

**UK&I Engineering Education Research
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Abstract Booklet



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UK&I Engineering Education Research Network 3rd Annual Symposium
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Abstract Listing

by First Author (**Surname**, Forename) with Paper Title

- 1. Aulak, Poonam:**
Global perspectives and challenges of transnational 'logistics' education; a review of literature
- 2. Daud, Muhamad Farid:**
Employers' Perceptions towards Generic Skills of Active Learning Experienced Graduates in Malaysia Engineering Education – The Emerging Findings
- 3. Dziallas, Sebastian:**
Exploring Characteristics of Graduates through Narratives
- 4. Ismail, Norhariati:**
Defining Work-Based Learning Approach in Engineering Curriculum - The Emerging finding
- 5. Johnson, Laura:**
Why are there more female engineers in Lithuania than in the UK? Comparing women's experiences of engineering in Lithuania and the UK
- 6. Kamaluddin, Rohaya:**
Industrial Practice Does Develop Practical Competencies in Malaysia Engineering Education – The Emerging Findings
- 7. Leyland, Laura:**
Grease Monkeys – NOT: Designing the engineering curriculum in the 21st Century
- 8. Mahmud, Mohd Nazri:**
Explaining enquiry-based interdisciplinary learning in engineering practice
- 9. Malik, Manish:**
Preparing Engineering students for lifelong learning and the world of work – Is there a role for the Engineer's Logbook in this?
- 10. Minshall, Tim:**
Review of potential impact of 3D printing on engineering education
- 11. Mitchell, John:**
Experiences of interdisciplinary project work in engineering programmes
- 12. Parkin, Neil:**
A Work In Progress - the influence of Trust on the sharing of Practical Knowledge in Technology Producing Small to Medium Enterprises (SMEs).

1. Global perspectives and challenges of Transnational 'Logistics' Education; a review of literature.

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CONTEXT

The purpose of this paper is to investigate key challenges and issues relating to the sudden and rapid development of Transnational Higher Education, with particular emphasis on Logistics Education. There has already been some interesting research conducted in this area, particularly by Knight (2005) who reflects, that while the Observatory of Borderless Higher Education in the UK tracks recent developments and reports on them, there is still a real need to ensure that 'cross-border education reflects and helps to meet individual countries' educational goals, culture, priorities and policies'.

PURPOSE AND RESEARCH QUESTION

The research question asks 'What are the challenges of cross-border education and what does this mean for the development of Logistics and Supply Chain Management courses involved in Transnational Higher Education? As already discussed by Zinn and Goldsby (2014), the merger of logistics, operations, supply management, and related disciplines into the broader field of supply chain management (SCM) has brought together academic fields with different professional identities and competing visions of what SCM ought to be; what students ought to be taught, and what the priorities for research and publication should be.

APPROACH

A systematic approach to review current literature will be adopted; two key areas will be considered. Firstly, the challenges of cross-border education and secondly, what this means for Logistics and Supply Chain Management courses involved in the Transnational Higher Education arena. An initial search of databases using keywords such as 'transnational + logistics + education' appears to indicate that not enough research has been conducted in this area.

KEY FINDINGS AND DISCUSSION

Globerson and Wolbrum (2014) state that academia continuously struggles with the content identification of logistics courses, wishing to support industry's needs. As expressed by Gravier and Farris (2008), articles about logistics education had progressed from asking, "Who are we?" in the 1960s and 1970s, to asking "What are we teaching?" from the 1980s. The debate concerning the content of a logistics courses will always be around since practitioners' needs are dynamic. These initial findings support the fact that an interest in logistics education has been growing, but the author has identified that a third dimension concerning transnational discussions is not apparent. Originality will be demonstrated through finding useful and enhanced working practices for the development of cross-border Logistics and Supply Chain education.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

The study is still work-in-progress and will indicate potential benefits which higher education and industry can reap from cross-border collaborations. An appreciation of culture-induced challenges will be noted; discussing how a blended or harmonised approach to maintain standards can be sought – with a common goal in sight and not necessarily 'one size fits all'.

