

# Developing a roadmap for E-learning at LTH

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**Abstract—** Focus groups interviews were held with a range of stakeholders in order to adopt a scholarly and evidence-based approach to developing policy on e-learning at the faculty of Engineering at Lund University. Three themes emerged; Philosophy and epistemology, Learning Design and Policy and infrastructure. The groups saw increased use of e-learning as necessary and inevitable, but acknowledged barriers to be overcome in order to move forward, including policies, infrastructure and administrative and resource constraints. Long-term strategies and plans at all levels would empower appropriate and future-looking redesigns.

**Index Terms—**engineering, education, policy, infrastructure

## I. INTRODUCTION

The emergence of digital technologies has brought far reaching changes in economics, culture and knowledge exchange (McNeely & Wolverson, 2008). These changes have had profound effects on education, raising significant philosophical and epistemological questions (deWaard et al., 2011). For example: how do we educate increasingly large numbers of students? How do we address globalization, internationalization and the development of the knowledge economy? How do we include members of society in higher education who have previously been excluded? Should education be made freely available to all members of society regardless of their geographical location, and if so, how? And how do or should students experience learning in a digital interconnected world (Bouchard, 2010)? Hence the use of technology in higher education raises wider concerns, namely the democratisation of higher education. In other words, how can technology be used to help provide education for all factions of society despite variations in economics, culture, history, and previous educational standing?

Historically education has focused upon producing students with a head full of facts and knowledge: content was king. But the context of education across the world has changed becoming increasingly complex. Student enrolment figures continue to grow and universities are increasingly being required to cater for a larger and more diverse student body. This encompasses geographically remote students, part-time students, those wishing career development, those who may be disabled and physically unable to attend, or those who are juggling jobs and or families. The wider social context has also changed: businesses now operate on a global scale challenging international boundaries and politics. Thus students of the 21<sup>st</sup> century will need more than just an understanding of their field to be successful. In such circumstances it is not

surprising that institutions are increasingly turning to technological solutions in order to address these complex and diverse needs. So what kind of policy is required to support the needs of future students?

In recent years the Higher Education sector has made considerable investments in technology to address this. For example 93% of US-based higher education institutions have made significant investments in university-wide implementations of digital Learning Management Systems (Green, 2010). These are typically embedded in a wider set of university processes supporting teaching and learning. This has enabled those from even fairly meagre backgrounds to gain access to a range of knowledge using modest hand-held mobile devices such as phones. No longer do students need to ‘go’ to an educational institution just to gain knowledge.

However, some of the policies for digital solutions take for granted that technology is viewed as the agent of change in students’ learning outcomes (Kirkwood & Price, 2014). It is not uncommon for the focus of policies to be on the technology itself and its implementation rather than upon the impact of technologies on student learning (Kirkwood & Price, 2013b). Policy makers tend to eschew evidence in the development of educational technology policy, while practitioners, enmeshed in a bustling teaching environment, tend to rely on tacit knowledge (Anderson & Biddle, 1991; Fitz-Gibbon, 1999). Cohen, Manion and Morrison (2011, p. 336) question whether

“[i]t is bordering on the unethical to implement untried and untested recommendations in educational practice, just as it is unethical to use untested products and procedures on hospital patients without their consent.”

Research has already established that the *quality* of university education is not predicted by the size of institutional budgets, research grants or by faculty teaching ratios such as student contact hours (Macfadyen & Dawson, 2012). Yet many institutions prize their institutional ranking as a measure of student success. However, Pascarella (2001, p. 2) argues that:

[a] ... serious problem with national magazine rankings is that from a research point of view, they are largely invalid. That is, they are based on institutional resources and reputational dimensions which have only minimal relevance to what we know about the impact of college on students ... Within college experiences tend to count substantially more than between college characteristics.”

Rather, the best institutional predictors of student success are the ways in which institutions use their resources in

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order to make the utmost of whatever students they have (Gibbs, 2010). Gibbs further argues that the distinguishing feature of effective higher education institutions is the strategic use of funds in a manner in which supports an institutional culture committed to student success. Hence good decision-making in terms of policy, infrastructure, and academic development are critical features of excellent institutions. Thus, the development of institutional policy and organisational culture are crucial to the manner in which e-learning is adopted or embedded in universities (Czerniewicz & Brown, 2009).

These changes are currently reflected through the many initiatives taken at LTH by individual teachers, who develop e-resources that allow students to take more responsibility for their learning. However in order to continue to meet the expectations of new and future students and stakeholders, we need to be pro-active with respect to e-learning. This is to enable LTH to continue to be a relevant, attractive and high quality institution.

So how could we model policy for high quality student learning that encompasses technology (Kirkwood & Price, 2012, 2013a, 2013b, 2014; Price & Kirkwood, 2014, 2011)? This project has embarked upon developing policy to support continuing, new and future students at LTH. It considers the needs of a range of stakeholders in order to adopt a scholarly and evidence-based approach to developing policy. The aims of the project are to provide better informed decisions regarding e-learning to help develop and modernise teaching and learning at LTH.

## II. METHOD

The project focuses on developing input to policy regarding e-learning through understanding the views of a range of stakeholders regarding perceptions of engineering education LTH in the future. In particular we focused on:

- What perceptions are held regarding engineering education in 2025?
- What are the future trends and big issues facing the future of engineering education?
- How will engineering education be different in the next decade?
- What is needed to be put in place in order to support future engineering educational needs?

