - Not immediately falsifiable
  - Applied and refined by others in other contexts
Discussion points

This analysis leads us to two questions for the further development of this work:

- Could these research criteria be used to develop widely agreed recommendations on enhancing the quality of research in the TEL field?
- Are there ideas, approaches, or criteria that are missing, but would be important for the future of TEL research?
Invited discussant
Judith Schoonenboom

Criteria for Methodological Excellence

December 10, 2007
The TeLearn Open Archive
integrator of TEL research in Europe
and beyond

http://www.telearn.eu

An Open Archive initiative powered by the
Network of Excellence Kaleidoscope

Nicolas Balacheff

December 10, 2007
The Open Archive initiative

- **What is an Open Archive?**
  - Uploading document on sustainable repositories (OAI)
  - Systematic tagging (Dublin Core, OAI-PMH)
  - Easy retrieval (tools by third party)

- **History**
  - Los Alamos 1999, and again researchers in physics
  - The Berlin declaration 2001
  - The Driver EC project and many more
The Open Archive concept

- **Benefits**
  - Open, **free** and reliable sharing
  - Production (**dissemination**) consumption
  - Interoperable repositories
  - Immediate access

- **Concerns**
  - Protection, **copyright**, sustainability
  - Quality and **trust**
  - Fame and **profile raising**
Concerns & Benefits

→ Sustainability
- The OAI is based on institutions
- Commitment on conservation
  → Protection and ownership
- Resources rigorously recorded
- Dublin core & OAI-PMH protocol
  → Copyright
- Evolution toward OA friendly policies
  - allow pre-print and post-print archiving
  - possible 12 months embargo
  (Romeo Sherpa database of publishers policy)
Concerns & Benefits

- **Efficiency**
  - Quick publication & easy access
  - Systematic use by major indexing engine

- **Quality control**
  - “Branding” committees
  - Open Journals

- **Plagiarism and trust**
  - Formal and standard registering
  - Interoperability & LSA like solutions

- **Weapon against reinventing the wheel**
  - Interoperable repositories, cross search
  - Emerging consensus on thematic metadata
TeLearn
a dissemination breakthrough

- The Open Archive Initiative is an international movement, initiated in the early 90s by physicists
- The key of the success is
  - the open access to the scientific literature
  - the efficiency of the dissemination of the recent work
- TeLearn, adds the fact to be first OA being multidisciplinary and multilingual
- Special resistances in the Social Science sector are known, they have been resolved
- passed a certain threshold the adoption grows very fast
- indicator of success is first the evolution of the number of uploads/downloads

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Download per month # 2064 publications
Total of 22704 from Dec06 to Oct07
TeLearn
a dissemination breakthrough

PhDs
Books
Research reports
Peer reviewed journals
Refereed communication

Spanish, Bulgarian, …
French
English

Type of publications

Languages
TeLearn
a dissemination breakthrough

Evolution of the average number of different (unique) users and visits per months:

Visits
Average time spent:: 6mn

Visitors

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What next?...

- Open Archive Initiative
  - International repository
  - Fully multilingual
  - Specific stamps

- International metadata
  - Theoretical pivot
  - Definitions
  - Conceptual organization

- Scientific consensus
  - theoretical
  - Technological
  - Practical

... results
To build scientific collaboration on top of the shared TeLearn Open Archive

Lone Dirckinck-Holmfeld
Kaleidoscope Symposium, Berlin 2007

December 10, 2007
To build scientific collaboration on top of the shared TeLearn Open Archive - Kal stamp criteria?

