

Design of teacher e-learning:

The scenario model

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Abstract: This paper deals with design principles for teacher education. In particular, it reveals the findings of research funded by UNESCO, the EU and the Danish Ministry of Education concerning scenario-based e-learning. According to this approach, learning scenarios can be considered as a focal point in the process of the design of computer-supported collaborative learning events tailored to the professional development of teachers. The teachers mainly produce these learning scenarios in order to develop knowledge about the learning potentials of information technology (IT) and planning competences regarding the implementation of IT into various learning environments.

Keywords: teacher professional development, learning scenario, use of information and communication technology, e-learning

1. INTRODUCTION

This paper reports findings from research, currently in progress, concerning teacher professional development. The research indicates that a crucial point in the development of teachers' competences is the design of learning scenarios.

A scenario of learning can be defined as a postulated sequence of imagined events aimed at someone's learning. It is characterised by particular roles of the learners, the teachers, and the IT.

Previous research (Nordenbo, 1989) concerning the planning processes, when teachers make decisions about situations of teaching and learning, indicates that teachers need knowledge about such scenarios. Choosing the best scenario can improve teaching efforts and increase learning outcomes. Therefore, it is recommended that the curriculum of both pre-service and in-

service teacher education contains topics and tasks where teachers construct and describe innovative learning scenarios with IT integration.

By producing learning scenarios, teachers can learn to implement IT productively, creatively, and effectively into their classes in order to foster their students' learning. These learning scenarios can then support the teachers in imagining and reflecting on their domain of practice.

2. LEARNING SCENARIO BACKGROUND

The flow of a learning scenario can be compared to a journey. The activities of the students and the teachers are the important steps of the journey. Like a journey, a learning scenario has a starting-point and an end-point. The starting-point is the learning potentials of the students, which depend, among other things, on the pre-requisite knowledge and skills of the students. The intended learning outcomes are the end-point.

Learning outcomes can be expressed in terms of the competences, which the students will be in a position to demonstrate when they have successfully finished the learning event. A competence framework can include personal and general competences, for example, the competence to co-operate and communicate by means of IT (Andresen, 1996) and fluency with respect to IT (Being Fluent with IT, 1999).

The scenario-based approach also deals with particular teacher competences. In this paper, the notion 'teacher competence' refers to teachers' knowledge and skills concerning reflective planning, performance, and evaluation of learning when students use IT in various ways to foster learning.

The traditional curriculum-related competences and the new IT-related competences complement each other (Andresen, 1998). Teachers thus need competences in both areas as illustrated in Figure 1.

The IT-related competence reflects the application of a variety of software genres into education. The mainstream IT genres are, among others, word processors, painting and drawing genres, spreadsheets, e-mail, and web-based sources and services. Thus, teachers must be capable of deciding how to use each of these genres according to the overall goals of the students' learning. In making these decisions, teachers benefit on having knowledge about how to use the IT genres most effectively in relation to subject-related and cross-curricular learning objectives. In particular, teachers appreciate being able to recognise and judge the specific contribution that the use of the genres makes to students' learning.

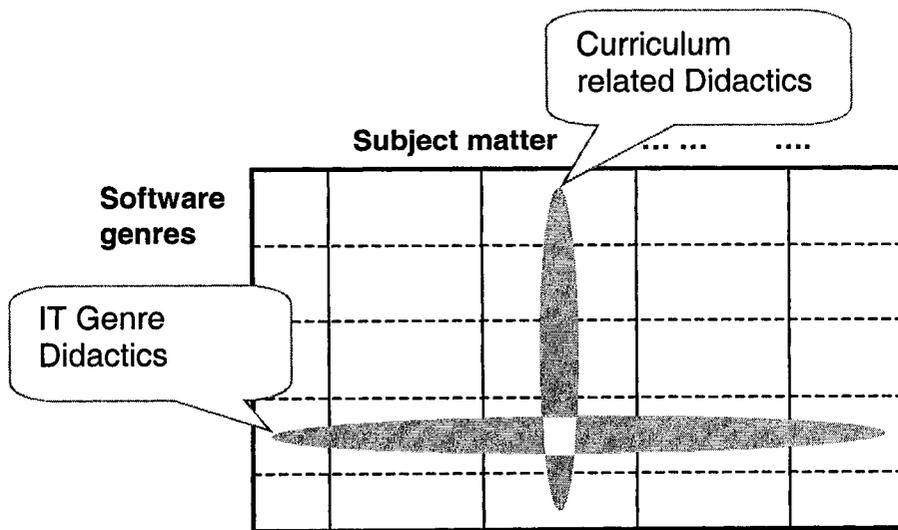


Figure 1. Two perspectives considering the application of IT genres into education

For those aspects of learning where an IT genre is to be used, teachers must be able to identify in their planning the way(s) in which it can be used to meet learning objectives. This encompasses knowledge about: 1) ways to assess students' progress and to make sure that the use of IT is appropriate to the particular students' capabilities; and 2) ways of teacher intervention in order to stimulate and guide students' learning (DfEE, 1998). In particular, teachers' competence encompasses knowledge about how to organise the work of groups of students dealing with IT for collaborative efforts ensuring that teacher coaching takes place when appropriate.

In short, teachers have to be capable of planning, implementing and evaluating learning scenarios, which reinforce teaching efforts and foster students' learning.

3. FOUR EXAMPLES OF LEARNING SCENARIOS

The number of scenarios is enormous. It is, however, possible to identify some ideal types of scenarios, which are typical of the everyday life of teachers in primary school, secondary school, at university, etc. Table 1 describes four learning scenarios with the use of web-based products. The scenarios vary with respect to the role of the students and the role of computers. The widespread use of IT is not limited to these four scenarios.



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