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Authors	Conway, Paul F.;Murphy, Rosaleen;Delargey, Michael;Hall, Kathy;Kitching, Karl;Long, Fiachra;McKeon, Jacinta;Murphy, Brian;O'Brien, Stephen;O'Sullivan, Dan
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Learning to Teach Study (LETS): Developing curricular and cross-curricular competences in becoming a 'good' secondary teacher: Executive Summary

**Paul F. Conway, Rosaleen Murphy,
Michael Delargey, Kathy Hall, Karl Kitching, Fiachra Long,
Jacinta McKeon, Brian Murphy, Stephen O'Brien, Dan O'Sullivan**



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

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School of Education, University College Cork (UCC)
<http://www.ucc.ie/en/education/>

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Learning to Teach Study (LETS)

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Dr. Paul Conway, Dr. Rosaleen Murphy, Michael Delargey, Prof. Kathy Hall, Dr. Karl Kitching, Dr. Fiachra Long, Jacinta McKeon, Dr. Brian Murphy, Dr. Stephen O'Brien, Dan O'Sullivan.

School of Education, University College Cork (UCC)

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Abstract

The aim of this research, the *Learning to Teach Study* (LETS), the first of its kind on the Postgraduate Diploma in Education (PGDE) in Ireland, funded by the Department of Education and Skills (DES), was to develop and implement a study of initial teacher education in the PGDE in post-primary education, in the School of Education, University College Cork. Its aim was to identify the individual and contextual dynamics of how student teachers develop curricular and cross-curricular competences during initial teacher education (ITE). Within an overall framework that explores how student teachers develop their skills, competences and identity as teachers, it focuses on curricular competences in mathematics, science and language teaching, and on the cross-curricular competences of reading and digital literacy and the development of inclusive teaching practices. LETS is the first programme level research on the PGDE, familiarly known to generations of student teachers and teachers as '*the Dip*' or '*the HDip*'.

Drawing on research on teacher education both in Ireland and internationally, the LETS report is divided into six sections encompassing thirteen chapters. Section 1 includes the review of literature and study aims in Chapter 1 and the research methodology in Chapter 2. Adopting an interpretive approach, LETS involved the collaborative development of three interviews protocols and a survey by the research team. Seventeen (n=17) students were interviewed three times over the course of PGDE programme, and one hundred and thirty three students completed a detailed survey on their learning to teach experience (n=133, i.e. response rate of 62.7% of the 212 students in the PGDE 2008/09 cohort). The four chapters in Section 2 focus on professional identity as a central dimension of learning to teach. Among the dimensions of learning to teach addressed in this section are the role of observation and cultural scripts in becoming a teacher, the visibility/invisibility of PGDE students as learners and the relationships between emotions, resilience and commitment to teaching. The three chapters in Section 3 focus on mathematics, modern languages and science respectively in the context of conventional and reform-oriented visions of good teaching. A number of common as well as subject-specific themes emerged in this section in relation to subject matter teaching. Section 4 focuses on PGDE students' experience of inclusion (chapter 10) and reading literacy (chapter 11) while learning to teach. Section 5 focuses on a key aspect of initial teacher education, namely, the school-university partnership. The final section provides a summary of the findings, identifies seven key issues emerging from these findings, makes

recommendations under four headings (system, teacher education institutions, partnerships in ITE and further research) and discusses some implications for research, policy and practice in initial teacher education.

Among the main findings emerging from the study are: (i) schools provide valuable support for PGDE students but this typically does not focus on classroom pedagogy, (ii) PGDE students typically felt that they had to be 'invisible' as learners in schools to gain and maintain authority and status, (iii) inherited cultural scripts about what it means to be a 'good' subject teacher shaped teacher identity and classroom practice, and (iv) as PGDE students begin to feel competent as teachers of maths, modern languages and science, this feeling of competence typically does not include their capacity to teach for inclusion and reading literacy within their subject teaching. In the context of research on teacher education, many of the findings are not unique to the PGDE or to UCC but reflect perennial dilemmas and emerging challenges in initial teacher education. This fact is important in setting a context for the wider dissemination² of the *Learning to Teach Study*.

