

Embedding employability and transferable skills in curriculum: A practical, multidisciplinary approach

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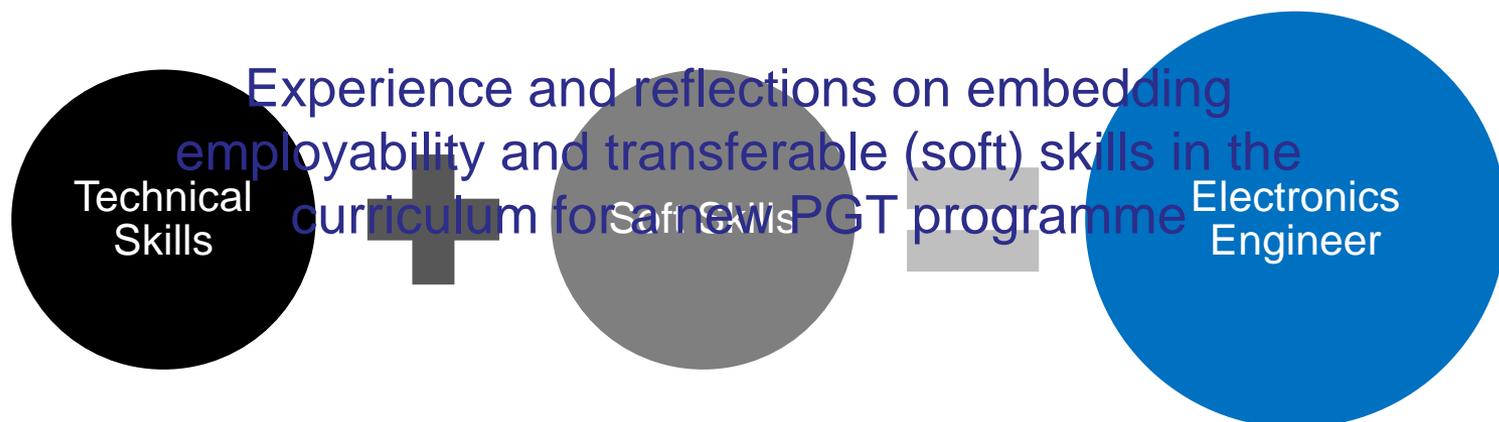
Outline

- Introduction
- **Embedding employability and transferable skills in curriculum**
 - **Part 1- Background and Rationale**
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 - Rationale from literature/research
 - **Part 2- Implementation**
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 - Present and Future

Introduction

- **MSc Electronic Systems Design**

- **New PGT course** at the University of Bath
- Focus on **students' employability** by giving them the practical design skills to take a lead role in the **electronics industry**
 - Learn how to research, design and develop electronic systems, engineering technologies, processes and products



**Embedding employability and transferable skills in curriculum:
A practical, multidisciplinary approach**

Part 1- Background and Rationale

Skills Set and Environment – The Challenge
Rationale from literature/research



Electronics Engineer's Skill Set [1]

Technical Skills

- Understanding of electronic engineering
- Diagnostic skills
- Micro-electronic circuitry
- Understanding of design languages

Soft/Employability Skills

- Communication
 - Oral
 - Written
- Criticality
- Task oriented

Electronics Engineer's Professional Environment ^[1]

- **Specialist knowledge**
- **Hands-on**
 - Ability and experience to **apply** the academic **knowledge** acquired in a **practical environment**
 - Development of new products/technologies
- **Integrative + Multidisciplinary**
 - Need to deal with **complex interdependencies**
 - **integrate** information from several sources and linking theory and practice
 - work **on multidisciplinary** teams

[1] <https://www.employment-studies.co.uk/report-summaries/report-summary-skill-needs-electronics>

Developing Electronics Engineers - The Challenge

- **Institution of Engineering and Technology (IET) annual ‘Skills and Demand in Industry’ Survey [2]:**
 - *Despite a rise in demand for engineering staff, **UK employers find that many new engineering graduates have significant skills deficiencies***
 - *Need to refocus *the higher education curriculum away from ‘theory’ and lectures to **problem-based, project-based or experiential learning** – focused on creating solutions to real-world challenges**

As course/programme developers and/or facilitators, what can we do?

