

Implementing and Evaluating the Digital Turn in Estonian Schools: from Spectacular to Fundamental



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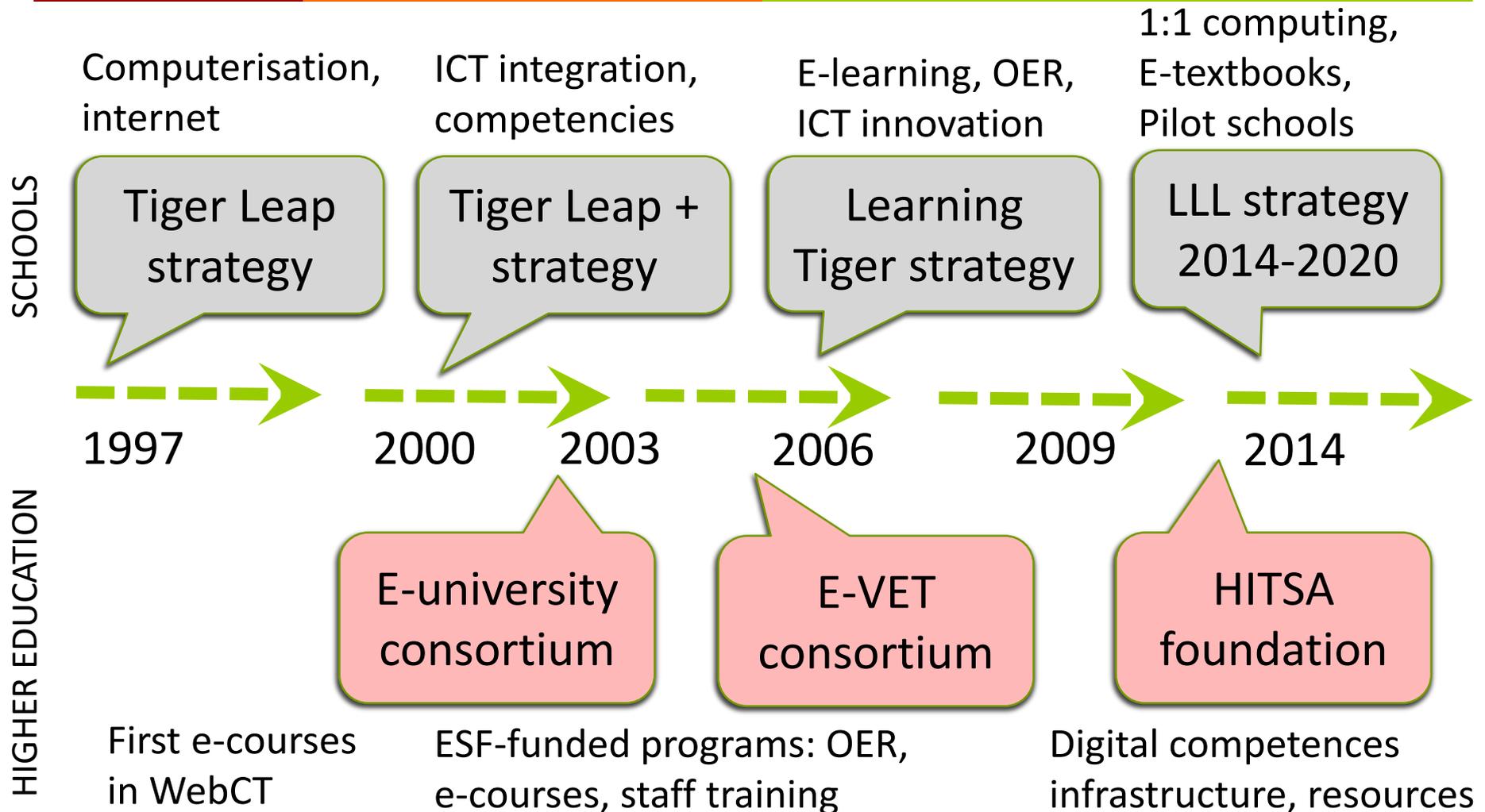


