Methodological approaches used to study Information and Communication Technologies in education

A systematic review of the Portuguese scientific production in Scopus and Web of Science

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The need for evidence

Technology is *present* in the very own processes of making science

Digital literacy is a prerequisite to make science
Research questions

1. Which are the main themes analyzed by the Portuguese scientific literature on ICT and multimedia in education?

2. Which are the operational verbs used in the abstracts to present the research objectives?

3. Which are the predominant methodological approaches to research in the field of online learning?
Results

Main themes:

• usage, perceptions and level of cooperation (F=12)
• multimedia development and assessment (F=10)
• distance learning (b-learning or e-learning) (F=8)
• learning and teaching (F=5)
Results

- ICT/Digital media (perceptions, assessment, cooperation, training, usage)
- Multimedia
- Learning and teaching
- Distance learning e-learning/b-learning)
- Lab (Remote/virtual)
- Augmented reality
- Impairment
- Serious games
- Social networks
- Others (Conceptual frameworks, Generational gap, Hypervideo, Information literacy, Senior university, Results
We have identified 104 operative verbs in the abstracts (M≈1,96).

- Half of the verbs are either expositive or descriptive (F=56).
- Approximately, one third of the verbs (F=32) introduce a more complex or analytic view on the subject (problematization verbs and analytical verbs).
- Other categories, less present in the abstracts, consist of redundant verbs (F=5); other verbs (F=4), confirmatory verbs (F=4), and evaluative verbs (F=3).
Results

- Evaluative verbs (to evaluate, to consider)
- Confirmatory verbs (to verify, to recognize, to demonstrate, to validate)
- Others (to capture, to concentrate, to derive, to promote)
- Redundant verbs (to research, to study, to investigate, to contribute)
- Analytical verbs (to analyze, to examine, to review, to systematize, to conclude, to determine, to discover, to
  
  Problematization verbs (to discuss, to address, to argue, to problematize, to suggest)
- Expositive and descriptive verbs (to present, to explore, to propose, to describe, to identify, to report, to

0 10 20 30 40 50 60
The majority of the studies are from:

- a non-experimental nature ($F=27$)
- qualitative and mixed data analysis procedure is more chosen than quantitative analysis, which is in accordance with the methodological approach.
- most studies are built upon case-studies and small samples or participants.

- From 26 articles in which we success to identify the $n$ of the sample:
  - 12 did not have more than 30 participants,
  - 5 have between 30 and 50 subjects
  - 11 have more than 100 subjects.
Results

Research and Development
Non-experimental
Non-experimental (case study)
Quasi-experimental
Documentary
Theoretical
Not identified

Quantitative
Qualitative
Mixed
Not applicable
Not identified
Conclusions

- Sociological aspects:
  - In first place, for a period of almost 20 years, 80% of the Portuguese production is concentrated in five years (from 2010 to the present).
  - In second place, we still have more male authors publishing.

- The thematic diversity:
  - both the descriptive nature of the operative verbs and the designs adopted still reveal some weaknesses to overcome.

- These are preliminary result that should be further investigated.
Outlook

- Is the international picture very different from the one that we are presenting? If so, what are those differences?

- Are these patterns different from those that one could get if the Portuguese production published as conference papers have been reviewed?

- Is there a relationship between mixed and qualitative methods and sociological factors such as authors’ sex, institutional affiliation and cooperation, and publishing impact factor?
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Thank you!
Your comments are welcome: cmorais@fc.up.pt

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