What Literature/Research Says

- **“the development of academic skills is most effective when it is integrated into course design”** (Huijser et al. 2008, p. A34)
- **“developing and improving academic literacy and numeracy skills should be seen as a shared responsibility between teachers and students.”** (Huijser et al. 2008, p. A34)
- **“learning how to study effectively at university cannot be separated from subject content and the process of learning”** and we should consider a “Built-in” vs. “Bolt-on” approach to skill development (Wingate, 2006, p. 458)

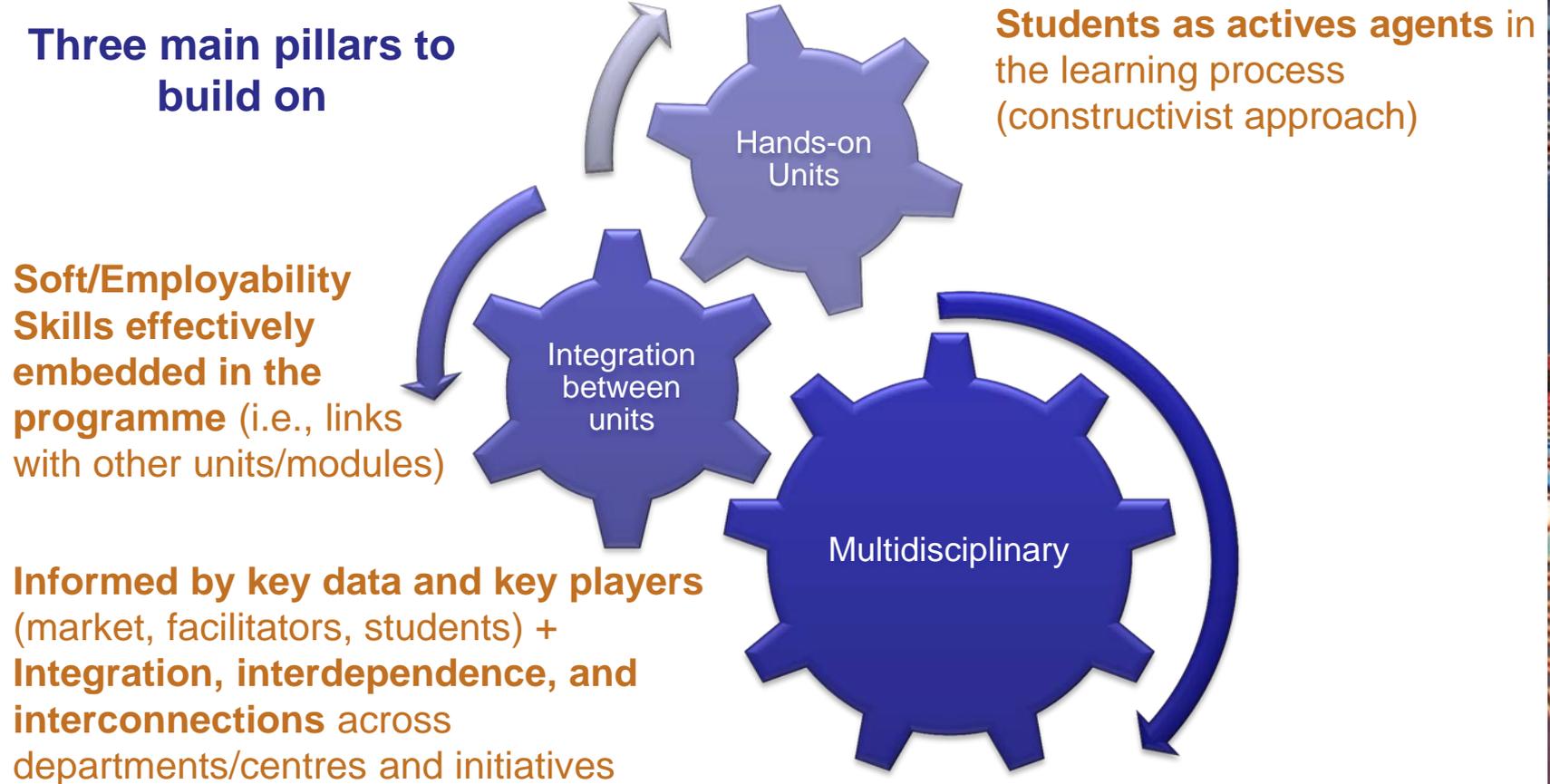
What are the main points/conclusions we can draw from this?