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Spectacular vs fundamental

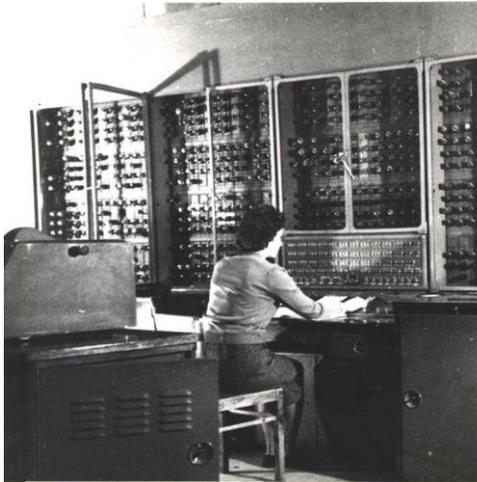
- Huberman (1980) 'Recipes for Busy Kitchens':
educational innovations tend to “*spend too much time on spectacular at the expense of fundamental*”

ICT/E-learning strategies in Estonia



Technology generation shifts

In shop



In school



Estonian Strategy for Lifelong Learning 2014-2020: action plan for Digital Turn

- **Digital turn in formal education system:** digital culture into curricula, bottom-up innovation, sharing good practice, educational technologists in schools
- **Digital learning resources:** digital textbooks, OER, quality management, recommender systems
- **Digital infrastructure for learning :** 1:1 computing, BYOD, interoperable ecosystem of services, mobile clients, school-wide digital turn (first in 20 pilot schools, then in others)
- **Digital competences** of teachers and students: competence models, self-assessment tools, mapping with course offerings and accreditation procedures, updating initial teacher education curricula