In order to get a range of perspectives we addressed three stakeholder groups:

- Students
- Teachers
- Administrative staff

This was to take a wide and collective perspective on the issues that might face these groups in supporting the future of engineering education and what technological challenges might need to be overcome.

The method used to elicit their views was focus group interviews. These were used to provide data regarding perceptions of long-term, over-arching trends regarding engineering education. The method was also chosen in order to:

1. Gain collective insights through discussion and to surface tensions within stakeholder groups that might need to be addressed.

2. To use the focus group approach to raise awareness of the future of engineering education in LTH and to stimulate further discussion in other fora in LTH.

The teacher and administrator focus groups were formulated through an email request to heads of units so that they could nominate staff who held representative perspectives on the future of engineering education. It was also to signal a clear commitment from LTH management to adopt a collaborative, scholarly and evidence-based approach to developing e-learning policy. The student group was formulated on request to the student union.

There were two teacher focus groups, one with 6 participants and one with 11 participants. There was one administrator focus group with 5 participants and one student group with 9 participants. Written consent was gained from the participants to make an audio recording of the focus groups interactions and this was later transcribed. Participants were assured of the anonymity of their interactions and that all data would be held confidentially. The transcriptions of the focus groups interactions were analysed using thematic analysis (Braun & Clarke, 2006).

## III. VIEWS OF THE FOCUS GROUPS

Initial analysis of the focus group data has indicated three emerging overarching themes. These are:

- Philosophy and epistemology
- Learning Design
- Policy and infrastructure

### A. Philosophy and epistemology

This overarching theme was concerned about the educational philosophy of LTH for the future and the importance of getting that right as a direction pointer for future teaching and learning development of LTH. Discussions around epistemology explored what LTH will understand by learning in the future; will it need to be 'certified' given the MOOCs movement and what is the role of universities in learning and supporting changes in educational provision? This also extended to whom LTH will be providing education for and for what purpose. This encompassed discussions about widening participation to students previously excluded from university attendance for a range of reasons and the role of universities in providing continuing support for professionals.

### B. Learning design

The learning design theme encompassed a wide range of topics that related to the design and structure of future modules and programmes of study. While it was clear that there was a need to incorporate new technologies this became an implicit assumption as discussion returned frequently to how the learning should be designed (and experienced) by students. Flexibly was seen as a very important provision for new and continuing students. Views regarding flexibly encompassed a variety of means through which to access education and flexibility in how students engage in their learning:

Maybe we will see different groups. Like a group coming here and being a community like the traditional view of an engineer and some new groups that will, like we mentioned, prefer to sit at

home [...] the best thing is if e-learning comes in natural on campus education

There was repeated discussion about improving student teacher interactions and a greater availability of small group interactions. This encompassed a radical re-think of how modules and programmes of study are designed and delivered so that more access to ‘content knowledge’ could be acquired through mechanisms other than the lecture theatre. This would enable students to develop as professionals working in a field through the development of appropriate skills rather than passive learners skilled at passing exams. The corollary of this is the impact on staff (academics) and their ability to radically rethink the design of their modules and programmes of study that work together holistically for students. Hence this would have a significant academic development implication. The groups did not provide solutions about how to combine profound rethinking of teaching with valuable aspects of campus life, such as networking. As one participant said “You cannot drink beer with an iPad.”

### C. Policy and infrastructure

The third theme to emerge was policy and infrastructure. This was recognized as a significant barrier to making changes in teaching and learning. The commentary from all the groups reflected a concern that the administration of educational provision in LTH did not reflect a progressive outlook on teaching and that many of the procedures reflecting administrative convenience rather than educational expediency for students. Hence learning designs and approaches to teaching were constrained by administrative procedures. This extended to policies and the associated infrastructure in relation to digital technologies, and in particular to the learning management system. Concern was expressed that there was a lack of clarity regarding the e-learning policy and that the operational plan associated with its implementation was vague. Concern was also expressed that the LTH LMS was an ‘in-house’ system rather than building upon ‘open source’ platforms that are more likely to be sustainable through the changing decade. The infrastructure to support the use of the LMS and digital technologies was also considered to be a weakness and a barrier to moving forward in a strategic manner to modernise and enhance student learning. Lack of effective policies, infrastructure, aligned processes as well the most precious of resource, time, was a great cause of concern:

I think that the student expect us to be flexible in 2025. Because if they can't find it here they can find it somewhere else.

## IV. CONCLUSIONS

All stakeholder groups agree on the necessity to re-direct education at LTH to encompass increased use of digital technologies, expressing their arguments in terms of access, attractiveness, quality and effectiveness. While there are many inspirational ideas in LTH about reshaping teaching and learning for the future, there are also acknowledged barriers to be overcome in order to move forward. The three themes provide a possible framework for developing teaching and learning in the future in LTH. Clarity regarding future e-learning policy would help in operationalising policies at the department and individual academic level. This would enable strategies and

operational plans to be determined that support the development of appropriate infrastructure. It would also enable long-term academic development plans to be developed. Such approaches would empower appropriate and future-looking redesigns of teaching and learning that reflect upon LTH as a progressive university developing and supporting high caliber professionals for the future.

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