EXPLORING AND ENHANCING THE IMPACT OF STUDENT AMBASSADORS

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Why a focus on STEM student ambassador outreach activity?

- Ambassador schemes across HEIs: ambassadors are the public face of universities
- Lack of knowledge of routes and careers in and with STEM
- Skills shortage – available jobs in STEM (local, national and international)
- Jobs available at different entry points and wage premium associated with STEM careers

- Young people from lower socio-economic groups, girls and black and minority ethnic young people are under-represented in STEM study post sixteen and in STEM careers
- Many young people and particularly girls, decide careers in STEM are not viable for them at an early age (Archer et al., 2010; Macdonald, 2014).
- Adult figures are important in motivating young people and encouraging progression in STEM subjects (Macdonald, 2014; Rodd, Reiss and Mujtba, 2013)
- Lack of positive 'role models' continues to be an issue, particularly for girls (Macdonald, 2014;)

The Studies

UK

- An ethnographic study - observation of activity/review of materials/ semi-structured interviews with academics, organisers, ambassadors and school students
- Data collected over 2 years (2008-2009)
- Study centered on 2 contrasting universities in the same geographic area

USA

- Observation of activity/review of materials/ semi-structured interviews with academics, organisers and ambassadors
- Data collected over 1 month
- Case studies of STEM ambassador activity at 4 research intensive universities (East coast)

Research approach

- Foucauldian discourse analysis and Post-structuralism
- Learning theory
- Ethnography
- Social Psychology
- Grounded Theory

Role Models

- Be honest, be yourself … you are very much a role model (UK Elite University: WP coordinator)
- They see us as a role model – they want to do it – like two of the students actually told me that (UK New University ambassador: summer school)
- A role model who teaches them things (US ambassador: summer school)

Stakeholders

- HEIS
  - *Project managers*
  - *Marketing departments*
  - *Academics*
  - *Diversity Units (US)*
  - *University management*
- Schools and colleges
  - *SLT*
  - *Teachers*
- Funders
  - *HEFCE/OfS (UK)*
  - *Charities*
  - *Business/ individual donors*
  - *Funding bodies (e.g. National Science Foundation (NSF), National Institutes of Health (NIH)) (US)*

Marketing

- ***It's an 'arms race' to attract customers and customers want to talk to other customers*** *– they want to talk about students and find out about the student experience…* ***Student ambassadors are an important aspect of our marketing strategy for high end students*** *– the high achiever kids … student ambassadors are really important (Academic: US)*

- *Working for the AEP is like customer services – you treat the children with respect so that they're nice back to you (UK Engineering Day: ambassador)*

- *The supervisors didn't really help me - it's 3 years till I go to university – I don't really want to know – I'm not bothered. I already know what you have to do – I knew the stuff that you can do – stuff you can gain from it (UK: Engineering Camp – school student)*

Aspiration Raising - indvidualisation

- *'I want to go back to my home town and* ***show them there's more than just community college****'. (US: Ambassador)*

- *Chanelle: Yes, you don't have to come from an upper class background or a grammar school to get to university. You can come from where they are coming from;* ***there's no real boundaries apart from your actual expectations in your head, I think.*** *It's like, if you think you won't be able to make it then that's going to limit you in where you're going. If you think I can do this, I can achieve what I want to achieve then that will give you inspiration to go and if there is someone telling you, you know* ***I came from where you come from; I came from a lower privileged background and I'm here; it inspires them*** *(UK: Medical Day)*

Identity

- Qadira: A lot of the girls say – oh so what engineering do you do? Always, always, always, always – because they always have it in their mind ah that it's just guys. Being a girl there it always seems to get them like interested. … on Monday somebody (girl) asked me – are you meant to be in this room? I was like – yes (Engineering Summer School: UK)
- We approach it through our identities. Other (white) volunteers don't have the same relationship that we do – they can't relate to the students culturally as we can. It's different with us (US: After School Science club)
- Hello Science – welcome to my clothes! (UK: Medical Day)

Pedagogy

Learning contexts: Attributes of in/formality (Malcolm Hodkinson and Colley, 2003):

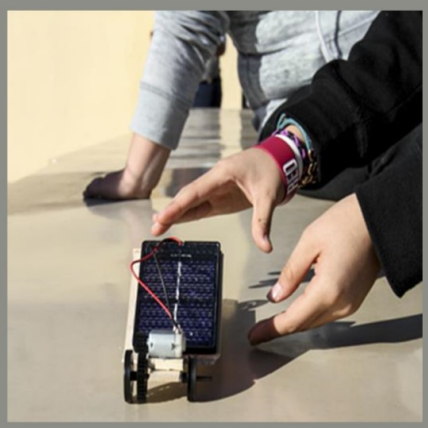
- Process
- Location and Setting
- Purposes
- Content

Experiential learning

'Becoming' is a matter of learning by doing: apprentices learn a new craft by becoming active participants in the processes of a social community rather than by assimilating an abstract body of knowledge … experiential learning is critical …once people begin to act in a certain way, they gradually come to see themselves as the kind of person who acts that way (Ibarra, 2007: 9)

Ayisha:... because we're students and they're students –I know they might not be the same age but - you kind of have the sense of...they seem like us (UK: Engineering event – school student)

Figure 1. Attributes of 'informality' (Colley et al. 2003): One Day Engineering Event (UK)