Digital infrastructure in Estonian schools

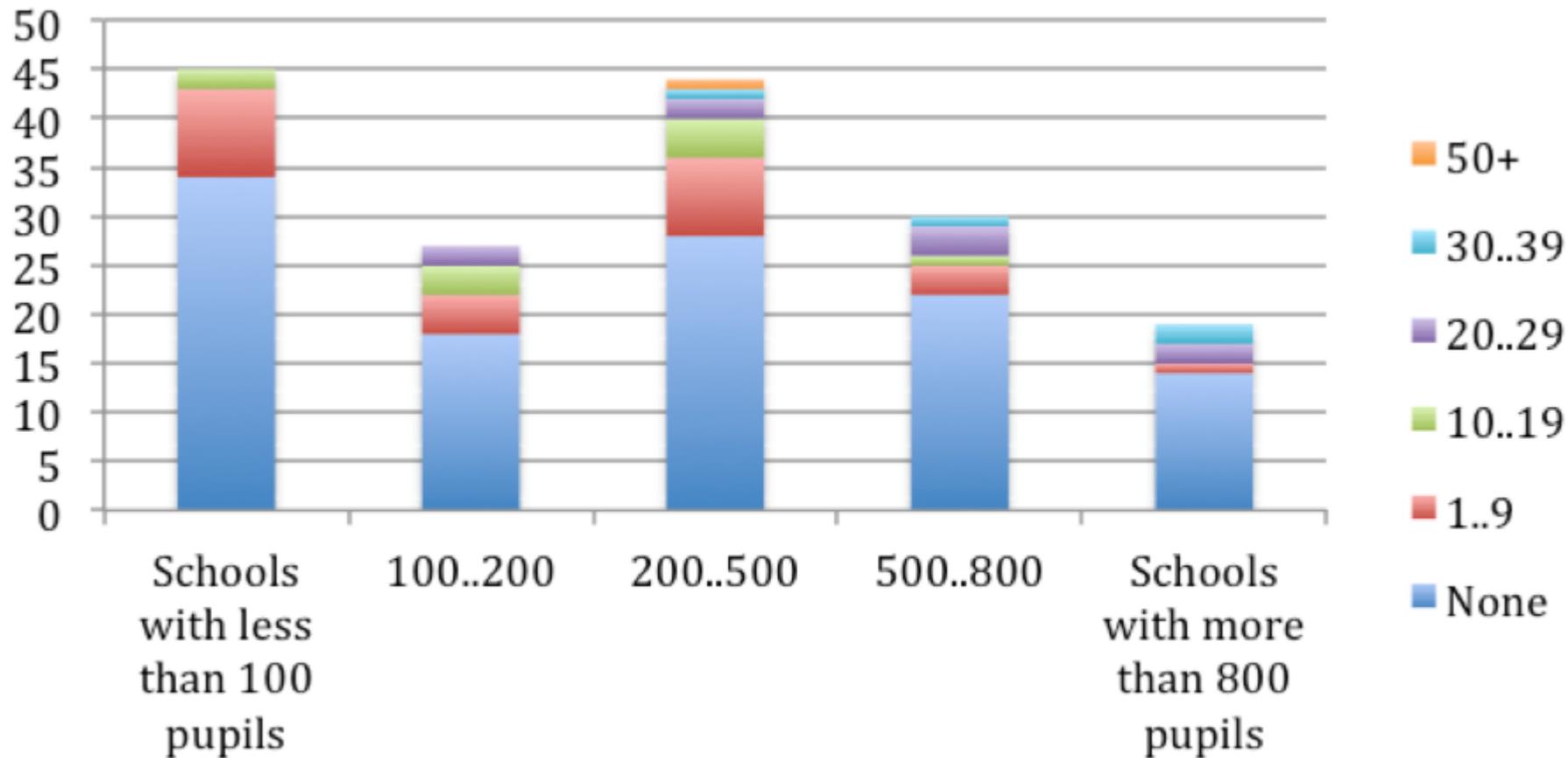
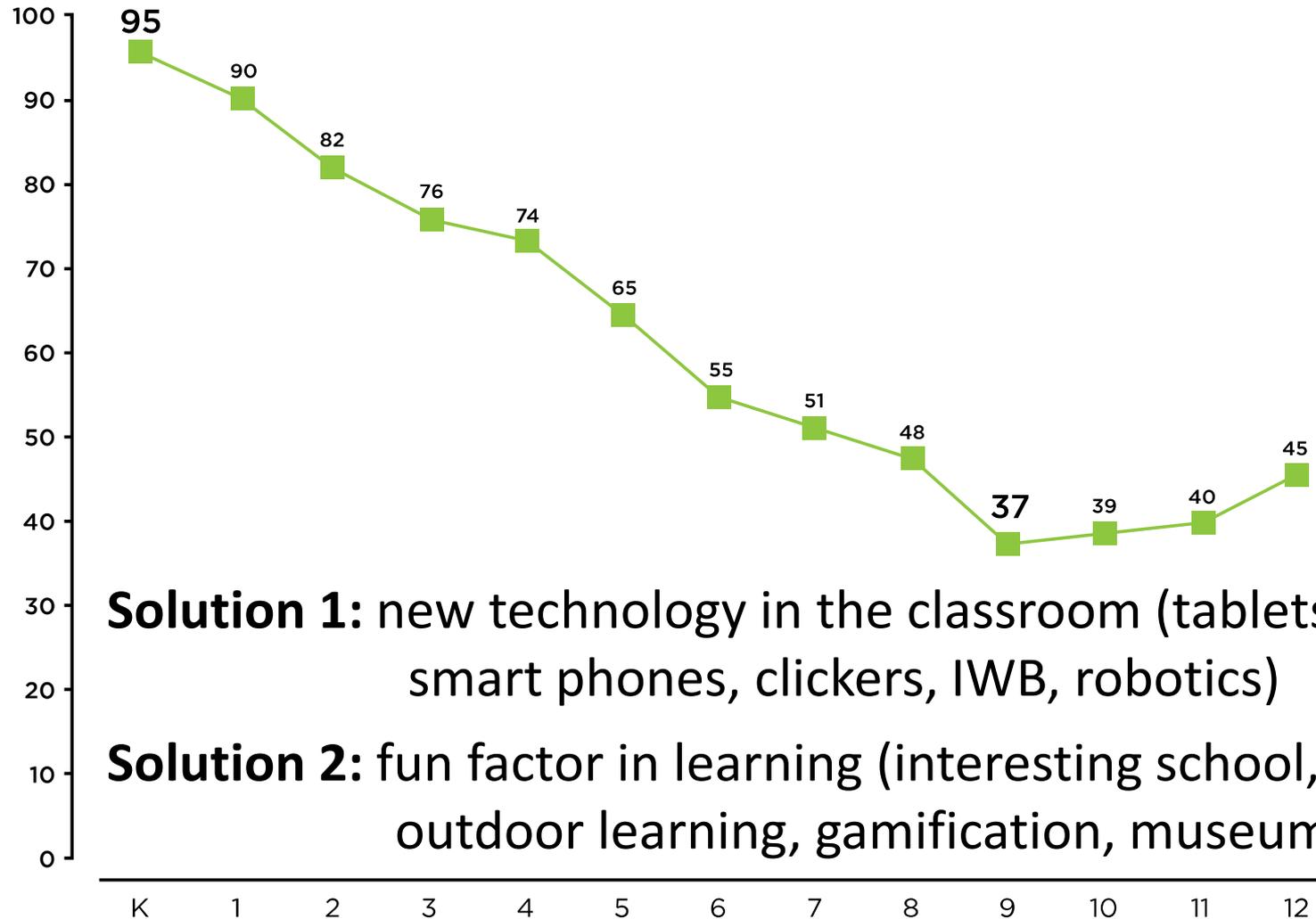


