MobiLearn: Competence Development for Nomads

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ABSTRACT
Organizations in the new economy are dependent on organizational knowledge and competence. Workers in these organizations are to a large extent mobile. They need new competence development opportunities unrestrained by time and space. We have developed and successfully tested models, applications and activities (e.g. multimedia scenarios) supporting competence development. We are transferring this competence development activity to mobile settings to achieve successful competence development for nomads. The goal is identifying applications and services in the competence development realm suitable for 3G (third generation cellular networks). Combining our models and activities with the new technology we rethink how competence development can be conducted and managed.

Keywords
Competence development, distributed education, mobile devices, 3G.

INTRODUCTION
Organizations are dependent on organizational knowledge and competence [6] and managing this is a crucial matter. The importance for professionals to continuously learn is widely recognized. The workers of many organizations today are mobile to a large extent. They are both locally mobile and traveling between offices and other work locations [1,4]. We call these people nomads [3]. Nomads need opportunities for competence development adapted to their mobility. We have previously developed models and activities for competence development that have been successfully tested and implemented in stationary settings [5]. Currently we are developing these further, for a mobile context to support nomads.

COMPETENCE DEVELOPMENT
By competence development we refer to all the organized activities initiated to increase the capabilities of an organization. Including traditional training as well as acquiring of softer skills.

The approach applied in this research is guided by the notion of cognitive apprenticeship [2]. This is related to social constructivism [7] where knowledge is jointly constructed in interaction as opposed to traditional classroom teaching, which puts the learner in the position of an object of assessment: the instructor initiates, learner respond, and the instructor closes the sequence by either accepting or rejecting the learners turn [8]. Distance education in general follows this traditional pattern.

According to cognitive apprenticeship theory, learning is a process of participation in communities of practice, at first legitimately peripheral, working its way to the more central problem areas. Learning occurs through interaction in real contexts, in authentic learning tasks, communicating with peers concerning relevant situations. The most prominent activity in how we realize cognitive apprenticeship is the multimedia scenario.

MULTIMEDIA SCENARIOS
Multimedia scenarios is a competence development activity that use problem-based learning, interactive multimedia, experiential learning and role-playing as a theoretical and practical point of departure. The approach consists of four activities: (1) concrete experience through role-playing with a multimedia scenario, (2) a period of reflection, (3) seminar where the scenario is discussed, and (4) ongoing and organized learning processes [5]. A multimedia scenario takes about three hours to go through and are conducted face-to-face in groups of 6-8 persons with big screen IT-support.

The scenarios paint a colorful picture of a situation relevant to the participants. For example: one scenario describes the progress in a fictitious development project. This scenario is used in an organization that has a problem with projects. The participants are confronted with some background information. They are each given different roles to play in the scenario. A story about a project is introduced to the participants, the storytelling is made vivid by multimedia.

The members of the roleplaying project group have to make choices trying to make this project a success. A session is two to three hours depending on how much discussion the participants engage in. When the scenario ends the project also is finished. This way time is compressed in the project to create an overview. The multimedia scenarios have been successfully tested in face-to-face settings.
In order to adapt this activity for nomadic use, we turn to mobile technology, specifically 3G, which is the next generation of wireless communication.

3:rd GENERATION CELLULAR NETWORKS – 3G
3G is optimized to allow very high-speed multimedia services such as voice, Internet access and video conferencing. The technology will provide access speeds up to 2Mbit/s in the local area, i.e., hot spots, and 384 kbit/s wide area access with full mobility. This makes the system suitable for high quality multimedia on mobile devices [9]. Of course other wireless technology can serve as the network infrastructure for our purposes. Alternatives are wireless local area networks (WLAN) and satellite-based networks. However, we expect 3G to be the core technology with more complete geographical coverage and with a more realistic billing for our purposes.

MOBILE MULTIMEDIA SCENARIOS
With 3G we will have the technical possibilities of turning this activity truly mobile. Since 3G with videoconference is at least two years from the market the research is future oriented and of an experimental nature.

To be able to redesign and evaluate multimedia scenarios on handheld devices we have used Compaq iPAQs Pocket PC and Sony VAIO C1 Picturebook. iPAQs were used for simulation of the expected small screens of the 3G – terminals. The Vaio (small size, built in video camera) is excellent for testing videoconference with a wireless LAN (simulating future 3G networks).

The Mobile Multimedia Scenarios introduce the participants to the story by videoclips, text and soundfiles. Participants are given information about the role they will play and introduces themselves to each other. The introduction is done by text chat, voice and videoclips. They are also, at all times, encouraged to engage in videoconference with the other members.

The time span of the Mobile Multimedia Scenario is not as compressed as in the multimedia scenarios. It is rather dependent on how quick the participants can reach consensus about the choices they have to make. The story will not continue until each participant has voted about what to do (this also puts some pressure on the members to engage in the activity and not keeping the others waiting for them). We also try to make a “cliffhanger” effect with each decision: we want the participants to anticipate the continuation of the story and actively use the Mobile Multimedia Scenarios.

The original multimedia scenarios, being face-to-face, are suitable for role-playing, communication and direct response for the participants. In the Mobile Multimedia Scenarios we attempt to sustain as much as possible of the original environment’s benefits. It is problematic because of the limitations of communication technology and small screens. We are attempting to create a human-computer environment that encourages and simplifies communication within groups as well as having support for our educational models in order to facilitate collaborative learning.

DICUSSION AND FURTHER WORK
The Mobile Multimedia Scenario is web based and supports multimedia such as video, text-chat, file sharing as well as functionality for the story telling and the learning models. We have made a preliminary feasibility study concerning the principles of Mobile Multimedia Scenarios. Twelve people who we consider nomads have been guided through use-cases where they had hands-on opportunities and were asked to think out loud. From this study we draw the conclusion that Mobile Multimedia Scenarios are worth exploring and therefor the prototype will be further refined.

The server application for Mobile Multimedia Scenarios is currently being developed with an administrator module for design of scenarios and support for the facilitator of the group using the scenario. We are also building an experiment environment with wireless LAN for indoor as well as outdoor use for further evaluation.

Our interest is designing the Mobile Multimedia Scenarios so that they lead to competence development and provide intellectual stimuli for nomads. A second interest is design of graphical user interface suitable for nomadic competence development.

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