

Uncovering the boundaries for learning through a Legitimate Peripheral Participation (LPP) and Communities of Practice (COP) lens: A case of civil engineering students in post-summer placement transition through university

Overview

Summary

Students returning to university from an industrial summer placement are in transition through two different learning environments. They leave behind a culture where their knowledge construction is undertaken in a collaborative space, guided through mentoring by a community of professional engineers. They are exposed to real-world problems, vocabulary and artefacts that assist them to take on an identity as a civil engineer. On return to university they re-enter a learning space that is largely characterised by competitive learning whereby a different identity is shaped through learning codified knowledge and where academic staff can be 'gatekeepers' to a curriculum of knowledge that is often simulated rather than real-world. Negotiating the boundaries between these two environments (often on multiple occasions over a 5 year MEng degree) en-route to a graduate position is known to be troublesome for students. Employing a social learning systems approach, particularly the concepts of LPP and COP can provide a lens to understand and improve the transition process for students and faculty.

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Context

Department of Civil Engineering

Contact Details

Dr Mike Murray

<https://www.strath.ac.uk/staff/murraymichaeldr/>

Themes

Student Transitions

Rationale

Placements & Professional Identity Formation

The Engineering Council (2014, p.13) recognise that industrial placements provide 'opportunities for students to apply their knowledge and understanding of theoretical concepts to practice and to exercise their professional judgement'. Johri and Olds (2011) refer to engineers in training forming their identity through their participation within a community of practice of professional engineers. Allie et al (2009, p. 362) recommended that faculty should help students develop a range of authentic engineering identities. However, research (Auburn, 2007; Pirie and McNicholas, 2015) has revealed that students who had returned to university from placements found that faculty had little interest in incorporating their learning within the formal curriculum.

Theoretical Framework

Lave & Wenger (1991) proposed an influential theory of situated learning: Legitimate Peripheral Participation (LPP). This is a way of understanding learning, as opposed to a framework which may be implemented. Mercieca (2016, p.9) argues that LPP has 'particular importance in practice-based programs in HE institutions' and that students require support so they are able to make a successful transition between the workplace and academic communities. Thus enabling the students to negotiate their identity.

CoP's as a Structural Model or Emergent Entity

Case (2008, p.14) has suggested that for engineering educators that 'the community of practice thinking tool can also be used to drive a more radical rethink of what we do'. Healey et al (2014) recommend 'partnership learning communities' whereby staff and students are involved in mutual support co-creating and sustaining new communities. However, Carnell (2007, p.37) argued that 'the idea of belonging to a community of learners challenges traditional views about teaching'. Indeed, Arthur (2016, p 232) has noted that 'universities today may not be hospitable environments in which CoP's can flourish'.

References

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Methodology

Data Collection

The project is divided into two Stages. Stage 1 (September-November 2016) involved an extensive literature review concerning the key concepts (Legitimate Peripheral Participation and Communities of Practice) with particular concern for how they have been conceptualised and applied within higher education settings. Stage 2 (December 2016- May 2017) involved the collection of primary data (vis-à-vis) semi-structured interviews with a purposeful sample of (N=19) undergraduate civil engineering students who had secured an industrial placement during summer 2016. Prior to the interviews each participant was asked to reflect on three examples where they considered that their professional identity had been shaped during placement and to have these in mind to discuss at their interview. The theoretical constructs informing this research were not discussed with the students.

Data Analysis

At the time of writing the transcribed data has only been subjected to a partial and cursory coding by the lead. The coding procedure has followed a deductive-inductive path in taking account of the guided semi-structured interview questions that elicited responses from the students about identity at work and transition to university. A pragmatic decision was taken that certain demographics (age / gender/ year of study) of the sample would not be considered in the data analysis.