² Details of *Learning to Teach Study* (LETS) research presentations and publications will be available on the LETS webpage in Funded Research section of School of Education, UCC website: <http://www.ucc.ie/en/education/research/>

Executive Summary: Learning to Teach Study (LETS)

1.0 Introduction

This Executive Summary of the *Learning to Teach Study* (LETS) outlines the study context and relevant literature, the research design, summarises the main findings, identifies overarching conclusions and discuss the implications of our work for research, policy and practice.

The LETS study adopts a socio-cultural approach to learning as our preferred stance. A socio-cultural perspective on competence in initial teacher education (ITE) emphasises the situated, relational and political dimensions of competence (Lave & Wenger, 1998; Claxton & Wells, 2002; Hall, Murphy & Soler, 2008; Korthagen, 2010), and draws our attention to key issues such as the opportunities available in the culture and immediate environment to become competent. It enables us to address the teacher archetypes, supports and challenges that are part of the 'learning to teach' process. These include participation structures, developing a deep and flexible knowledge of subject domains, access to resources, critical reflection at a number of levels including technical, practical and critical levels, and adaptive expertise among others. Based on a number of key issues critical to understanding teacher competence, the LETS study focused on the process of becoming a good teacher in the Post Graduate Diploma in Education (PGDE) initial teacher education programme. The study was guided by two research questions:

- What are the individual and contextual dynamics related to the development of teaching competence in the PGDE?
- In the context of the PGDE, what are the challenges and supports in developing teaching competence in mathematics, science, language teaching, inclusion and reading and digital literacy?

Drawing upon the key issues summarised in Chapter One, particularly our adoption of a socio-cultural perspective, we frame the study in terms of the opportunities to learn to teach, encompassing material and symbolic resources and as well as social supports, available to student teachers.

In Chapter 1 we identify a number of principles guiding this study as follows:

- Teacher competence encompasses knowing-in-context and doing-in-context to enhance teacher and student learning in schools

- Competence in teaching evolves and develops over time and is optimal when directed towards the development of adaptive expertise
- The development of competence across the continuum of teacher education requires support and guidance, and this is especially important during initial teacher education
- Teaching competences have been defined in different ways both in the past and the present. We recognise that educational researchers, student teachers, teachers in PGDE participating schools and ourselves as teacher educators may have both shared and different understandings of teaching competences
- The specification of teaching competences acts as a powerful 'message system' within the profession for policy makers, teacher educators, student and practising teachers as well as researchers.

Conceptions of competence are theory-laden and interwoven with the pedagogical, psychological and political of teacher education. Among the dimensions of competences we highlight are how:

- Classic and contemporary views of competences reflect significant changes in assumptions about the development of human competence.
- Research on competences should not be seen as separate from other aspects of teacher education.
- Current policy discourse neglects much of the complex interwoven nature of pedagogy, psychology and politics associated with competence, for example, in its over-reliance on learning outcomes in a manner that typically eschews both the initial and ongoing opportunities for learning.

1.1 Research design

LETS is an empirical research project into how students on the Post-Graduate Diploma in Education (PGDE) in University College Cork (UCC) develop teaching competence as post-primary teachers. The LETS study was undertaken over three years (2007-10) and involved the participation of an experienced research team from the School of Education, UCC. The team brought a variety of experiences and insights to the research task, and within the overall socio-cultural understanding that framed this study, were able to contribute their specialised knowledge in areas such as teacher learning, inclusion, equality and diversity, literacy, second language teaching, the teaching of mathematics and of science, teacher education policy, socio-cultural perspectives on learning etc. (e.g. Hall, Marchant, & Ghali, 1999; Conway & Clark, 2003; Delargey, 2003; Conway & Sloane, 2006; McKeon, 2007;

O'Brien & O'Fathaigh, 2007; Hall, Murphy & Soler, 2008; Long, 2008; Conway, Murphy, Rath & Hall, 2009; Kitching, Morgan & O'Leary, 2009; Murphy, 2009). The research team itself can be seen in this context as a community of learners, participating together in the task of achieving an understanding of the process of learning to teach.

