

ICTs to Improve Learning and Research

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Overview

Part 1: Information

1. EERA Network 16
2. ICTs in theories and research on teaching and learning
3. Model 1: ICTs in traditional education and research
4. Model 2: ICTs to individualise teaching and learning
5. Model 3: ICTs enabling optimal education and research
6. Questions and discussion

Part 2: Your own learning and research

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1. EERA Network 16 *ICT in education and training*

- a. Ljubljana, September 1998
- b. <http://www.eera-ecer.de/networks/network16/>
- c. ... to study and improve ICT-supported education, learning and training at all levels of attainment and in different professional environments
- d. ... educational, instructional, (meta)cognitive, social and motivational processes, performances and effects
- e. ... longitudinal research, benchmarks at different levels, integrated innovation and evaluation designs

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Annual Report 2013, Istanbul

- teachers and technology
- ICT and pedagogy
- computer supported collaborative learning
- blended learning
- ICT and social networks
- ICT and special educational needs
- learning with tablet computers
- teacher students and ICT
- E-learning
- multimedia and serious games

<http://eeranw16.mixxt.eu>

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2. ICTs in theories and research on teaching and learning

- a. Internet; mobile; any place; any time; any device
- b. Teaching differentiation: information sources; content; difficulty level; self-regulation; individual/group; time; place; device; performance; evaluation; progress
- c. Learning differentiation: see Teaching
- d. Importance of achievement / certification structure
- e. Importance of validity of learning (cheating, plagiarism)

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ICT-based learning and research: EERJ

Model	Assumptions or goals	Applications or examples
1	ICTs to assist or replace traditional education and research	<ul style="list-style-type: none"> • parts of textbooks • assessment by systemic monitoring • large-scale surveying
2	ICTs to promote differentiated teaching and / or self-regulated learning	<ul style="list-style-type: none"> • teaching user/group/category learners • learning=question, explore, evaluate in collaboration • registrate, evaluate, communicate
3	ICTs to explore, specify, and check optimal educational conditions including criterion- and norm-based indicators to realise optimal, self-regulated learning	<ul style="list-style-type: none"> • assist differentiated, diagnostically based education • continuous support of teaching and learning across learning environments • theory and research are multi-disciplinary and longitudinal

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ICT-based learning and research

Model assumptions or goals	Articles EERJ (in press)
Model 1: ICTs traditional	Steffens (student at school)
Model 2: ICTs differentiated teaching and / or self-regulated learning	<ul style="list-style-type: none"> ▪ Steffens (student at home) ▪ Andrade ▪ Cebrián Robles, Serrano Angulo, & Cebrián de la Serna ▪ Raposo Rivas, Cebrián de la Serna, & Martínez-Figueira
Model 3: ICTs optimal educational conditions	Mooij, Dijkstra, Walraven, & Kirschner

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3. Model 1: ICTs in traditional education and research

- a. Education & ICTs not really integrated (Steffens: school)
 - b. Personal, social, pedagogical, psychological, curricular, home, school, societal variables
 - c. Same age: differences in psychological development
 - d. (Former) experiences at school, home, other situations
 - e. Cross-sectional evaluation (class/school- or norm-based)
 - f. Consistency curricular progress and (inter)national level?
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Age- or norm-based grouping, learning content, and assessment

Regular education:

- learners of about same age in same class
- calendar age \neq psychological competence, potential

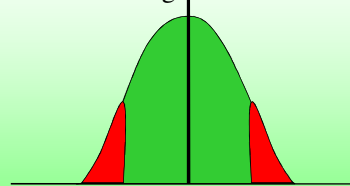
“Adaptive education”:

= adaptation to mean of group / class instead of to (individual) psychological capacities and potential