Reflections from Literature/Research

- **Integration between units** Soft/Employability Skills now when it is integrated into course design (effectively embedded in the programme (i.e., links with other units/modules)
- “developing and improving academic literacy and numeracy
- **Hands-on** Students as active agents responsibility between teachers and students” (Huisman et al 2008, p. A34) (constructivist approach)
- “learning how to study effectively at university cannot be
- **Multidisciplinary** informed by key data and process of learning (and we should consider a “Built-Integration, interdependence, and interconnection” (Vingate, 2009, p. 458) s/centres and initiatives

Reflections from Literature/Research



Part 2- Implementation

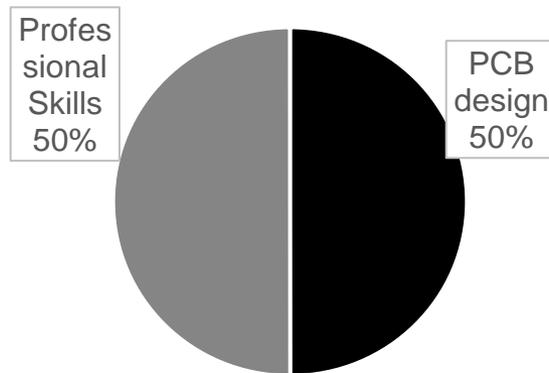
From Curriculum to Class



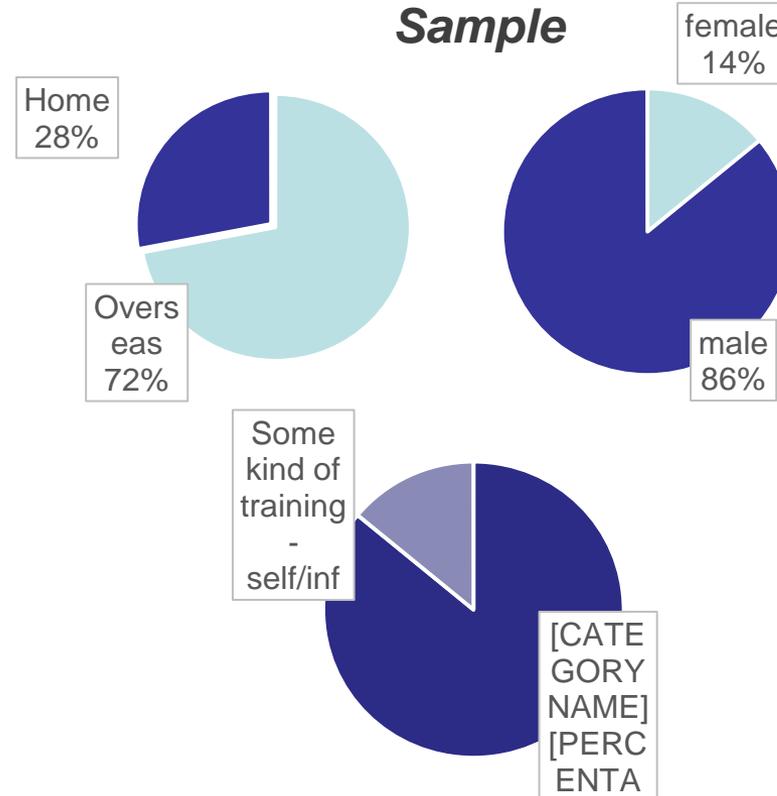
From Curriculum to Class – Case Study

EE50228 – Electronic Systems Design and Manufacture

Content

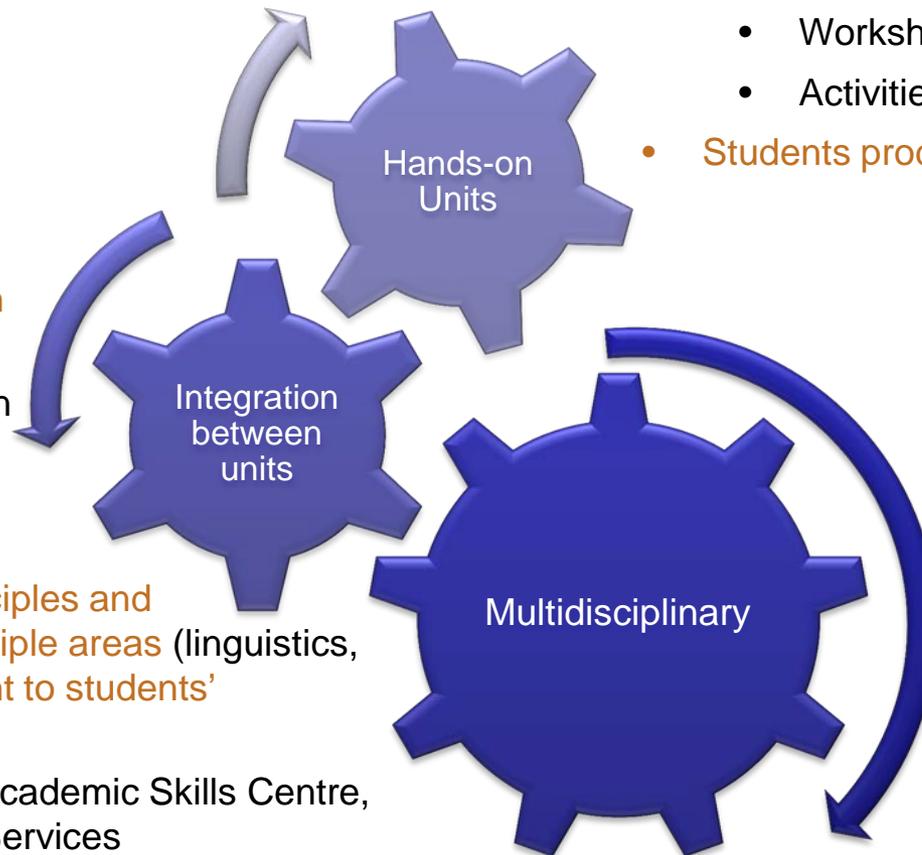


Sample



From Curriculum to Class

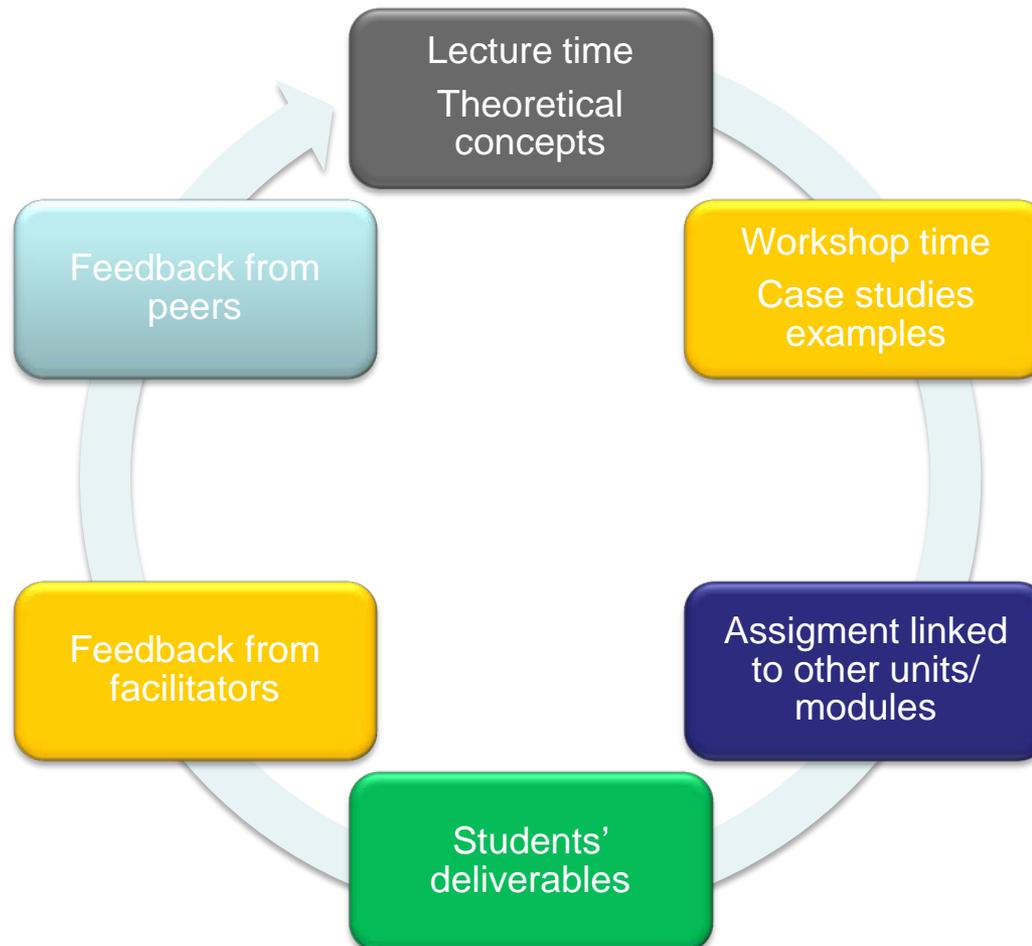
- Products used for other parts/units in the MSc
 - Relevant
 - Strengthen links between subjects
 - Integrate information from several units, linking theory and practice
 - Integrate and apply principles and methodologies from multiple areas (linguistics, information, etc.) different to students' technical expertise
 - Careers Service, Academic Skills Centre, Library, Students Services
- targeting key areas (communication, etc.)



- 'Skills and Demand in Industry' Survey
 - Learn by doing
 - Workshops
 - Activities & resources online
 - Students produce own products



