



The Power of ICT

ICT (Information and Communication Technology) and Curriculum Changes

Sahid
Yogyakarta State University



Objectives

- ◆ To introduce the influence of ICT in changing curriculum and its components:
 - Contents & Goals
 - Curricular activities & Organization
 - Assessment Practices
 - Student & Teacher Outcomes
- ◆ To introduce the added value of ICT and ICT-supported curriculum change



What are your objectives?

- ◆ Having comprehension on curriculum changes influenced by ICT
- ◆ To identify changes in curriculum associated with technology
- ◆ To examine cases of curricular changes associated with ICT within specific subjects
- ◆ To examine the impact of ICT on curriculum changes



Key Questions

- ◆ What is the relationship between ICT and curriculum?
- ◆ How ICT changes the curriculum?
- ◆ How ICT changes students learning and teachers teaching?
- ◆ How ICT changes the assessment of student outcomes?
- ◆ What impacts have ICT on student competencies, attitudes, and other outcomes?



Definition of Curriculum

An interrelated set of experiences that a student undertakes under guidance of school. (Marsh & Willis, 1999)





Planned Curriculum

Goals and Contents intended for the schools

- ◆ National & local contents requirements
- ◆ School Practices operation
- ◆ Possibility to change the contents



Enacted Curriculum

The curriculum as it is actually taught or operationalized at classroom level

- ◆ Whether & how Goals and Contents are implemented
- ◆ The organization of the innovations and the concrete student and teacher activities



Experienced Curriculum

The actual outcomes of education:

- ◆ Knowledge
- ◆ Skills
- ◆ Attitudes

that students have acquired.

It is affected by

- ◆ Goals
- ◆ Contents
- ◆ Instructional processes (incl. assessment)



Curriculum Changes in the Knowledge Economy and Information Society

- ◆ Lifelong learning skills
- ◆ Metacognition skills (the ability to set student's own goals, planning their own learning and evaluating their success)
- ◆ Transfer of knowledge/skills → more active involvement of students



Curriculum Characteristics for the Knowledge Economy and Information Society (Voogt and Odenthal, 1999)

- ◆ New goals: students become competent in information management, communication and collaboration, and metacognition
- ◆ Less structured sources of information ~ learning materials
- ◆ Integrated subjects: students able to understand relationship between subjects, not just reproduce facts
- ◆ Centered on authentic problems based on real-world settings
- ◆ No barrier between school and outside world, students spend less time in classroom/school, individual learning approaches



Goal & Content Change Implications

- ◆ New assessment methods
- ◆ Measure ability of knowledge reproduction
→ measure ability to apply knowledge in realistic settings.
- ◆ Closed format → Open formats (portfolio, performance assessment, etc.)
- ◆ Summative assessment → Formative assessment



Contributions of ICT

- ◆ Technology → a major factor in the transition to a knowledge economy & information society
- ◆ Application of ICT to manage information and solve problems → important set of skills
- ◆ Applications of ICT → support pedagogical changes in new curricular visions



ICT & Curriculum

◆ ICT as a Subject Content

- Within Specialized Subjects (e.g. Computer Science, Information Technology Management)
- Integrated with Other Subjects (e.g. Computer applications for mathematics, engineering, economics, etc.)

◆ ICT as a Tool

- For Academic Information Management
- As Learning Tool
- As Teaching Tool



ICT in enhancing learning & curriculum changes (Dede, 2000)

- ◆ ICT & multimedia can simulate authentic problem situations
- ◆ Networked communication provides virtual communities for students/teachers to practice advanced tools
- ◆ ICT learning tools & environment facilitate guided & reflective inquiry to acquire sophisticated concepts/skills



ICT in enhancing ... cont.

- ◆ Modeling & visualization software uses to bridge abstractions and experiences
- ◆ Collaborative learning environments & shared experiences
- ◆ Special designed learning environments



SITES Module 2

www.sitesm2.org

- ◆ **The Second Information Technology in Education Study: Module 2**
- ◆ An international study of innovative pedagogical practices that use information and communication technology (ICT).
- ◆ Sponsored by the International Association for the Evaluation of Educational Achievement (IEA).
- ◆ Participated by 28 countries to identify 174 innovative classrooms.
- ◆ National research teams used a common set of case study methods to collect data on the pedagogical practices of teachers and learners, the role that ICT played in these practices, and the contextual factors that supported and influenced them.
- ◆ The International Coordinating Committee (ICC) conducted a cross-case analysis using qualitative and quantitative methods.
- ◆ Implications are drawn for both improved policy and classroom practice.



Why ICT in Instruction?

- ◆ Providing access to a wealth of resources
- ◆ Assisting in self-paced learning and assessment; and
- ◆ Bringing groups together virtually to promote discussion – all in a learning environment that can potentially overcome the traditional boundaries of time and physical location or ability.



Integration of ICT in Instruction

- ◆ **Virtual Learning Environments (VLEs) and Managed Learning Environments (MLEs)**
- ◆ A VLE is an electronic system that can provide online interactions of various kinds that can take place between learners and tutors, including online learning. Many institutions have invested in a VLE; however, even if your institution has one, you will still need to consider all of the issues raised here to make effective use of it.
- ◆ Managed Learning Environment (MLE) refers to the whole range of systems and processes that contribute directly, or indirectly, to learning and the management of that learning (including VLEs). Many institutions are developing an MLE through joining up their various systems (eg MIS, VLE etc).



How to consider ICT?

- ◆ ICT must be placed in the context of a professional approach to teaching, with a holistic view of how it will fit in with the learning objectives of the topic, overall course design, and the assessment and feedback procedures.



Key issue

- ◆ Pedagogy
- ◆ Assess the cost
- ◆ Consider possibilities
- ◆ Incremental adoption
- ◆ Sourcing materials
- ◆ Creating or adapting materials
- ◆ Standards
- ◆ Legal implications



Further Resources

- ◆ www.iea.org
- ◆ www.sitesm2.org
- ◆ Kozma, Robert B. 2003. "Technology, Innovation and Educational Change – A Global Perspective", *A Report of the Second Information Technology in Education Study*. Pp. 81 – 124. ISTE Publication