KEYWORDS

Logistics, Transnational, Education, Culture

2. Employers' Perceptions towards Generic Skills of Active Learning Experienced Graduates in Malaysia Engineering Education – The Emerging Findings

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CONTEXT

International engineering projects and collaborations have become common and are increasing everywhere in the world. Researcher literature in engineering education has discovered that employer criteria in selecting potential engineers, not only depends on academic and technical knowledge, but also on generic skills. Graduates are expected to be equipped with updated generic skills to survive in the challenging industry - especially to become a 21st century international engineer. The perception of the employer on such skills represents an important part of learning and it is this perception which will be discussed.

PURPOSE AND RESEARCH QUESTION

The aim of this paper is to discuss the employers' perceptions and experiences of active learning experienced engineering graduates, specifically in generic skills perspectives, that have emerged during the initial analysis.

APPROACH

Following a case-study methodology, employers' experiences (working with engineering graduates) and their expectation towards three generic skills were investigated; verbal communication, problem solving and team work. Based on the purposive sampling, a total of 10 employers hiring graduates from two Malaysia Higher Education (HE) institutions, were interviewed using semi-structured interview techniques, transcribed, and the transcripts analysed using the thematic analysis.

KEY FINDINGS AND DISCUSSION

Overall, the employers' initial feedback shows that they are unsatisfied with the recent graduates' generic skills performance and felt frustrated with graduates' grades - which hardly represent the skills. Some of the key areas identified in the interview include reasons why it might be happening and what employers see as the most important in areas of the skills and their attributes.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

In conclusion, the findings emerging from the interviews reinforce the argument that there is a need for the HE to work closely, and maintain a constant engagement with the employer in order to detect the changes in industry, not only the current technologies used, but also to update the skills expected by the employers to better equip the graduates to increase employment opportunities and prospects. In order to achieve this, one of the primary outputs from this PhD study will be the generic skills assessment framework in the active learning environment; the aim of which will be to improve the assessment approaches whilst meeting alignment across the designated learning outcomes and in doing so can help to promote Engineering Education standards whilst meeting industry requirements.

KEYWORDS

Generic skills, active learning, and employers' perception

3. Exploring Students' Conception of Learning through Narratives

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CONTEXT

In contrast to studies that solely explore students' identity development during their time at university and beyond – and so have minimal focus on disciplinary and institutional context – others have sought a richer picture. For example, Stevens et al. developed an engineering-specific three-dimensional framework of learning consisting of disciplinary knowledge, identification (as an engineer), and navigation (through engineering education) [1]. And Begel and Simon observed novice software developers in industry and described instructional techniques to better prepare recent college graduates for their careers [2]. We draw on these (and other) works to examine students' experience of, and the effect of, an engineering education.

PURPOSE AND RESEARCH QUESTION

In this work we take a holistic view of students' development: we are interested in how students make sense of their educational experiences at particular institutions, how these institutions influence student learning, and what this reveals about students' wider learning trajectories.

APPROACH

We adopted a life story protocol for narrative elicitations of students' and graduates' learning experiences and conducted interviews with a small number of students at Olin College of Engineering. A life story approach presents an appropriate methodology to explore students' sense-making as evidence from research in psychology suggests that we construct stories to make sense of our lived experiences (which form our narrative identity). For the analysis of the interviews we used methods of grounded theory and narrative enquiry.

KEY FINDINGS AND DISCUSSION

The work we report here is a preliminary study. We present five thematic groups that emerged from our analysis of interviews with students at Olin College (of which all but one were either in their junior or senior year) [3]. Whilst these themes are particular to the cohort of students we interviewed, they also indicate the education that Olin provides, reflecting a curriculum that anticipates needs for a new kind of engineer and is designed to disrupt existing structures.