Figure 8. Availability of tablet computers in schools.

Loss of enthusiasm at school

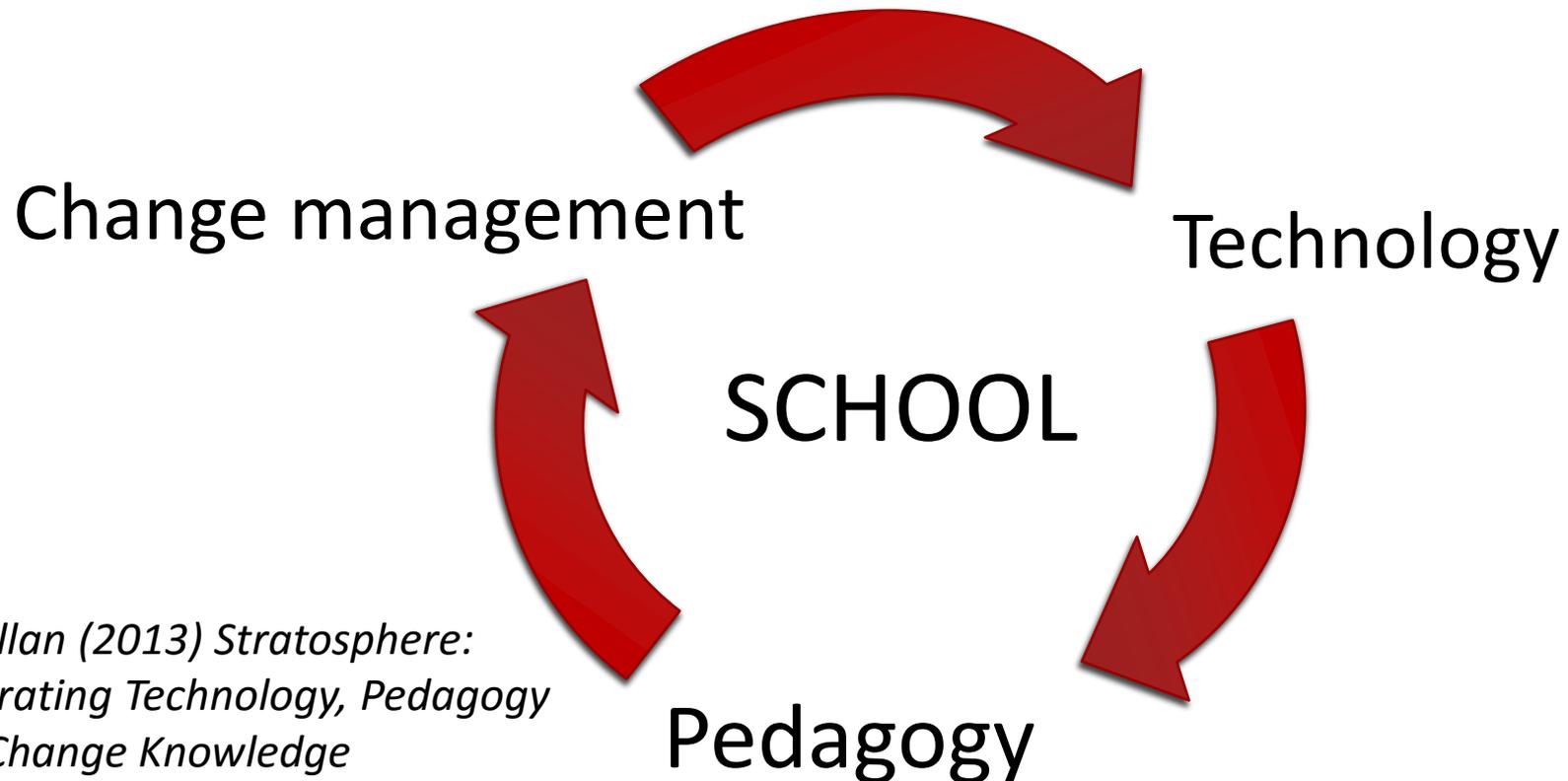


Solution 1: new technology in the classroom (tablets, smart phones, clickers, IWB, robotics)

