Research Trends in Educational Technology: Some Observations

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The Plan

- Educational research
- Tracking research
- Some findings
- Concluding remarks
Educational Research
Importance of research

- Research shows the culture of a discipline
- Extends the frontiers of knowledge and understanding of the discipline
- Helps know ‘more and more about less and less’
- Finds solutions to existing problems/challenges
- Supports building theories
Educational research

• Multi-disciplinary; drawing from psychology, sociology, philosophy, management, etc
• Covers curriculum, communication, collaboration within school and outside
• Tries to answer what works and why
• Influences policies and practice
Educational technology research

- Effectiveness of educational technologies
- Technology as a teacher
- Technology as a teaching aid
- Technology as a learning tool
- Cost-efficiency: tools for management education
Some major problems

• Identifying a research problem
• Articulating a problem statement for research
• Matching research methods to objectives
• Lack of rigour in literature review and developing a theoretical perspective
• Sampling and generalizations
• Inappropriate use of statistics
• Inadequate depth in analysis of findings and their relationship to existing literature
• Poor implications for policy, practice and future research
Tracking Research
Foundation of tracking research

Technology

Research

Interest

Organisation
Interest

• What interests you?
• What area you want to investigate?
• Is the problem worth spending time?
• Can you sustain the interest for 2-4 years of time? Or beyond?
• Is it of immediate interest or has futuristic value?
• What’s the purpose? Writing a paper or a research project?
• Bibliographic control of the interest area?
Organisation

- A systematic approach
- Using tools such as Zotero, Mendeley, etc
- Note-taking
- SQ3R approach: Survey, Question, Read, Reflect, and Record
Technology

- Using databases, such as ProQuest
- Setting Google Alert
- Setting journal specific ToC Alert
- Joining Discussion Forums/ Mailing lists
- Social Media tracking, following experts in the field
Analysing research trends

- Undertake a review of literature in a topic
- Read several meta-analyses
- Content analysis of journals in the discipline
- Undertake a bibliometrics analysis of a discipline
- A Delphi study of experts
Some Findings
The beginning...(somewhat)

- Covered 4 journals: American Journal of Distance Education, Distance Education, Indian journal of Open Learning, and Open Learning.
- Major trends: Research on students and learning, impact on national development, operational, use of technology, and learning materials.
Analysis of Conference papers


- **Classrooms, schools and universities** have been mostly used in the studies. This can be interpreted as educational dimension of the technology mostly applied in the classroom, school and university environments.
- Most of the papers presented in both WCES2009 and WCES2010 were written on **e-learning** and **ICT**. There are also papers written on office programmes, multimedia and mobile learning.
ETRD: 2006-2008


- Used gap analysis approach
- Identified 4 areas for future research:
  - Distance learning, including Web-based courses, teleconferencing, blended (hybrid) courses, etc.
  - Social networking with a global community of learners
  - Integrating technology as a learning tool in classroom instruction
  - Teaching students to become skilled and confident users of technology
ETRD: Citation network analysis


- Citation network analysis of papers published in ETR&D, 1989 to 2011.
- Key areas: Instructional design, learning environments, role of technology, ET research, psychological foundations.
- Five key themes of ET identified in this study were not totally independent but overlapped.
Covered papers published from 1980-2014

Trends reported:
- 1980–1984: professionalization and institutional consolidation
- 1985–1989: instructional design and educational technology
- 1995–1999: student support and early stages of online learning
- 2000–2004: the emergence of the virtual university
- 2005–2009: collaborative learning and online interaction patterns
- 2010–2014: interactive learning, MOOCs and OERs
Educational Technology: Highly cited


- Highly cited papers from *Educational Technology and Society* published between 2003-2010
- Identified 4 highly cited research topics:
  - collaborative learning
  - game-based learning
  - mobile learning and ubiquitous learning
  - technology adoption
IRRODL: 2000-2015


- 2000–2005: the establishment of online learning and distance education institutions
- 2006–2010: widening access to education and online learning support
- 2011–2015: and the emergence of Massive Open Online Courses (MOOCs) and Open Educational Resources (OER)
**IJETHE: 2004-2017**


- Reflections and studies on the use of ICT in education at the university and the impact of digital practices
- The quality of learning using technologies
- Focus on the design and development of learning strategies and activities with the use of digital environments and tools
Educational Technology: six journals