The principles of the interpretive research genre (Mertens, 2005, Borko et al., 2007) informed the LETS research project. The methods used included semi-structured interviews, analysis of documents and a survey questionnaire (Green et al, 2006). Using a multiple-case study research design, seventeen student teachers were interviewed on three occasions over the course of an academic year. To rely exclusively, however, on a single type of evidence (i.e. interviews) would be to depend on a narrow evidentiary base. Consequently, a survey focused on the prior experiences and beliefs (e.g. about learning) that student teachers bring to the PGDE, including their own views of their efficacy as teachers and their knowledge about reading literacy and inclusion, was completed in March 2009 by 133 of the 212 students of the 2008/2009 PGDE cohort (a response rate of 63%).

At the core of the LETS study are the detailed interviews conducted with the 17 student teachers by members of the research team. The timing of these interviews was designed to capture growth and change over the year, and to focus on particular concerns expressed by the student teachers at each stage; see Table A below. After each set of interviews, the research team met to discuss emerging issues and to draw up additional questions for subsequent interviews. This repeated cycle of data collection and analysis is characteristic of an interpretive approach to research (Mertens, 2005). The semi-structured format ensured consistency between interviewers, while still allowing any individual issues that might arise in the course of the interview to be followed up. A shared understanding of the broad principles of the overarching socio-cultural framework that informed our analysis was reached through a lengthy process of discussion and debate among the members of the research team, who nevertheless were enabled to view the data through the lens of their own experiences and expertise.

Table A: Overview of Semi-Structured Interviews with Student Teachers

Part	Interview domains: January 2009	Interview domains: March 2009	Interview domains: 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

Ethics

No student was interviewed by his/her own teaching practice supervisor, all were assured of anonymity, and consent was understood to be on-going, that is, they were free to withdraw at any time from the study.

Analysis

Analysis of the interview data consisted of the team individually and collectively reading and annotating the transcripts data and identifying (tentatively) the key themes emerging from the evidence. Transcript analysis was based on the methodology used in a similar study in Australia by Huntly (2008, p. 131), but adapted to make it usable by a team rather than a single researcher. The data collected provides grounded evidence for the identification of robust findings by revealing important aspects of the students' developing understanding of the process of learning to teach.

2.0 Summary of findings

In this section we summarise the main findings from the Learning to Teach Study (Chapters 3-12). The quotes from student teachers included here are selected from the main report and are illustrative only; they are not necessarily representative of the full range of perspectives expressed by LETS participants.

2.1 Findings Chapter 3: Observation and conversation

- Negotiating images of curriculum and relationships presented by teacher role models past and present was a significant feature of the learning to teach experience and the development of competence, for student teachers.

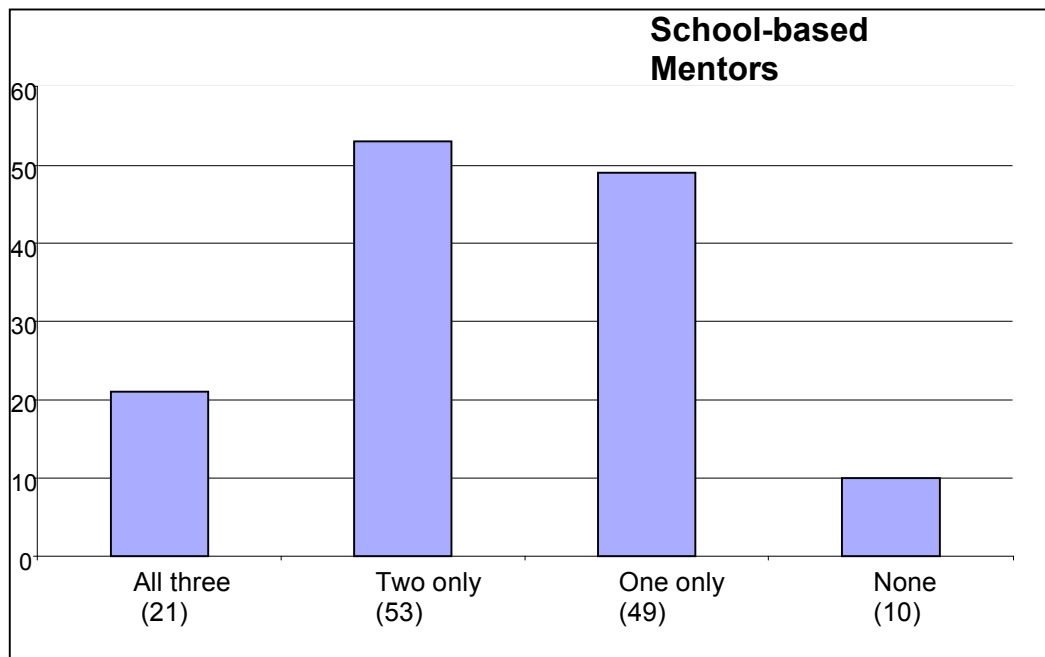
Interviewer: So then the opposite, can you think of an English, history or whatever teacher who you really did not admire, who you thought was not a good teacher and why was that the case?