Solution 2: fun factor in learning (interesting school, outdoor learning, gamification, museums)

Technology and fun are not enough

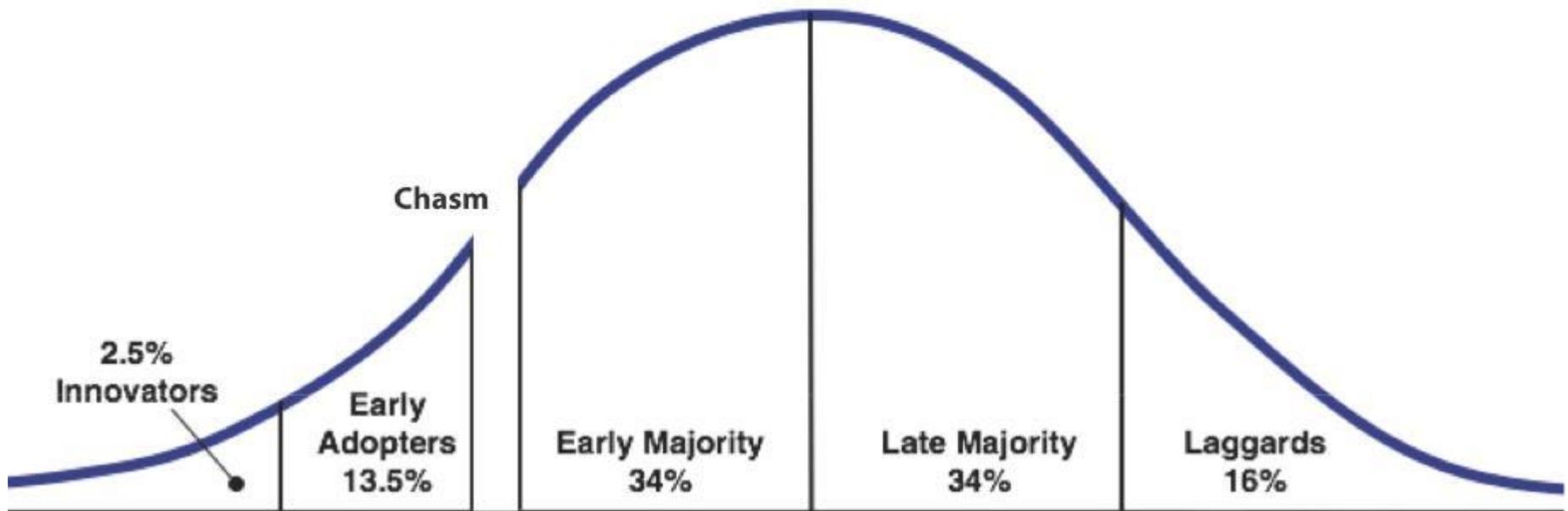
- Successful educational innovation requires combination of three forces on the school level:



*M.Fullan (2013) Stratosphere:
Integrating Technology, Pedagogy
and Change Knowledge*

Change management: whole school turn

Technology Adoption Life Cycle

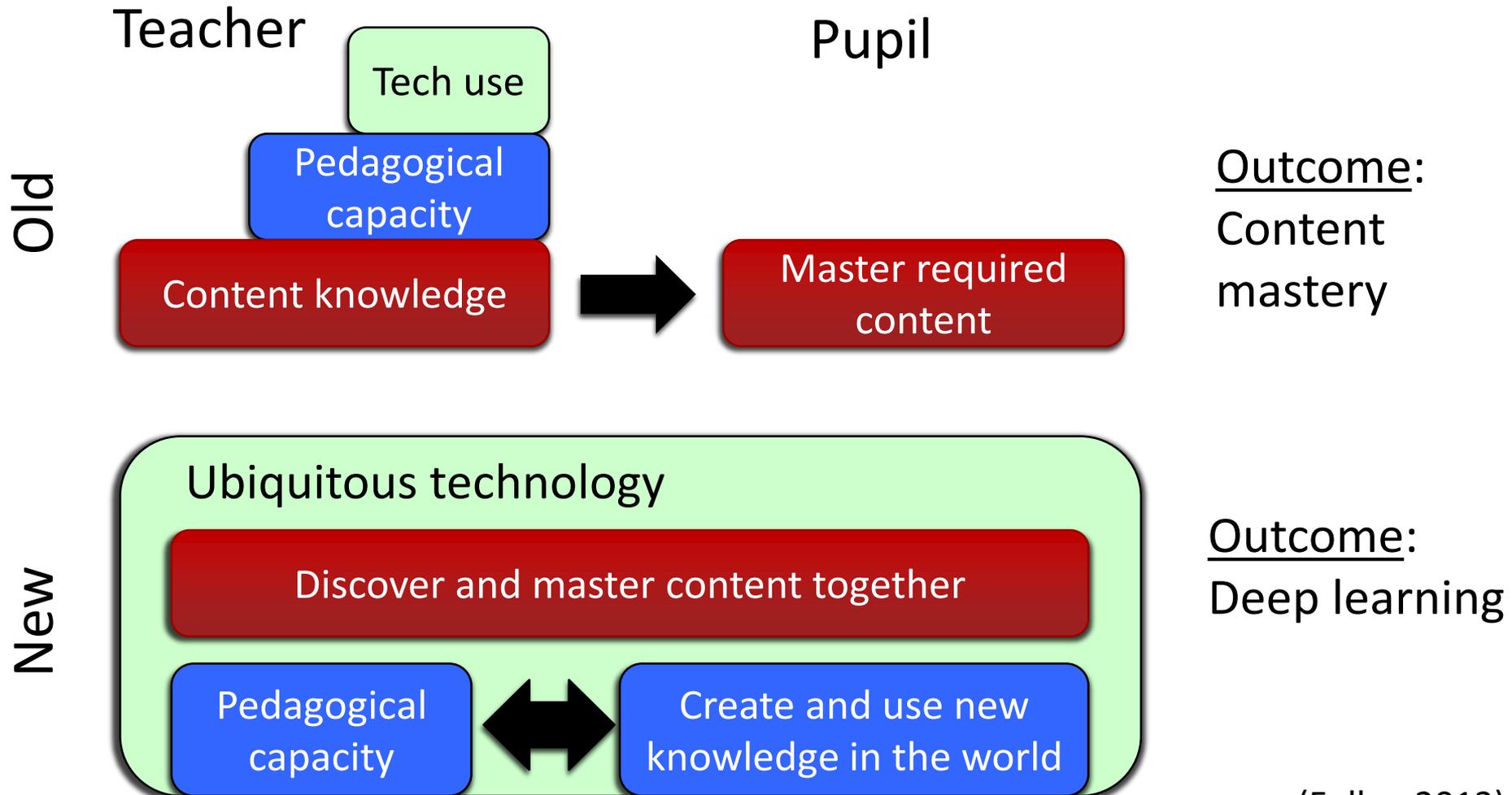


- The training and support is oriented on the level of a teacher
- Diffusion of innovations (Rogers, 1992), OECD study (2002)
- Whole school intervention models are needed

Pedagogical change

- The Club of Rome (1979) From reproductive learning to innovative learning (anticipation, participation)
- Metaphors of learning (Paavola & Hakkarainen):
 - MONOLOGICAL: learning as **aquisition** of knowledge
 - DIALOGICAL: learning as **participation** in community of practice
 - TRIALOGICAL: learning as collaborative **knowledge creation** resulting with shareable digital artefacts

Old and new pedagogies



Innovation models in education

- **Macro-level** innovation management: national strategy, related programs, national curriculum, changes in regulations (assessment, textbooks), quality assurance
- **Micro-level** innovation: teachers networks, professional development, competitions, projects
- Often overlooked **meso-level** innovation model:
 - Whole-school policies and change management
 - Inclusive management, learning from each other
 - Learning organisation, double loop learning (Why, How, What)
 - Success stories: Waldorf schools, Schools with Distinction

Samsung Digital Turn pilot schools



Five scenarios for tablet classrooms

- **Flipped classroom:** learning in advance of the lesson from short videos and other resources, making sense and applying new knowledge during the lesson (Khan Academy)
- **Inquiry-based learning:** learning like scientists do, by questioning, exploring, explaining, (in)validating
- **Project-based learning:** collaborative creation of digital artifacts
- **Problem-based learning:** solving, then designing problems (tasks)
- **Game-based learning:** learning from playing and designing games (e.g. Quest2Learn school NY)

Digital Mirror: assessing digital maturity

- An online tool for self- and peer-assessment of school's digital maturity
- Three dimensions of digital maturity:
 - Digital infrastructure (1-1 computing, BYOD, Wifi, support)
 - Pedagogical innovation (learning environment & resources, roles)
 - Change management (whole school policies, learning organisation)
- 5-point assessment scale (from iTEC innovation maturity model):
 - Exchange: teaching approach is not changed
 - Enrich: technology supports differentiated learning
 - Enhance: teaching and learning are re-designed
 - Extend: ubiquitous technology, learner takes control
 - Empower: beyond institutional boundaries, learner as co-author

Digital Mirror

DigiPeegel



Raportid:

Raport #1

Lisa raport

Lisad:

Sissejuhatus

Ülevaade

1 Individuaalne
hinnang

+ Lisa grupi
hinnang



Raport #1

04.11.2015



Conclusions

- Schools are overwhelmed by surveys that only ask for data without giving anything back
- Digital Mirror is a data collection tool that supports teachers and school administration in implementing double-loop learning and becoming a learning organisation
- Meso/school-level innovation model is often overlooked, yet very powerful in focusing on fundamental rather than spectacular side of innovation