- Examined 2,997 research articles published between 2000 and 2010 by six journals
Educational Technology: Topics on rise

• Macro view of technology integration (average 25 articles/year)
• Macro view of online learning (average 45 articles/year)
• Instructional Design (average 23 articles/year)
• Assessment in Technology-based Environments (average 17 articles/year)
• Educational Software and Simulation (average 23 articles/year)
• Automated Instructional Systems (average 17 articles/year)
• Learning Interactions and Online Collaborative learning (average 37 articles/year)

Educational Technology: Stable topics

• Educational Games (average 7 articles/year)
• Technology-assisted Learning (average 15 articles/year)
• Attitude toward Technology (average 11 articles/year)
• Learning Community (average 9 articles/year)
• Online Discussions (average 8 articles/year)
• Problem-Solving (average 7 articles/year)

Educational Technology: Cold topics

- Learning Styles (average 4 articles/year)
- Technology Adoption (average 4 articles/year)
- Learning Objects (average 5 articles/year)
- Multimedia (average 5 articles/year)
- Computer-assisted Language Learning (average 5 articles/year)

DE research: Content analysis


• Covered 7 journals; 861 articles
• Findings: interaction and communication in learning communities (13%), learner characteristics (12%), and instructional design (11%) from micro levels and educational technology (15%) from meso level constitute 51% of all research areas.
• This confirms that DE is strongly related to ET.
Multiple journals: content analysis


- 23 journals; 2001-2014; A collaborative research project at Brigham Young University.
- Findings: limitations of citation matrices; Importance of good abstract; use of keywords; poor methodological rigour; low importance to theoretical works; techno-centrism vs design and integration of technology
Research topic and gender


- Female researchers choose different research topics than their male colleagues
- More women (60.1%) than men (39.9%) carry out research on the micro level - teaching and learning in distance education
- Female researchers are more concerned with the social aspects of learning and teaching, interaction and communication in learning communities, learner support services, and learner characteristics
Concluding Remarks
What are major journals in ET?

<table>
<thead>
<tr>
<th>Publication</th>
<th>h5-index</th>
<th>h5-median</th>
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<tbody>
<tr>
<td>1. Computers &amp; Education</td>
<td>94</td>
<td>137</td>
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<tr>
<td>2. British Journal of Educational Technology</td>
<td>53</td>
<td>78</td>
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<tr>
<td>3. Journal of Educational Technology &amp; Society</td>
<td>49</td>
<td>72</td>
</tr>
<tr>
<td>4. The Internet and Higher Education</td>
<td>46</td>
<td>97</td>
</tr>
<tr>
<td>5. The International Review of Research in Open and Distributed Learning</td>
<td>41</td>
<td>68</td>
</tr>
<tr>
<td>6. Journal of Computer Assisted Learning</td>
<td>37</td>
<td>84</td>
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<tr>
<td>7. Educational Technology Research and Development</td>
<td>34</td>
<td>50</td>
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<tr>
<td>8. International Conference on Learning Analytics And Knowledge</td>
<td>32</td>
<td>56</td>
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<tr>
<td>10. Distance Education</td>
<td>31</td>
<td>44</td>
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Source: https://scholar.google.ca/citations?view_op=top_venues&hl=en&vq=eng_educationaltechnology
## Key areas for research

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<tr>
<th>Themes</th>
<th>Tracks</th>
<th>Interactions, engagement, scaffolding, analytics</th>
<th>Learning achievement, effectiveness</th>
<th>Cost-benefit analysis, and cost-effectiveness, return on investment</th>
<th>Quality management, assurance, operations research, administration</th>
<th>Attitudes, perception, satisfaction</th>
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<td>Social media and learning</td>
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<td>Massive open online courses</td>
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<td>Open educational resources</td>
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<td>Big data and learning analytics</td>
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<td>Blended learning</td>
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<td>Mobile learning</td>
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(Not comprehensive)
Some micro-topics for research

• Student access to textbooks and learning resources in...
• Faculty attitude towards OER in...
• Faculty and student use of OER in... (example of ePG Pathshala)
• Faculty engagement in design and development of MOOCs through SWAYAM
• Faculty and student use of social media for learning
• Comparing instructional design features of MOOC platforms
Journal of Learning for Development

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Thank You