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Age-based at-risk groups

Risk --- OK --- Risk
Age mean



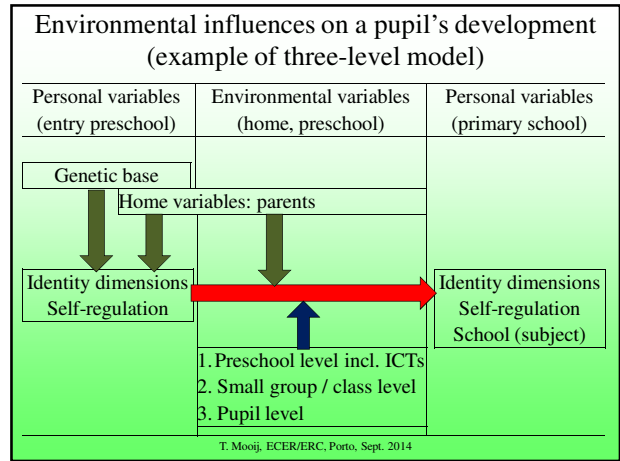
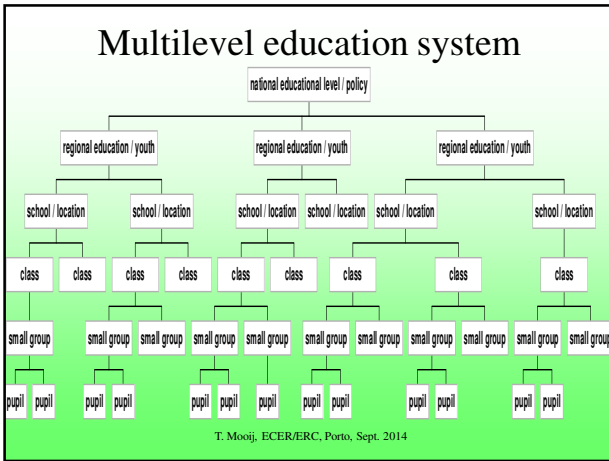
- | | |
|---------------------------|------------------------|
| a) General IQ | d) Social behaviour |
| b) Language performance | e) Emotional behaviour |
| c) Arithmetic performance | f) Motor behaviour |
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4. Model 2: ICTs to individualise teaching and learning

- ICTs to accommodate single users, small groups or classes, or specific schools or categories of learners
 - Learning by questioning, exploring, evaluating, and investigating in collaboration with teachers / learners
 - ICTs promote registration, evaluation, communication
 - Steffens: ICT Use and Achievement: student at home
 - Andrade: Dialogue and Structure: self-regulation
 - Cebrián Robles et al.: Federated eRubric Service
 - Raposo Rivas et al.: Electronic Rubrics to Assess Competences
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5. Model 3: ICTs enabling optimal education and research

- a. Educational differentiation // differentiation learners
 - b. Beginning characteristics learners (appropriate placement)
 - c. Teaching and learning & ICTs:
 - adapted to individual / small group / group
 - clarity necessary/prescribed and own/creative tasks
 - differentiation in self-regulation and teacher assistance
 - double diagnostics (criterion, norm, both integrated)
 - immediate evaluation and feedback in flexible settings
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Towards norm- and criterion-based learning: systemic innovation

- Age- or norm-based: specific tasks, criteria, adaptations
- Criterion- or content-based:
 - series of tasks according to psychometric criteria
 - curriculum: absolute evaluation, continuity in progress at own individual level of competence
- Both: double diagnostics
- Development of education // ICTs
- Multilevel, multidisciplinary, longitudinal
- Examples school transformation model 3: Mooij et al., EERJ

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6. Questions and discussion

Questions?

- Theoretical?
- Models?
- Methodological?
- Practical?

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Part 2: Your own learning and research

	Theoretical	Methodological	Practical
Model 1: ICTs assist/replace traditional education/research			
Model 2: ICTs promote differentiated teaching and/or self-regulated learning			
Model 3: ICTs enabling optimal educational conditions incl. criterion- and norm-based indicators to realise optimal, self-regulated learning			

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Answer in small groups

Report to all

General discussion and conclusions

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