CONCLUSIONS

Narrative methodologies have allowed us to explore students' conception of learning. Longitudinally, we hope that they will also expose characteristics of "graduateness". We will revisit the students, who are now graduates, using the same narrative elicitation technique in the coming year.

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KEYWORDS: Narrative methodology; qualitative research; student experience

4. Challenges in Work-Based Learning Approach from Mentor's or Trainer's Perspectives

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CONTEXT

Over the past ten to fifteen years, learning and teaching approaches have changed significantly, in particular within Higher Education Institutions where the use of Active Learning has radically impacted on the exchange of knowledge at an undergraduate level. Such change reflects the rapid advances in technology and the move towards a globalized, knowledge-based economy. The implementation of Work-Based Learning (WBL) is another approach which, it is believed, can prepare students to be effective workers. In addition, the participation of industry has shown that it supports this kind of engineering education by providing a proper platform for knowledge sharing as well as its technical support for the production of future engineers.

PURPOSE AND RESEARCH QUESTION

This PhD study explores the vital role played by industrial mentors or trainers in order to successfully implement WBL in the workplace. The study looks, from their own perspective, at the challenge that such mentors or trainers face in running WBL. In addition, it sets out to analyse how well prepared industrial mentors or trainers are to implement Active Learning in the context of Engineering Education in Malaysia.

APPROACH

This research takes the form of a qualitative case study using in-depth semi-structured interviews. A total of 17 mentors volunteered to take part in this study, all of whom were directly involved in the WBL programme in one of the university's engineering courses. The data were analysed on the basis of the emerging themes which relate to the study.

KEY FINDINGS AND DISCUSSION

The key findings of this study suggest that some of the industrial mentors or trainers were unable to understand the purpose of the WBL approach and their role in it. Apparently, some of the mentors still believed that the approach is similar to the placement or internship activity which has been pursued by other institutions. However, most of the participants supported the approach taken by the present study as a positive effort towards producing competent workers upon graduation.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

In conclusion, the preliminary findings suggest that proper training and awareness should be given to the industrial mentors or trainers in order to make sure that WBL is efficiently and effectively adopted. In addition, a few important factors, namely, people's roles and the procedures and training required should be linked together for successful implementation of WBL. Ultimately, the findings from this study will reveal how well prepared are the mentors or instructors in Malaysia, as key components in WBL implementation.

KEYWORDS

Work-Based Learning, Preparedness, Active Learning, Engineering Education

5. Why are there more female engineers in Eastern Europe than there are in the UK? An exploration of women's experiences of engineering education in Lithuania and the UK.

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CONTEXT

Women currently comprise of only 5.7% of the engineering workforce in the UK (Wise: 2014). In Eastern Europe however, women comprise of around a third of the engineering workforce, with Bulgarian women making up 30% of the engineering workforce, Latvian women 29% and Lithuanian women 27% (European Engineering Report: 2010). The European Engineering Report (2010) argues that women's better representation in engineering is embedded in social and cultural conditions existing prior to, and related to communism. There is no current evidence to support this claim, and what studies do exist are out of date and irrelevant to Eastern Europe today (Durnell et al: 1998).

PURPOSE AND RESEARCH QUESTION

The purpose of this PhD is to determine why it is that women still remain better represented in engineering in Eastern Europe than in the UK. To achieve this, it will propose the following research question: How do female engineering students' experience engineering education differently in the UK in comparison to Lithuania?

APPROACH

The study will examine female engineering students' experiences of engineering education through their personal, historical narratives, drawing also on the experiences of male engineering students to gain insights into their perspectives of gender inequality in engineering. It will adopt an inductive approach within a social constructivist framework, utilising grounded theory techniques for data analysis. A purposive sampling technique utilised to select participants with the use of snowballing until theoretical saturation is reached. Data will be collected through semi-structured interviews.