1. Criteria for the inclusion of publications and papers in the TeLearn repository
2. Quality assurance mechanisms for the archive
3. Maintaining the TeLearn Open Archive
Only peer reviewed journals and conference proceedings should be invited to submit papers
Questionnaire results: YES (3) NO (9)

Additional comments:

- “It does not hurt to include more papers, making more ideas available. You could include in the metadata whether or not it was peer reviewed.”
- “It is certain that is critical to dispose also other kind of 'publications' or 'ressources'”
- “A very valuable paper may be in a position not to find the proper journal, either because it is too long, or not in the scope of the current editorial policies, the KalStamp could be a solution to claim for its quality towards the community. In this case, indeed, a specific review process must be implemented.”
Additional comments:

- It’s a new, quickly changing, interdisciplinary field.
- Nothing against these, but our area (TEL) is not driven by these kind of publications (fortunately or unfortunately).
- Papers coming from such journal benefit from an a priori guaranty on the scientific quality, not necessarily on relevance and importance, the KalStamp should express something on these aspects.”
- No - but we should make clear the impact factor of the journals.”

Journal publications with high impact factors should be accorded highest priority
Questionnaire results: YES (2) NO (9)
The Scientific Quality Committee identified the following conference proceedings to be added to the archive. Do you agree?
Conferences and conference proceedings

Additional comments:

- “I'm in favor of making available all articles from any conference (and even other types of documents)”

- “Yes (only the parts relevant for TEL).”

- Proposed conferences:
  - “The Asia-Pacific ICCE conference series.”
  - “EIAH (Environnement informatiques pour l'apprentissage humain / Digital environments for human learning), TEL research francophone conference, some conferences from national communities, may be other”
Additional quality criteria

- Books/ chapters should be included from all publishers who agree to make the material available in open archives within at least one year of publication
  Questionnaire results: YES (11) NO (0)

- PhD theses made available by University libraries
  Questionnaire results: YES (11) NO (0)

- Research reports from funded EU and national research programmes
  Questionnaire results: YES (11) NO (0)

- Open source tools, software, learning objects and learning designs, developed within research programmes where evaluation data is also available
  Questionnaire results: YES (11) NO (1)
Quality assurance mechanisms. Criteria for inclusion in terms of using already peer review

Questionnaire results: YES (9) NO (1)

- “Very important to have shortcuts (without additional peer reviewing) for as many standard sources (e.g., conferences, journals) as possible. Publications without prior peer reviewing may need additional quality control, though.”

- “At least, relevance to TEL should be one criterion. For example, all papers from proceedings of Online Educa and ICALT can be included, but not all papers from EARLI are relevant to TEL.”

- “I agree in general, except the cases of 'Open source tools, software, learning objects and learning designs': I'm not certain that the quality of them can be really certified by the fact that they constitute the output of national research centers. I have not a good idea of the quality of the research centers in all the European countries.”
The Kaleidoscope Scientific Quality Committee should set up an international editorial board to advise the TeLearn team.

Questionnaire results: YES (10) NO (0)

- “Yes, but this should be a very 'light committee', which only sets up the rules for inclusion and answers questions that come from the Team. The Team should have the opportunity to suggest additional conferences, journals etc. to the Committee, based upon the papers that they receive for publication.”

- “Yes, and it is important to keep the international nature.”

- “I really support that idea. It would broaden the "ownership" and responsibility of TeLearn beyond Kaleidoscope.”
#1: journals, conferences and societies
#2: the main conferences, journals and societies
#3: which university libraries should be affiliated to the TeLearn archive,
#4: the categories, metadata and search mechanisms to be undertaken
#5: how to optimize Google searches to link to TeLearn

Who should be responsible for deciding the following, the Editorial Board or the TeLearn Team, with reports to the Board?
Questions to further explorations

- **KAL quality stamp**
  - Criteria for inclusion: Core publishers, conferences, journals...in relation to TEL (Traditional quality criteria, however open for new, emerging criteria - interdisciplinarity )
  - Open and transparent (using already existing review procedure)
  - TEL Review procedure in special cases: special papers, ressources, tools etc.

- **Special initiatives?**
  - Publications and ressources from national communities within Europe, and international communities outside Europe

- **Challenges**
  - Negotiation with core publishers and conferences
  - Are the quality criteria In accordance with national & institutional award and promotion systems?