Fiona: I suppose my English teacher, I actually had her all the way up but I remember in 5th and 6th year, she was a very nice woman and you'd be happy in her class and things but she had very fixed ideas about the rightness or wrongness of certain English texts. I remember doing one poem by Sylvia Platt and she was saying what was this image and we all agreed that it was like a pregnant woman or something. And she was like, 'oh no it is not, oh no it is not.' ... And I just remember her being very cynical of the way we wrote. And I really loved it and I remember kind of going off the walls in 5th year and not caring anymore but then I got back into it (*emphases added*).

- Despite the fact that over 90% of PDGE students in our survey had one or more of the three kinds of mentor we identified, (school coordinator, assigned mentor or sought-after mentor, see Fig. 1), by comparison very few had opportunities either to observe experienced teachers or be observed by these same teachers during teaching practice. Of those 52 who **had** observed, almost half had observed on fewer than four occasions; 7 had observed once, 13 twice and 4 three times (see Table B). These findings are entirely consistent with the recent OECD's TALIS study (Gilliece et al, 2009) which, based on a nationally representative sample of post-primary teachers in lower second level, demonstrated that professional collaboration is typically focused at the level of exchange and coordination rather than deeper levels of professional collaboration centred around activities such as team teaching, observation and co-planning. In summary, opportunities for deep professional engagement about pedagogy were significantly constrained (Conway et al, 2011).

- Summarising PGDE students' access to the three types³ of school-based mentors we note the following:
 - 1 in 6 (15.5%) student teachers had all three types of mentors, that is, a school level coordinator, an assigned mentor and a sought after mentor;
 - 2 in 5 (39.8%) had two of these three types of mentors;
 - A significant minority had only one type of mentor: school level coordinator (12.8%), assigned mentor (5.3%) or sought after (18.8%).
 - 1 in 13 (7.5%) had none of the three types of mentors
 - Almost all, that is, over 9 in 10 (92.5%) had one or more type of mentors

Fig. 1: School-based mentors available to PGDE students in TP schools (n=133)



³ *School level mentor* refers to situations where PGDE students were in a school that had arranged for one teacher to act as a coordinator of all PGDE students in the school. *Assigned mentor* refers to situations where PGDE students were assigned a mentor in their TP school. *Sought-after mentor* refers to situation when PGDE students said that they themselves sought out a teacher as a mentor.

Table B: PGDE students' opportunities to observe a teacher teach at least once during PGDE 2008-09, (n=133)

	Frequency	Percent
Yes	52	39.1%
No	81	60.9%
Total	133	100 %

- In the case of the student teachers who did not have an opportunity to observe another teacher teaching, the vast majority , that is 4 out of 5 (82%), of those who responded to a follow-up question, stated that they would have valued the opportunity had it been made possible (see Table C).

Table C: PGDE students who did not observe another teacher teach during PGDE would like to have opportunity to do so (n=74)

	Frequency	Percent
Strongly agree	43	58%
Agree	18	24%
Undecided	8	11%
Disagree	2	3%
Strongly disagree	3	4%
Total	74	100.0

Kevin: ...the first two weeks we went into the school we were more or less told that you would be sitting in the class watching your class teacher and I mean I thought that was brilliant because not only do you get to know the class from sitting at the back of the room but you just get a small bit more confident. I mean this particular day I saw what the teacher was doing and I thought, yes I can do that. It helped me just to build my confidence more than anything else. ... I didn't know what to expect first when I sat at the back of the class, but now, yes I know what is going on, I know the processes that go on in the room and stuff, so that first two weeks was a big help. Even though it was junior classes and even though there was a drawback in terms of you were recognised as a student going back to the classroom, that kind of wore off. One of the people in the school said to me, 'this could be a disadvantage sitting at the back of the class because the students will recognise and cop on that you are a student and take advantage of it.' But I didn't get that. (Interview 1, p.6, emphases added)