KEY FINDINGS AND DISCUSSION

The study is currently in its infancy and no data has been collected so far. Speculatively, however, it might be that both engineering and gender are conceptualised differently in Lithuania in comparison to the UK. It could be that engineering is not as strongly conceptualised as a masculine profession in Lithuania as it is in the UK. It could be that there is a cultural legacy attached to women's historical participation in the technical workforce during the heavy industrialisation of the Soviet era.

CONCLUSION

This study will hopefully establish the contributory factors for why women still remain better represented in engineering in Eastern Europe than the UK, and whether women's better representation in engineering in Eastern Europe will continue, or eventually decline in line with the same levels across Europe.

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6. Industrial Practice Does Develop Practical Competencies in Malaysia Engineering Education – Emerging Findings

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CONTEXT

Practical competencies are a vitally necessary attributes in young engineers. Industrial placement exposes students to the need to develop practical skills and competencies. While some students do develop practical skills and competencies, others develop them less well, but on the whole the experience fosters the maturity of the students. The exposure to 'on-the-job-training' during placements highlights the practical competencies that may be developed through assessed and engaged work. This paper discusses the process whereby industrial placement develops practical competencies among students. The paper also refers to an empirical study in a Higher Education Institution in Malaysia which examines the process of developing practical competencies by engineering students during a period of industrial placement.

PURPOSE AND RESEARCH QUESTION

The purpose of this research is to learn more about the process of developing the practical competencies of Higher Education Institution engineering students during their industrial placement. It relates to the primary research question: "How do engineering students in Higher Education Institutions develop practical competencies during a period of industrial placement?" Ultimately, this PhD study focuses on the students' skills and competencies in active learning for good employability, in particular their technical and practical competencies.

APPROACH

A mixed methods design combines quantitative and qualitative research. This study seeks to develop rich insights into various phenomena of interest which can be investigated both quantitatively and qualitatively. The mixed methods approach in this study includes several components, such as structured surveys, semi-structured interviews and three case studies with content and document analysis. This leads to data analyses to find the answers to the research questions and to interpretation, which constitutes the final step in this research design. In the writing stage, narrative study is also employed.

KEY FINDINGS AND DISCUSSION

According to the emerging findings, practical competencies do develop during a period of industrial placement when students are prepared and gained experiences in the disciplinary study. Indeed, the students developed practical competencies when they are exposed to right experiences during placement. Whilst others, who have experienced different disciplinary background during placement, undeveloped their practical competencies with respect to the area of their engineering study. This claim is supported by data from 209 questionnaire surveys and 8 interviews with students. Therefore, it is anticipated that some students can develop practical competencies in this way, though not all of them do so.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Overall, the research findings from this study will contribute to knowledge, theory and practical applications to do with 'Students', 'Industries' and 'Higher Education Institutions' about the development of students' practical competencies and the enhancement of graduates' employability. In a nutshell, it is expected that this study of students' experiences on placement will result in a set of evidence-based guidelines for Higher Education Institutions and Industry.

KEYWORDS: Industrial Practice, Practical Competencies and Engineering Education.

7. Grease Monkeys – NOT!: Designing the Engineering Curriculum in the 21st Century

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CONTEXT

The paper presents why our engineering courses are bias towards male entrants as opposed to female entrants. Engineering is still perceived negatively by potential female school leavers seeking higher education courses. Whilst, this may be the way engineering is perceived in schools as a vocational rather than a professional career path, it also could be the way our own institution portrays the subject?

PURPOSE AND RESEARCH QUESTION

The purpose of this paper is to present findings from a 'Women into Engineering' event hosted at Birmingham City University during June 2015. The Event is part of a national series of events designed to raise awareness of engineering and support a feminist agenda within the context of engineering courses in higher education. The challenge facing our Institution is how can we design and deliver an engineering curriculum that takes on such new challenges whilst at the same time meet the expectations of the students and needs of industry?

