

Mixed Messages Concerning Science Teaching: The Contested Feasibility of Active Learning

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Overview

- Study and Context
- Methodology
- Findings
- Conclusions/lessons to be learned
- References

LETS

- Learning to Teach Study (LETS)
- A Research Team in the School 2008-2010
- DES-funded
- Understand the dynamics of learning to teach on consecutive model of initial teacher education (ITE) at post-primary level
- Framed in terms of emerging new professionalism for teachers
 - Curricular (subject) & cross-curricular (inclusion & reading literacy) competence

Methodology

- Mixed methods study: Interview & survey
 - Interviewed 17 PDE students 3 times during 2008-09 (January, March & May)
 - Survey (n=133, 63% of cohort), 130 items
- Data collection
 - Based on collaboratively developed interview protocols informed by literature and collective experience as teacher educators
- Ethics
 - Written informed consent, anonymity, confidentiality, free to withdraw at any point, no student interviewed by own tutor

Interview Domains

Part	January 2009	March 2009	May 2009
A	Background, previous experience, motivation to learn to teach	Update on progress learning to teach	Opportunity to learn to teach
B	Opportunity to learn to teach	Opportunity to learn to teach	Critical incidents in learning to teach and in school
C	Critical incidents in learning to teach and in school	Critical incidents in learning to teach and in school	Understanding of subject teaching, inclusion and reading
D	Understanding of subject teaching, inclusion and reading literacy	Understanding of subject teaching, inclusion and reading literacy	Future plans
E	Summary: SWOT 1	Summary: SWOT 2	Summary: SWOT 3

Analysis

- Phenomenological (Huntly, 2008 who undertook similar study in Australia)
- Theoretical sampling across data collection time points
- Collation of files based on emerging themes
 - Paragraph level
- Team met regularly to discuss emerging findings

Method

- For the purpose of this paper, we draw on:
- Excerpts from interviews with student teachers of science
- 50 student teachers of science typically in the PDE year –
 - 8 participated in this study
 - Primary and Secondary Methodology

Some thoughts from the Literature

- Social Constructivist approaches have been emphasised in the reform of science education (Kang 2008)
- Personal Beliefs are critical in relation to the nature of Science teaching (Crawford 2007, Jones and Carter 2007)
- Attention must be given to the epistemological beliefs in pre-service programmes both in terms of the science concepts trainees will teach and in terms of educational concepts they bring to a pre-service program (Russell and Martin, 2007)
- Teachers in schools have an essential part to play in partnership with university staff in the training of pre-service teachers (Monk and Dillon 1995)

Some Literature

- Co-teaching is a viable model for teacher preparation – ‘working at the elbows’ (Roth and Tobin, 2001)
- Teacher Education programmes involve trainees trying to learn in two very different sites, - the school and the university (Allsop and Benson, 1997)

How do we balance this equation?

- $SCT + PB + SU + CoT + ITEP = \text{One well rounded perfect trainee.}$

Findings

- Student teachers receiving mixed messages concerning science teaching
- The University says....
- The mentor/school says...
- The student teacher believes...

Findings – teach to the test

■ Marissa

- *There is a focus on active learning during the course but from what I have heard from other teachers there is not time for that or there is not as much time. But then some teachers in the school do have time for it. I wonder is it just a choice people make.*

Findings – teach to the test

- The schools message is to prepare students for exam and teach to the task but to Marissa this was an impediment to her vision of good science teaching

Findings – Investigative Coursework

- An investigative school approach to the Coursework component of Junior Cert Science?
 - *They [teachers] decided what experiments to do and they decided how they would do them. And then they told the students how they will do the experiments. And the students went through the experiments with the teacher and basically the teachers did all the thinking and the students did what they were told.*
 - Sinead, Interview 2, p. 10

Coursework continued

- Attendance at In-service and conversations with other teachers there and Sinead discovers that in some schools, teachers were “*talking about the students doing the thinking*” and resources the students themselves were using
- To Sinead the carrying out of such investigations is worthwhile and allows the students an opportunity to engage in inquiry.

Findings – can you help me please?

- Interviewer: *So if you were thinking about an issue there where do you go for help?*
- Interviewee: *Well you can brave it and go and ask one of the other teachers but often, rather than just answer the question you have asked they try and push their own way of doing it, it is very pushy, if you want to do it at all, you do it their way.*
- Aoife is asked why would you want to do a project like Science Across the World?

Findings – there is some good practice

- *The biggest experience was assisting another science teacher doing the investigation for the junior cert course with water baths and hot water...I wanted to look at her skills and how she approached things during class and that was quite helpful and interesting for me*
 - Marissa, Interview 2 pg. 1
- Another student, Thomas reported of being grateful of his mentor's input and his lived teaching experience.

Lessons to be learned

- Student teachers are highly influenced by their mentors and other science teachers in their school and so the relationship between them is crucial
- Avoid the mismatch between student teacher, university, school and mentor beliefs concerning science teaching

Lessons to be learned

- Student teachers need to learn ‘at the elbows’ of reform oriented teachers/mentors who are disposed to reform based teachers and the teaching of science through inquiry.

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