Attributes of in/formality	Process	Location and setting	Purposes	Content
Engineering Event 	The learning 'process' was 'negotiated'. No planned formal assessment or pressure on ambassadors to ensure particular learning outcomes. No 'predetermined learning objectives', 'curriculum' or 'external certification' 2003: 30-31).	Company offices	Students had to draw on their STEM subject knowledge, but curriculum learning was not the main aim of the activity. 'Purposes' were mixed including: aspiration raising, developing subject knowledge, promoting key messages about engineering, developing knowledge of progression, routes and careers. Outcomes could only be 'activated by individual learners' (Becket and Hager 2002) as a result of their engagement with activity and ambassadors. Learning outcomes were therefore largely 'learner determined'.	Emphasis was on 'uncovering knowledge derived from experience'

Ambassadors' contributing to emerging 'possible selves'?

Possible Selves (Markus and Nurius, 1986)

Harrison (2018)

- Intervention Point 1: developing a 'palette of possible selves available to the individual' N.B holistic view of possible selves (homeowner, career, routes)
- Intervention Point 2; engaging with young people's beliefs about their ability to exercise control and succeed at tasks (parents and teachers)
- Intervention Point 3: enabling young people to elaborate vivid and detailed like to be future possible selves (active process)
- Intervention Point 4: focus on HE and what is desirable and realistic

Ibarra (2007) /Gartland and Smith (2018)

- Work activities (experiential learning)
- Relationships and Networks 'guiding figures… role models … people who embody new possibilities' (2007:140)
- Life Events

US

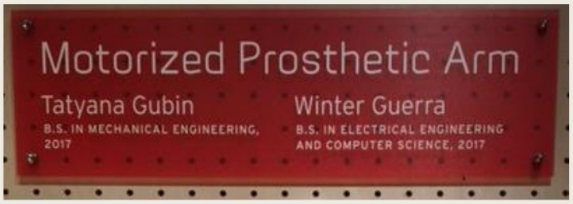
Active engagement of academics and post graduate students and focus on subject specific pedagogies

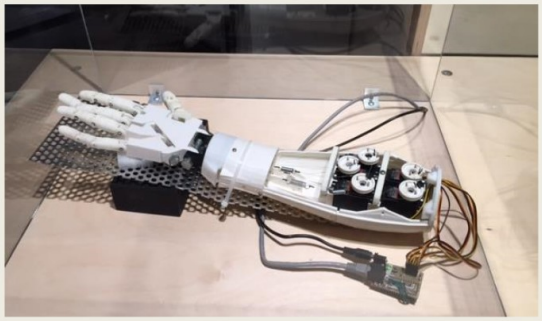
- *disciplinary fidelity (US: Academic)*
  - *it's important for young people to understand what engineering looks like at university (US: Academic)*
- *Following the scientific method (US: Ambassador)*
- Prescribed framework informed by the NAE and engineering education department at the university (PBL approaches):
  - *ten minute presentations, five to ten minute planning session, thirty minutes of building time and ten minutes sharing*
- Engineering Ambassadors Network (EAN)
  - Assertion Evidence Method
  - Conferences
- *students are interested in science communication … funding agencies are focused on public engagement (US: Academic)*

Community Engagement

- ‘it’s a moral obligation for me – I feel I should be giving back’ (US: Ambassador)
- ‘it’s not a job it’s a calling.’(US: Ambassador)
- university buildings are encroaching on community lines… they need to make a positive contribution to the community (Academic)

- ***‘Active citizenship’*** has been found to key in supporting student engagement (Zepke and Leach, 2010)





Targeting

University based sustained activity with 'a select few' vs working inclusively with whole class groups in schools

> *…schools (and careers services) are particularly important for disadvantaged children in that they can potentially provide a fairer distribution of cultural and social capital and opportunities for supporting, developing and informing children's interests' (Archer et al. 2013).*

- *'We want to get to every kid – not just those already into science' (Academic – USA)*
- 'We have tried to make certain that everything we do in outreach is designed to broaden participation' (Academic, USA)
- 'We have kept our values at the expense of some funding' (Academic, USA)

Conclusions

Ambassador outreach activity has the potential to ‘disrupt existing gendered, raced and classed subject identities and ’ and ‘interrupt dominant identity patterns of (dis)identification’ (Archer et al, 2010) in STEM

but

Dominant discourses and practices in HEIs can:

- position ambassadors as marketers and school students as consumers
- individualise success and problematise school students as lacking appropriate ambition
- embed existing stratification
- focus on targeting small numbers of high achievers and fail to be inclusive
- neglect pedagogy, undermining the quality and impact of interventions

Theoretically informed ways forward for practice and evaluation of ambassador activity

- Drawing on theory and research provides us with areas to focus on, explore and 'measure' when evaluating ambassador activity
- Theories and concepts can be used alongside the *NERUPI framework* to provide a more detailed understanding of the contribution of ambassadors/how they are best used in outreach activity.
  - *Pedagogies: attributes of in/formality (Colley et al, 2003)*
  - *Possible selves (Ibarra, 2007/Gartland and Smith, 2018; Harrison, 2018)*

NERUPI

- Social and academic capital – progression curriculum
- Habitus – student identities
- Skills Capital – skills curriculum
- Intellectual capital –knowledge curriculum

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