APPROACH

The research was conducted using both primary and secondary research methods. Data investigating participation by gender was collected from our Institution and combined with sector-wide statistics to provide a picture of the gender imbalance in STEM subjects both within our Institution and in comparison across the sector at HE Level. Primary data was collected via a survey during the Women in Engineering Event that comprised year's 8-9 female pupils from schools in the West Midlands region. The day was divided up into presentations from women engineers and an activity designed to raise awareness of the context and role engineering has in generating creative ideas and solving real-world problems.

KEY FINDINGS AND DISCUSSION

The findings were conclusive in a radical change in perception of engineering amongst the pupils. This goes against current evidence of destination data showing low numbers of women entering HE engineering courses in the UK. Evidence suggests that universities in the UK need to develop a more 'female-friendly' curriculum and promote this more effectively at dissemination events.

CONCLUSION/RECOMMENDATIONS

Industry has raised the alarm of a shortage of STEM subjects, which includes engineering. If university engineering schools are to address this dilemma they must consider novel ways of attracting more female students on their courses. The Women in Engineering Event proved effective in changing perceptions of 12-14 year old girls about engineering as a potential career path as opposed to a 'grease monkey'. The event provided organisers and facilitators with an important insight into the expectations of this group and thus enables curriculum developers to include 'female friendly' content for future engineering courses.

KEYWORDS: Women into engineering, curriculum design

8. Explaining enquiry-based interdisciplinary learning in engineering practice

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CONTEXT

This paper reports findings from a study that seeks to explain the phenomenon of enquiry-based interdisciplinary learning in engineering practice. It focuses on understanding the enquiry-based interdisciplinary learning of practising engineers who learn knowledge related to the life sciences in the context of interdisciplinary development projects. It builds on the extant research on professional and workplace learning which emphasises the prevalence of learning through epistemic practices.

PURPOSE AND RESEARCH QUESTION

The purpose of this paper is to address the research question of “why practising engineers engage in different epistemic practices and how these practices lead to different learning outcomes?” The answers to this question reveal the different situational factors that govern the choice of learning practices and the achievement of learning outcomes.

APPROACH

This research uses the inductive case studies approach to develop an explanatory model in the form of a typological framework. In this inductive approach, a number of case studies are conducted in series to iteratively develop and refine an initial explanatory model, which then evolves, through rigorous data analysis and hypothesis testing, into the final typological framework.

Case studies data analysis makes use of three different methods of causal analysis which are conducted in a complementary way: 1) the comparative analysis method, which compares similar and different ‘types’ learning instances in order to develop testable causal inferences, 2) the congruence method, which assesses the congruence of the causal inferences as well as their rivals against case studies data in order to determine the most plausible explanation, and 3) the process tracing method which further tests, and where possible, provide resolution between competing explanations.

KEY FINDINGS AND DISCUSSION

Findings show the complexity of the causal relationships between different situational factors, epistemic practices and learning outcomes which can be adequately embodied in a typological model. Different configurations of situational factors and epistemic aspects of interdisciplinary learning could lead to either similar learning outcomes (equifinality phenomenon), or different learning outcomes (multifinality phenomenon).

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

The findings implicate the importance of knowing the situational factors, diagnosing them and engaging in suitable epistemic practices when undertaking enquiry-based interdisciplinary learning in engineering practice.

KEYWORDS

Enquiry-based learning, interdisciplinary learning, inductive case studies

9. Preparing Engineering students for lifelong learning and the world of work – Is there a role for the Engineer’s Logbook in this?

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CONTEXT

Engineers for years have used some form of records system for recording their experiments, findings and studies, for example an engineer’s logbook. Logbook use within the industry has become more advanced in recent years. It has been shown that by analysing the content of past logbooks, information retrieval for future projects can be improved thereby helping engineers in design and troubleshooting. McAlpine et al, (2006) have studied an engineer’s use of logbooks for information retrieval in detail and proposed using electronic systems for improving searching within such documents. Within medical schools, where logbooks are also used, a review study suggests several of its benefits backed by research evidence. However, there is no such equivalent study within Engineering Education yet.