- Feedback provided by tutors was vivid, memorable and consequential in terms of student teachers' understanding of professional standards and expectations. The variation in emphases on particular aspects of practice by

different tutors was a significant feature of student teachers' experience of learning to be a 'good teacher' in their subject areas.

Interviewer: OK and so, what teaching experience did you learn most from?
Padraig: I think from my micro-teaching, being able to stand back and look at your own teaching time and time again helped But one thing that really caught me was the student that put up her hand a number of times during the class but for some reason took her hand down again and I never saw her, and it was like it was set up, the student was right in front of the camera so I could see that I didn't see her. And I don't know why she pulled down her hand. And that struck me when I was reviewing the video because I was trying to edit the video and I was looking at it and looking at it again and thinking, what is that student trying to do? Why didn't she leave up her hand? Why didn't I see her? So a lot of those questions I found really, really good for me but good for me to ask the questions. I didn't ever get an answer to the question but you'd have different theories. Was she afraid to ask? Was she just shy? Was it that I had ignored her in the past? There were a lot of questions as to why the student might do that and I find that process quite good. (Interview 2. p. 2)

- Identity-work was a central aspect in the emergence of beginning competence in teaching among student teachers. The central role of identity-work was evident in conversations about the negotiation of images of role models past and present, the expressed need for opportunities to observe and be observed and student teachers' engagement with the various messages (from school, university, subject cultures) about what it means to be a good teacher in their two subject areas.

2.2 Findings Chapter 4: Identity

- Student teachers crave opportunities to observe other teachers at work in the classroom, believing that that observation of teaching is fundamental to the development of expertise. However such opportunities are comparatively rare.
- Student teachers experience considerable tension between the twin identities of professional/teacher and learner (Beijaard et al, 2004). For many, the impression management involved in constantly representing oneself as a teacher on the one hand is a source of anxiety and on the other hand militates against openness to an incremental, ongoing, indeed lifelong, process of professional learning.
- Student teachers are understandably extremely concerned about classroom management and discipline, seeing this aspect of classroom life as pivotal to and overarching all other aspects of pedagogy.

- Student teachers experience significant dissonance between what they perceive as the more progressive script endorsed and encouraged by their College course and the more traditional practices evident to them in schools, with the power of the latter exerting a substantial conforming pressure.

Student Teacher: I suppose what comes from the course is very idealistic in a sense, it is like group work and peer teaching and all these wonderful and marvellous things that you are supposed to do. But the reality of trying to keep a class under control is a completely different thing. The school want me to be able to manage my classes and also get them to learn and the PGDE course seems to want it to be like some sort of Dead Poet's Society scenario where you are like an inspirational and amazing teacher that you just magically charm the students into doing what they are supposed to be doing rather than the reality of how people teach, in a sense. So I found that a bit confusing, how are we actually being judged on our visits, what are we supposed to do, is there a checklist? Nobody has given us the rubric.

2.3 Findings Chapter 5: Visible and invisible learners

- The LETS study reflects other studies (Britzman, 2007; Moore-Johnson et al, 2004; Mewborn & Stinson, 2007) in finding that learning to teach in isolation is a constraining factor in learning to become a competent teacher and that school level collaboration is the only sustainable option.
- The LETS study characterises the student teachers' appetite for isolation in terms of 'invisibility' and finds that students are less successful at negotiating curriculum or assessment issues in schools when no one in the school takes responsibility for their learning as novice teachers.

Siobhán: In my school there is no system of mentoring which I think, especially at the start you would find very helpful. I mean the teachers in my school in general are very helpful.

Interviewer: But there's no specific person?

Siobhán: But there's no specific person and again at the start I wouldn't have felt comfortable even asking for help because like that you were afraid you would feel weak and things like that. Maybe you don't want to draw the extra attention on yourself.