Key findings

- Professional Identity formation during placement is enacted through disciplinary narrative and for novice student engineers a professional community provides an authentic legitimate peripheral access to identity formation through language:

Then it was really interesting to be in that meeting and be able to start understanding the language

that was being used. So when you start understanding the language of engineering, I suppose

you start feeling more like you are an engineer. (# 1)

- Opportunities for identity formation post transition occur where real-world engineering customs and practice are reflected in the curriculum and pedagogy:

This fourth year was quite an interesting year in terms of coursework. Because there has been a

lot of group work. That actually is pretty much the same as you would normally do as an engineer. (#

5)

- Power & authority relationships between academics and students provide barriers to prevent student engineering identity formation post placement transition:

If a good lecturer speaking to a student as an equal and as a civil engineer instead of as a

student who, you know, just want to get rid of for this year and not see them next year or whatever, then I think, yeah, if you have a good lecturer who speaks to student as an equal, it can help form an identity of a civil engineer. (# 4)

Recommendations

- The Department of Civil & Environmental Engineering should establish a student-academic CoP so as to leverage explicit/ tacit knowledge, and identity formation experiences from students who have undertaken industrial placements.
- If authentic student-academic CoP's focussed on professional learning are desirable in HE then universities should ensure that a sufficient number of faculty members have gained relevant industrial experience.

Next steps

On completion of the research during Winter 2017 it is envisaged that the analysis of the data will provide some guidance as to the opportunities and barriers related to cultivating an undergraduate student-academic CoP within the department of CEE. Whilst not perhaps evident, such communities are already prevalent in research whereby professors grant LPP to doctoral students (Wenger, 1998). Given that the TEF (and considering HE's in Scotland are participating or observing) is now operational, the opportunity to rethink undergraduate pedagogy should be seized. Should faculty be unwilling to lead then there is growing evidence of student-led CoP's (Knaus and Callcott, 2016) that should provide suitable inspiration for students to negotiate their professional identity in both the curricular and co-curricular teaching and learning space.

References

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Lessons learned

Agency and Power

The students professional identity formation appears to have flourished where they considered themselves to be legitimate stakeholders in the learning process with agency 'to become' a professional civil engineer. On the transition back to university several students made explicit comments about being denied agency.

Opportunities for Authentic Learning

The evidence from this research suggests that students had legitimate access to authentic learning experiences during placements but that on transition to university there was a perceived lack of authenticity. Notable exceptions were where students engaged with academics with industry currency or with engineers during co-curricular problem solving workshops (CE4R).

Student involvement

Stage 1 (September- November 2016) Intern- Barney Stark, 4th year BA (Hons) Psychology.

Stage 2 (December 2016- June 2017) Interns- Siyana Hristozova BA (Hons) Business with HRM & Hamza Tariq BA (Hons) Psychology & HRM

Links/Attachments

Murray, M., Hristozova, S., Tariq, H & Stark, B. (2017) Undergraduate Post- Placement Transition to University: Contested Identities within Communities of Practice? *QAA 3rd International Enhancement in Higher Education Conference: Inspiring excellence - transforming the student experience*, 6-8 June 2017 - Radisson Blu Hotel, Glasgow, UK. <http://www.enhancementthemes.ac.uk/docs/paper/5-1-2-undergraduate-post-placement-transition-to-university-a-community-of-practice-pdf?sfvrsn=4>

Slides are available below

Related Outputs

Murray, M., Tennant, S., Forster, A., Craig, N., Copping, A & Pilcher, N. (2017) Talk the talk and walk the walk: Are career academics gatekeepers to my tacit knowledge? *Journal of Perspectives in Applied Academic Practice - Special issue on Student Transitions* 5(2):112-114, doi:10.14297/jpaap.v5i2.268. (Document available below)

Tennant, S., Murray, M., Gilmour, B and Brown, L. (2018) Industrial Placement for Civil Engineering Students: A Case Study of Four Universities, Summer 2015. *Industry & Higher Education*. (IN PRESS)

File	Modified 
PDF File Talk the Talk and Walk the Walk Are Career Academics Gatekeepers to.pdf	Nov 24, 2017 by Alex Buckley
PDF File QAA CoP.pdf	Nov 24, 2017 by Alex Buckley
File Uncovering the boundaries for learning through a Legitimate Peripheral Participation (LPP) and Communities of Practice (COP) .url	Nov 24, 2021 by Natalia Oleynik

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