PURPOSE AND RESEARCH QUESTION

This study investigate the student motivations for keeping logbooks and if something can be done to motivate all students and encourage reflective activities in them such that they become more independent thinkers and prepared for lifelong learning. To do so, the following research questions will be investigated:

- What types of events (critical and non-critical) do students record within their logbooks?
- How can we detect these critical events within student logbooks for automated detection?
- What motivation related cues can be extracted from the logbook text as well as its revision history and edit records?
- What motivates students to record and reflect on their work in the logbooks?
- Can an intelligent tutoring system encourage more reflection within student logbooks?

APPROACH

Logbooks of final year engineering degree programme were captured for a 2 year period. These logbooks were then coded based on categories identified in existing literature as well as using plan, do, record and reflect as four broad categories to start to make sense of the temporal relation within and between entries throughout a project’s life cycle. A total of 120 individual student electronic logbooks were used in the first two years of this project.

KEY FINDINGS AND DISCUSSION

The paper shows how student motivation and other useful information can be captured from such artifacts as well as how automated coding can be used in a multi layered way to detect patterns that can prove useful for students and supervisors over the life cycle of each project. Initial coding of the logbooks has been done allowing us to automate future coding using the training data and model built for event identification.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

The paper will show how staff can benefit from knowing why students do and record what they do in their logbooks and if and how we can impact independent thinking and reflection.

KEYWORDS

Project Logbooks, lifelong learning

10. Review of potential impact of 3D printing on engineering education

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CONTEXT

Recent and on-going changes in economic, industrial and organisational structures (i.e. 're-balancing' of the service and production aspects of economies in the wake of financial crises; and 're-shoring' of production capabilities) are resulting in increased demand for engineering skills in many sectors. In parallel with these changes has been the emergence of a range of advanced production technologies (of which one of the most high profile is '3D printing' (3DP)). The diffusion of 3DP is highlighting the need for a range of new and specialised skills, but also revealing the gaps in the understanding of the nature of the required skills and the consequent possible required changes to engineering curricula.

PURPOSE AND RESEARCH QUESTION

The aim of this paper is to review and categorise existing research on the issues that connect the emergence of 3DP with engineering skills development, and to highlight areas for further research.

APPROACH

We use a structured review of literature, drawing upon (1) academic research from economics, manufacturing strategy, and industrial and education policy, and (2) the wide range of policy and consultancy reports published by government agencies, private sector consultancies and professional engineering institutions. The findings from this literature are presented as a framework that allows us to characterise and show the interconnections between the issues observed, and highlight gaps in current knowledge.

KEY FINDINGS AND DISCUSSION

Our preliminary results show that there are two broad categories of research that connect 3D printing with engineering education. Firstly, the emergence and diffusion of these production technologies is resulting in the need for some changes to be made to engineering curricula. Some changes will be needed to help students develop additional capabilities, e.g. 3DP-specific CAD skills. Other changes relate to the way in which students learn about existing concepts, e.g. accelerating the design process through the use of rapid prototyping with 3DP. The second category relates to the way in which the high visibility of 3DP among the broader population has the potential to increase engagement with STEM activities at primary and secondary level schooling. However, research on the way in which 3DP could support children's learning and impact their perception of STEM is very limited.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Our initial analysis reveals skills-related issues that are common to the diffusion of many novel production technologies, but also highlight issues that may be unique to 3DP (e.g. the impact of higher levels of design freedom on the skills required of industrial designers; the need for specific materials-related skills, *et al.*). In addition, some research is showing that 3DP may be able to play a role in a range of skills development and improving level of STEM participation. Our structured review of the literature shows that while the generic issues of advanced production technology diffusion and changes to engineering curricula are reasonably well researched, the STEM participation issues are much more emergent and speculative, hence further work is required.