- The study further endorses the isomorphic or one-to-one link between a school that teaches novice teachers to teach and the renewal of established teachers in the school.
- The study also notes the effect of successful mentoring on the academic performance of novice teachers as they give up the ideal of 'make-believe' and reproduction and engage more easily in learning how to teach.

2.4 Findings Chapter 6: Emotions and efficacy

- Emotions mediate meaning in student teachers' everyday personal and professional identities. Their sense of efficacy entirely underpins their practice in school, the university and towards those around them. While a sense of competence was strongly felt by many student teachers, for some, it was hard-won, for others, it was provisional, and for others again, it was based on a pragmatist school experience as opposed to the 'unrealistic' setting of the PGDE course.

Maebh: Oh God, definitely a journey, but sometimes you would feel that it is a step forward and two steps back. Definitely a roller coaster, up and down, even in the one day depending on the classes that you have had. Yes a roller coaster. It was a very emotional year, very challenging and you feel in your classroom experiences and even in the staffroom as well, you would see different people who would react to you in different ways. Some people could be like, if there was a supervisor there, they could be saying, 'do you want me to photocopy anything, how did you get on, do you want a hand with anything.' Other people would be like, 'oh you are taking up a lot of space with your laptop.' (Interview 3, p. 14)

- It was clear that positive experiences came from engaging interactions with others, and from students' engagement with and successes through the curriculum. Issues of frustration with school-university messages, feelings of overload and feelings of inadequacy and doubt dominated from a negative point of view. Students developed both positive and negative strategies to cope with their affective experiences.
- Student teachers' identities as *learners* were an important part of their emotional journey. Many understood their resilience as protected and fostered when they had positive or negative experiences with their teaching practice tutors. But the scope of the term 'emotion' was often narrowed in their understandings to mean negative experiences; talking about emotion in teaching may be somewhat stigmatized, or the emotional process may have been a more individual narrative and thus not seen as a legitimate, overt part of the labour involved in learning to teach.
- Formative feedback and tutors who view learning to teach as a constant process may be key to increasing positive experiences and incorporating not-so-positive experiences as lessons that are part of the process, rather than mistakes.

2.5 Findings Chapter 7: Mathematics teaching

- A fundamental assumption guiding this study is that learning to teach is best undertaken in a context in which student teachers experience gradual and supported entry into full classroom responsibility. This assumption, growing out of Vygotsky's *zone of proximal development* (ZPD), is based on research on learning as assisted performance (Tharp & Gallimore, 1988) and more recent teacher education studies (Moore-Johnson, 2004; Mewborn & Stinson, 2007). These suggest that the 'sink or swim' model of learning to teach ultimately undermines teaching as it provides far less opportunity to develop a wide repertoire of skills, and the pressure to survive consigns student and beginning teachers to an over-reliance on their apprenticeship of observation. Framed in terms of a continuum from 'graduated and supported' to 'sink or swim' models of learning to teach, how can we characterise the experiences of PGDE students? In order to address this question in relation to the teaching of mathematics, we draw on both survey and interview data. A five-item scale (Cronbach Alpha = 0.70) was constructed to assess the extent to which PGDE students who responded to our survey received support in learning to teach in their school placement. The five items in the *Support in School* scale were: (i) Got lot of help planning lessons from school staff, (ii) Had chance to talk daily about lesson progress with teachers, (iii) Felt supported by staff in school, (iv) Had access to resources in school, textbooks etc. and (v) Felt supported in my main subject.
- There were significant differences⁴ in support for students in different subjects, when teaching their main PGDE subject (see Table 3). A number of observations are noteworthy. Overall, the mean scores (from low of 8.5 in French to moderate score of 14.2; Score scale: min = 0 and max = 20) suggest a low to moderate degree of support was available to student teachers in both main and second subjects in the PGDE during 2008-09. However, there was a statistically significant difference (Tukey posthoc, $p=0.05$) between the degree of support in schools for student teachers of Maths (mean=14.2, sd 2.8) compared to French mean=8.5, sd 3.9). No other two-way comparison of mean scores on the 'Support in School' scale, between Maths, Science, French or Other Languages, were significant.

