INDUCTIONS – XRD STYLE

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MY SITUATION

- Employed originally as a “Super Post-doc”
- Three roles: Technical / Teaching / Research
- Technical: Running XRD Research Facility @ MSE
THE SRF: 2003

- Department facility housing:
  - 5 machines doing roughly the same experimental technique
  - 4 data analysis PCs, 2 common software packages

- Number of active users (MSE only): 90?
  - Mainly PGT & PGR

- Number of staff members: 1 (Me)
Faculty facility, used by researchers from across campus
- 11 machines doing a range of very different experimental techniques... (+2 more on order!)
- 2 analysis PCs, 10+ different software packages commonly used for different types of data analysis

Number of students (2018): 280+
- From 2nd Year UG through to academic staff

Number of staff members: 1 (Me) - and my role has diversified
Wider Context

- **2005-2014, Engineering: PGT & PGR** ⬆211.7%
- **2000-2014, MSE: PGT & PGR** ⬆245.6%
  - 253 PGT/PGR students in 2014
  - 70% from non-EU backgrounds (vs. 13% for overall UK student population)
- **TUOS staff, from 2007/08 to 2013/14** ⬆25%
Wider Context

- More students and researchers =
  - More experiments?
  - More data to analyse?
  - More ‘wear & tear’ on experimental equipment
  - Increased use of consumables, chemicals
  - …More demand on staff time
How I got out of a hole

(A story of time and space)
Adapted aspects of ‘flipped learning’ models to the research environment

- Implemented new induction procedure
- Cut repetitive processes
- Online content
VLE Implementation

Got CiCS to set up MOLE “Organisation” for SRF on Blackboard
• Key: Identify what was routine and **repetitive** - what could be ‘automated’

• Added content to deal with:
  • Regular questions - *e.g.* instrument specifications
  • Basic Data Analysis - uploaded SOPs
  • **Induction** - what to expect and what is expected
  • Registration - gather info needed on new users
Some things have to be done or communicated in person... Many things don’t

My issues:
- Lab involves use of radiation and/or lasers
- Users required by law to pass H&S training
- 1/3 of users I trained were not completing this

Decided to implement online induction to move onus onto researchers
- Important to review changes and respond to issues or feedback
Induction Process

Step-by-step

- Implemented as a “Learning Module” on MOLE
  - Induction video (14 mins)
  - Access form (signed by supervisor)
  - Radiation/Laser Safety Training / Info / Test
    - Test can be on MOLE for those who can’t access H&S
  - Sign generic Risk Assessment (PDF > Discussion Board signature)
  - Fire Safety / Out of Hours Access (Info)
  - Registration
What to expect / what is expected
  - https://www.youtube.com/watch?v=pWjXKGWases

Introduction / contact details / core office hours / my responsibilities (a.k.a. don’t waste my time) – 2 mins
Outline induction / registration processes – 1:30 min
Safe working practices, COSHH, RAs, PPEs, food/drink, waste/glass disposal – 5 min
How to find ‘SOPs’ for the machine – 1 min
Booking and logging machine time online – 2 mins
General rules & responsibilities – 1 min
Further training available, e.g. data analysis – 1 min
What happens next – 30 secs
Registration

- Final step of induction
- User must complete registration via Google Form
  - Get ‘accurate’ info for online booking system/records
  - Users ‘forced’ to agree to my terms and conditions
  - Users upload Access Form (and e.g. Laser User Record Form)

- Once they click ‘Submit’ I get an auto-generated email telling me someone is ready & waiting for training
Implementation

- I deliver most of my training now online

- Most methods now have SOPs as both PDF files and screencast tuition
- ‘Worked Examples’ - problems from my research
- Instrument training still to one-to-one/small groups
Impact

“I don't have time to do all that s***”

- Needed a significant amount of content before students engaged

- Saved me a lot of time - easily 300+ hours per year
  - MOLE metrics! For 1st July 2014 - 30th June 2015:
    - 207 users spent at least 10 minutes accessing the VLE
    - Accumulated total of 970.05 hrs on the VLE
    - Average user: 4.68 hrs

- Improved access to (my) expertise
- Led to more independent, more competent researchers
I use Keyboard shorteners to type common text quickly, e.g.:

- Machine names – I type bbd2 for ‘Bruker D2 Phaser’
- Typing xxrdreq automatically writes out my 122 word email text for new users on how to access induction process

On Mac, I use ‘Dash’
On Windows, I use ‘PhraseExpress Free’