KEYWORDS

3D printing, engineering skills, curriculum change

11. Experiences of interdisciplinary project work in engineering programmes

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CONTEXT

Most real engineering problems do not respect the boundaries of the traditional academic disciplines. Instead they require engineers from a number of disciplines to come together in teams with mixed expertise and experience to generate and deliver novel solutions. In many academic settings, creating authentic problem-solving experiences of this nature is difficult as the constructs of the academic disciplines often prove a barrier to such activities. This work looks at students' responses to interdisciplinary learning experiences in the early years of their degree programme.

PURPOSE AND RESEARCH QUESTION

This study aims to investigate the students' experience of interdisciplinary project in the early stages of their degree. In particular it aims to identify the attitude of students to such activities and their perceived attainment of key learning outcomes.

APPROACH

This study analyses data collected via both questionnaires (including pre- and post- attitude studies) and group interviews from two separate interdisciplinary activities developed as part of the Integrated Engineering Programme (IEP) at UCL, UK. The work presented looks at the student experience of two five-week projects in the first term of their first year and a two-week intensive project at the end of the second year. In total over 600 students took part in the first year projects and 500 in the intensive second year programme. The data was collected in the 2014/15 academic session, where the first year projects ran for the first time. This work presents some early findings from a longitudinal study that aims to track the development of student attitudes through the whole three or four years of their engineering programmes.

KEY FINDINGS AND DISCUSSION

Initial analysis clearly shows that the majority of students recognise the value and challenges of interdisciplinary working whilst finding it enjoyable and stimulating. Further analysis on the achievement of key learning outcomes is ongoing as part of the longitudinal study.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

The study aims to show the benefit to students of working in interdisciplinary teams early in their degrees. Although it was hypothesised that the differences between student groups at entry might not be significant, early analysis suggests that this is not the case. We aim to show the key areas of attainment perceived by students subsequent to their experience of interdisciplinary projects.

KEYWORDS

Project-based learning, Interdisciplinary projects.

12. An investigation into the influence of Trust on the sharing of Practical Knowledge in Technology Producing Small to Medium Enterprises (SMEs).

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CONTEXT

Congruent with the growing importance of SMEs in Europe, Staplehurst and Ragsdell, (2010) have noted growing evidence that SMEs in the UK are adopting knowledge sharing strategies to become more competitive, which also have implications for organisational learning and trust.

As with knowledge sharing, Tunsi, (2012) outlines that the sharing of Practical Knowledge is the key to the success of organisations, as it is part of intellectual capital it can contribute to sustained competitive advantage. One of the key motivations for sharing practical knowledge is to retain it within an organisation, thereby enabling organisational learning and development.

PURPOSE AND RESEARCH QUESTION

In general terms, research on practiced based knowledge sharing has acknowledged the importance of Trust; however this area has not been the specific subject of academic research.

The aim of this research is to formulate a framework which provides insight into how Trust influences the sharing of Practical Knowledge in Technology Producing Small to Medium Enterprises (SMEs).

APPROACH

Since this 'work in progress' will examine how personnel in SMEs use Trust based strategies within their daily work to share Practical Knowledge, Ethnographic Case Studies, a recognised qualitative research methodology has been identified as being suitable for this research.

For this research it is envisaged that a qualitative Ethnographic research instrument may be designed specifically to capture, process and analyse both the explicit and tacit phenomena yielded from practical knowledge sharing activities and categorise the implications for organisational learning.

KEY FINDINGS

- A framework will be formulated with associated empirical phenomena that outline how trust influences the sharing of Practical Knowledge.
- Best practice guidelines for developing Trust literacy for Engineers when sharing Practical Knowledge in different organisational settings.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Whilst the research is in its early stages, the most challenging aspect of it has been selecting an approach research methodology. Ethnographic based case-studies was chosen as it is envisaged that this will enable the researcher to more accurately capture how trust influences the way Engineers go about sharing their practical knowledge in their daily work.

KEYWORDS

Practical knowledge, knowledge sharing, trust.