⁴ In the context of teaching their main PGDE subject, a one-way ANOVA, with two-way Tukey test posthoc comparisons, to assess the differences in means between support for students in different subjects was significant overall (df 9/123, $F=2.64$, $p=0.008$).

Table D: 'Support in Schools' for main and second PDE subject

PGDE Subject: Main & Second	Mean (Main)	n	Mean (Second)	n
Maths	14.2	10	9.9	31
French	8.5	9	7.7	5
Other language	12.6	3	11.0	5
Science (incl. Biology)	11.2	25	12.3	9

Aoife: Yes I was lucky enough, well the science teachers not so much, but I found maths very hard to make interesting at the beginning of the year and even with all the notes from college it was mostly just I am doing an example on the board and now you have to do three examples. It was very boring for the students. So one of the maths teachers in the school was nice enough to, as I approached her with this, how do you do it? She said, 'well come in and have a look.' And it sealed for me that maths is a repetitive kind of semi boring subject, I like it, but for the kids...

Emma: Before my idea of a good teacher of maths would have been quite traditional, like the good teachers that I had went up to the board, did examples and then we did examples. So now I wouldn't have that image of a good maths teacher. I would think it is somebody who gets the kids active so they are sitting up rather than just slouching because traditionally maths isn't a subject that people particularly like and I think it is because of the transmission method, it doesn't suit most people. So I would think a good teacher would be someone who looks for resources and tries to relate the material to the students. (Interview 2, p. 4).

- The challenges of reform-oriented mathematics teaching: Experiencing student teaching and becoming a teacher of post-primary mathematics in 2010 presents a fundamental challenge for student teachers and schools - as well as for university-based teacher educators. The challenge, which poses many dilemmas for ITE, revolves around the difference between student teachers' experience of learning maths in their own schooling and what is being proposed as the future direction of mathematics in Ireland with the current roll out of Project Maths (www.projectmaths.ie). At one level, this phenomenon might be seen as only about mathematics teaching but at another it is one of the fundamental dilemmas of teacher education: how should the next generation of teachers be educated and assessed in a reform-oriented era? Central issues to the teaching of any subject are conceptions of knowledge, assumptions about learning, teaching and assessment in the domain, and the role of curriculum resources. The roots of

Project Maths in Realistic Mathematics Education (RME) raises yet another issue, that is, how student teachers and teacher educators understand and enact the ‘real-world’ in the context of maths teaching.

- The mediating role of the methods module in ITE: The methods module has enabled the student teachers to acquire new ways of thinking about teaching and learning, that is, a vision of mathematics that is different from their past experiences as students of mathematics. In particular, the methods module appeared to challenge student teachers to consider how they might consider not only an instrumental but relational view of mathematics teaching. More crucially, they have taken its relevance and content to the site where it matters most – their classroom.
- The resources challenge: Although the mathematics methodology course encouraged student teachers to use resources in their classroom teaching, there were issues for them in trying to develop resource-rich environments in schools. To many of the pre-service teachers, the use of resources is a radical innovation and differs greatly from the traditional, exposition and practice model of practice that they themselves experienced as students of mathematics.
- The appeal and associated challenges of ‘real-world’ mathematics: Consistent with proposed reforms in mathematics education, student teachers are adopting a ‘present-oriented’ approach to mathematics teaching, that is, post-primary students are being encouraged make connections between their lives and the mathematics they are learning in school, or simply finding mathematics in the world around them. However, the student teachers interviewed as part of this study seem to have understood the notion of ‘real’ as simply being a tangible or concrete object that helped student understanding of a mathematical concept. None of the prospective teachers interviewed as part of this study present an interpretation of the concept as relating to the process of mathematising (see *Glossary*) from a ‘real-world’ scenario. This process of mathematising is emphasised in the RME framework.

2.6 Findings Chapter 8: Modern languages

- Student teachers’ prior language learning experiences affect their thinking about teaching in significant ways: Student teachers’ prior language learning experiences affected their beliefs about teaching and provided them with

strong role models. If they had had significant experiences of Communicative Language Teaching (CLT), it would have provided them with a model of teaching on which to build their own practice.

