

Breaking into Chem. Ed. Research for a Newcomer - the Vital First Year Transition



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VICEPhEC2020

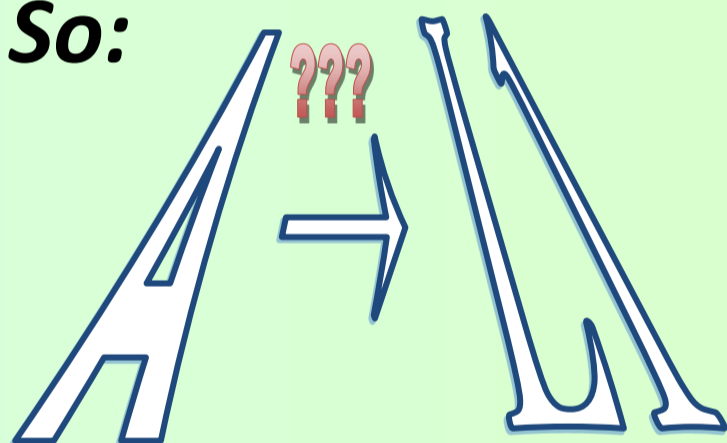
Challenges for a Teaching Specialist uncertain where to start with Chemistry Education research:

- New journals, new methods, new approaches compared to physical sciences research (e.g. qualitative data)
- T&R colleagues / university structure may not consider pedagogic research to be 'real' research
- Ethics approval as an offputting 'activation energy barrier' to getting started

Solutions to address these problems:

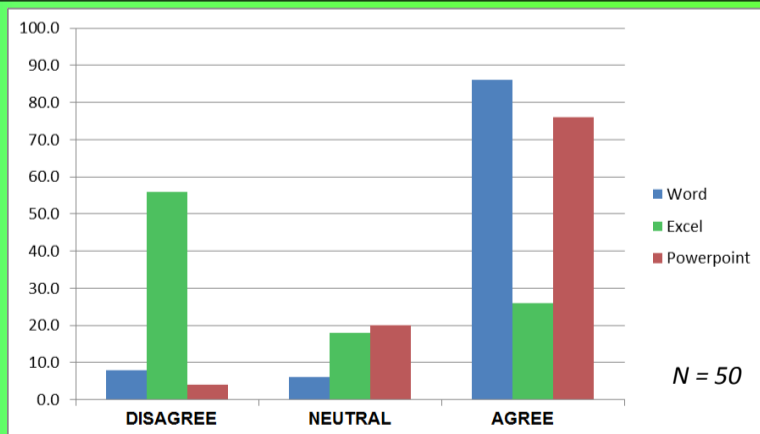
- Mentorship from colleagues, networking through conferences, confront the unknown
- Trial experiments on a small, internal scale (not publishable) to build confidence and find problems before constructively engaging with the ethics system
- **Most importantly:** research what interests you and what you believe will make a real difference for your students' learning experience!

So:



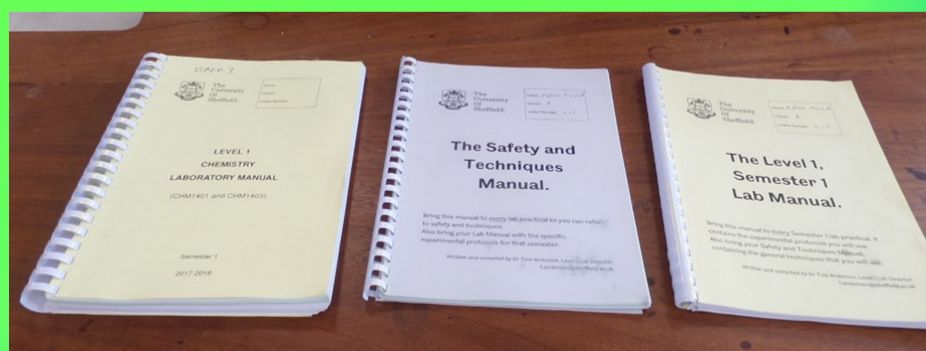
Ever since I was a first year student myself, I have been fascinated by the challenges of the transition from A-level to university study. This has long been recognised as a vital area for pedagogic research, particularly in practical skills.¹⁻² My lecturers clearly did not always know what I already covered, such as treating NMR as completely new when it had been on the A-level syllabus for years. This robbed me of some confidence in their teaching authority and made it harder to engage.

"I was confident using Microsoft (X)
before I began my [university] studies"



My Department had struggled for years with low student uptake of the centralised online feedback system (often <10%). Were students unwilling to participate? **No:** I found in-person paper forms at the start of a lab produced useful feedback with a takeup rate of 100%! *Example of one finding (to the left) showed students felt Excel neglected at A-level, which I fed back to AQA's HE Stakeholder Group.*

Other findings suggested students were intimidated by weighty lab manuals and found the content repetitive, especially following the introduction of the Practical Endorsement at A-level. Based on student feedback, I introduced a new short 'Safety and Techniques' manual for continuing skills and a second manual with less 'recipe-like' experimental protocols to take advantage of the Endorsement skills. Over 75% of students reported this to be an improvement!



¹Hulme, J.A. and De Wilde, J. (2014). *Tackling transition in STEM disciplines...* York: Higher Education Academy.
²Gatsby Charitable Foundation, (2011), Written evidence submitted to The House of Commons Science and Technology Committee... Ninth Report of Session 2010-12, vol. II, Ev 66-70.