Introduction

Over the last twenty years the use of information and communication technologies (ICT)　in higher education has been promoted as having the potential to transform teaching and learning, raise standards and increase the employability of students (Laurillard, 2002).

Institutions of higher education have increasingly invested heavily in technical infrastructure and virtual learning environments to support teaching and learning and academic practice is progressively influenced by policies involving technological trends (de Freitas and Oliver, 2005). A critical review of research on the educational use of technology, however, reveals very little evidence of significant impact on teaching practices, rather, educational technology is being used to replicate or supplement existing practices (Hannafin and Kim, 2003; Lovelace and Ellis, 2001; Conole and Oliver, 2007).

The pedagogical adoption of ICT is a complex process influenced by many factors of both contextual and individual nature. The strategies adopted by individual teachers are shaped by factors such as disciplinary differences in educational technology use, informal social systems or academic cultural differences and the formal organisation of the university (Russel, 2009; Kreber, 2010). Teachers' beliefs and attitudes and their confidence and competence with ICT are also centrally important in the pedagogical adoption of ICT (Somekh, 2008). Any research carried out to investigate the adoption and use of ICT in higher education needs to combine these different individual and contextual perspectives in order to identify systemic patterns. Two aspects of particular interest here are how teachers' approaches to teaching and learning affect uptake and implementation of new practices with technology and how hands-on experiences in the area of teaching and learning with technology lead to transformation in practice

In 2003 the University of Umeå, Sweden, started an online Bachelor of Science in Pharmacy program in response to the need for qualified pharmacists in rural, sparsely populated areas. The program is Internet-based and is offered to students in two forms, as a distance study group and as local study groups located in various rural areas. After ten years of implementation, evaluation and development the program is today one of the most successful professional programs offered by Umeå University and in 2012 was the only Pharmacy program in Sweden to receive the assessment "very high quality" from the Swedish Agency for Higher Education (HSV) .

More than thirty faculty have been involved in the development and implementation of the program over the last decade, although only a third of the teaching staff have been engaged with the program for the entire ten-year period. Nonetheless, by examining the context and practices of the teachers over time it is hoped that valuable insights can be gained into changes in teaching practice and approaches to teaching in a technologically rich teaching and learning environment. This study aims to focus on two particular aspects: How do teachers' approaches to teaching and learning affect uptake and implementation of new practices with technology? Do practical experiences in the area of teaching and learning with technology lead to transformation of pedagogical practices?

Utilising the online Bachelor of Science in Pharmacy as a longitudinal case study this paper aims to examine the following questions:
• If and in what way has the implementation of digital technologies changed within the program?
• Can changes in teaching practices within the program be evidenced and if so are these changes transformational or incremental?

Method
Qualitative and quantitative data concerning the program have been gathered regularly since 2003 as part of the quality assessment and development programme of the Bachelor in Pharmacy. Data includes teacher questionnaires, semi-structured interviews, observation and analysis of online teaching practice. Documentation concerning program organization and management, student course evaluations and student results are also included in the study.

Comments
Preliminary results seem to indicate that there are important individual factors governing teachers' responsiveness to potential change situations. In similar teaching contexts, faculty reacted very differently to the challenges and opportunities afforded by technology enhanced teaching and learning on the Bachelor in Pharmacy Program. Differences in the individual teachers' approaches to teaching and learning with technology, in departmental teaching culture and in the individual's openness to change were all factors evidenced in the case-studies.

There is an urgent need to identify and implement strategies that promote the effective implementation of learning technologies in higher education if the quality of teaching and

learning is to be maintained. This study aims to explore and suggest strategies that can support academic development activities that enable transformation in teaching practice and stimulate pedagogical development in the field of technology supported teaching and learning.

References

Conole, G and Oliver, M (eds) (2007). Contemporary perspectives in e-learning research. London & New York, Routledge

De Freitas, S. and Oliver, M. (2005). 'Does E-learning Policy Drive Change in Higher Education?: A case study relating models of organisational change to e-learning.' Journal of Higher Education Policy and Management, 27 (1) 81-95.

Deaney, R, Ruthven, K and Hennessy, S (2006). 'Teachers' developing 'practical theories' of the contribution of information and communication technologies to subject teaching and learning: an analysis of cases from English secondary schools', British Educational Research Journal, 32:3,459-480

Errington, E. (2004). 'The impact of teacher beliefs on flexible learning innovation: some practices and possibilities for academic developers.' Innovations in Education and Teaching International, vol 41, no 1, February 2004.

Hannafin, MJ, and Kim, MC (2003). 'In Search of a Future: A Critical Analysis of Research on Web Based Teaching and Learning.' Instructional Science 31, no. 4: 347-51.

Laurillard, D. (2002). Rethinking university teaching, a conversational framework for the effective use of learning technologies. London, Routledge Falmer.

Loveless, A and Ellis, V (2001). ICT, Pedagogy and the Curriculum. London. Routledge

Russel, C (2009). 'A Systemic framework for managing e-learning adoption in campus universities: individual strategies in context.' ALT-J, Research in Learning Technology 17, no. 1: 3-19.

Somekh, B (2008). Factors affecting teachers' pedagogical adoption of ICT. In International handbook of informational technology in primary and secondary education. Ed. J. Voogt and G. Knezek, 449-60. New York:Springer.