Sessions Structure



Part 3- Evaluation

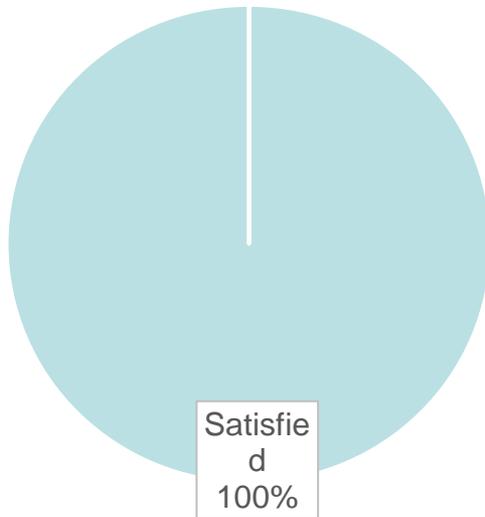
Preliminary results
Present and Future



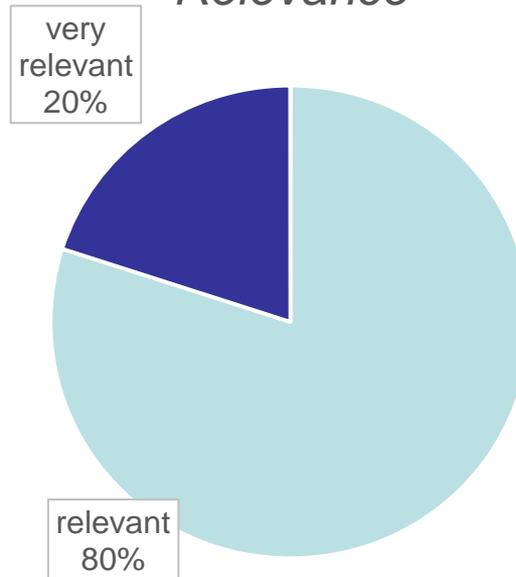
Initial Outcomes

- **Students' view**

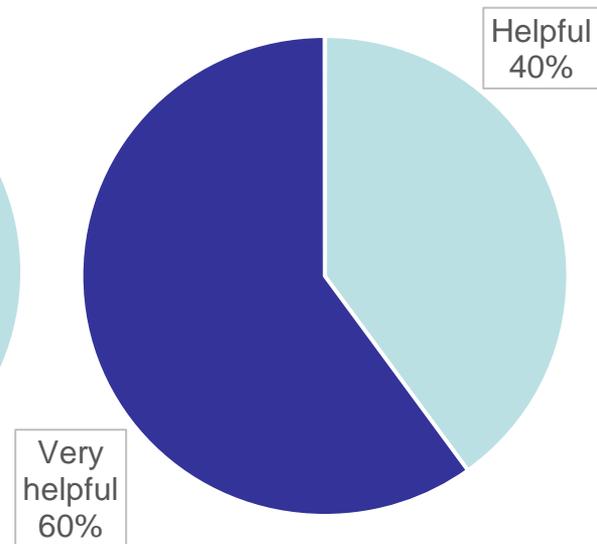
Satisfaction



Relevance



Finding a placement



Initial Outcomes

- **What our Students Say**

- *“The lectures [about] presentation skills and technical reports were really interesting and also very useful. In fact, the variety of people presenting was really good. It was clear a lot of effort had gone into arranging the sessions” – Dan O.*
- *“The CPD classes have been very helpful. Since I’m not from the UK, I didn’t know a lot of things. With the help [of the demonstrators] I have understood a lot of do’s and Don’t’s” – Elaine M. A.*
- *“It helped me to understand how to approach literature study and filter it down. It was an extremely helpful session. It is a skill to be mastered by all students!” – Allan A.*

Initial Outcomes

- How our students are perceived



The screenshot shows a Twitter interface. At the top, there are tabs for 'All' and 'Mentions', with 'Mentions' selected. A 'Settings' link is visible on the right. The main tweet is from the user 'bristolisopen' (@bristolisopen), posted 1 hour ago. The profile picture is a circular logo with the text 'BRISTOL IS OPEN'. The tweet text reads: 'Xin was such a wonderful addition to ouR team. It was an absolute pleasure to have him working with @bristolisopen during his @UniofBath placement #Engineeringinterns #interns #UniofBath'. Below the tweet is a quote tweet from 'BathEngAndDes' (@bathenganddes) which says: 'Success stories: read about Xin's (MSc Electronic Systems Design) placement experience ow.ly/ubnv30nl08w @bristolisopen'. At the bottom of the tweet, there are icons for replies, retweets, likes (with a '2' next to the heart icon), and direct messages.

- Read Xin's story at

<https://www.bristolisopen.com/summer-interns-at-bristol-is-open/>

Present and Future

- **Starting point/inspiration for other initiatives**
 - Supplementary workshops for MSc students at Bath who do not have these as an integral part of their MSc programme
 - Placement support sessions
- **Expansion to other PGT programmes**
- **Ongoing evaluation/revision process**
 - Revision through data, students, peers and reflection
- **Open dialogue with existing and new partners**

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THANKS FOR YOUR ATTENTION