Emma: They were building houses, and in their groups to speak as much target language as they could. And obviously it was going to be pretty difficult to structure so I didn't expect very much. But there was one girl and she was trying to ask what room she was to design and she kept saying *Quoi pièce moi?* [What/room/me?] it wasn't a sentence at all but it was brilliant. And she kept doing it instead of reverting back to English and she kept doing it and trying to get her question across. And then eventually whoever was setting up the room realised what she was trying to say and told her. That was brilliant and it was really funny.

- The context of learning to teach affected student teachers' developing curricular knowledge: Specific school contexts (e.g. teaching Modern languages such as Spanish and French though Irish), class allocations (e.g. Transition Year presented a difficult context for teaching languages) and timetabling arrangements all presented significant challenges for student teachers. These challenges were related to cultural issues around language practices in schools as well as student teachers' own cultural knowledge. In the latter case, student teachers who had not experienced their own schooling in Ireland faced some additional challenges in relation to becoming language teachers.
- The interplay of theory and practice was complex and context-sensitive: Student teachers were presented with key principles of communicative language teaching in the Second Language Education 1 (French, German, Irish and Spanish) module in the university-based programme. Their personal theories of second language teaching arising from their own experience of second language teaching influenced their thinking and practice throughout the course. But as the course progressed there was a rethinking of personal theories and student teacher beliefs; a change in student teachers' thinking came from experiences in the classroom.
- Developing second/foreign curricular competence was a plural rather than monolithic/unitary phenomenon: Curricular second/foreign competence is made up of a range of sub-competences. The development of one sub-competence, e.g. classroom management, affects another competence, e.g. teaching through the target language.

2.7 Findings Chapter 9: Science

- The integration of 'real life' experiences and examples into science teaching was at one level very natural and relatively easy as students as well as the teachers/student teachers were able contribute. Nevertheless, the issue of how best to introduce 'real life' examples was at the same time one of the central challenges of learning to become a competent teacher.
- Student teachers experienced mixed messages with regard to visions of good science teaching. Specifically, these mixed messages revolved around the extent to which active learning methods were advisable and/or feasible in the classroom.

Thomas: I find from my mentor that the little hints and tips are a great help, it is not just general teaching practice theories, he actually gives us hints and tips about the actual concepts that I am teaching and I find them a great help. I can't really find them anywhere but it is just a built up knowledge he has over years of teaching the subjects. (Interview 1, p. 7).

Sinead: ...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.

- The 'practical' aspects of teaching science present particular and immediate challenges and opportunities for student teachers largely unique to science. These challenges and opportunities were intertwined with promoting subject matter understanding and student motivation.

2.8 Findings Chapter 10: Inclusion

The first challenge of inclusion facing student teachers is centred on a) meaningful engagement with 'difference' (with its social class, ethnic, gender, sexual orientation and racial dimensions) and b) development of critical agency with respect to structural and systemic logics that impede deeper inclusionary practices:

- At the very outset of one's teaching career, inclusion was often seen as separate from teaching and, consequently, not viewed as a priority. In this way, 'learning to teach' and 'learning to include' appeared disconnected and precedence was placed on 'managing diversity' in the classroom.
- Becoming competent in 'dealing with' or 'coping with' inclusive issues and challenges revealed a strong deficit position which arose from, or was associated with, practical/utilitarian approaches for student teachers. This was frequently justified by a considerable lack of systemic supports.

- Having the courage or personal/professional strength to 'stand in their own shoes' with respect to critiquing colleagues and non-inclusive aspects of school culture was problematic for student teachers.
- Possible transformative practices remained paradoxically aligned with strong meritocratic concerns and predictive teacher functions. For example, student teachers acknowledged the need to actively address individual pupil needs at school and classroom levels yet, almost simultaneously, were constantly reverting to norm referencing and systemic priorities. Such twin values reveal a tension between 'ability and viability' teacher judgements.

The second related challenge of inclusion highlights the importance of teacher identity development and particularly cultural literacy growth. More effective inclusionary practices emerge when, despite limited experience of otherness, student teachers view inclusion as a core responsibility:

- Student teachers expressed a genuine care ethic for marginalised students but there was also uncertainty, vulnerability and apprehension with respect to their role in developing more inclusive learning practices.

Interviewer: What part of your teaching experience do you find the most interesting and rewarding?

Aoife: I think the girls in my class who have learning difficulties, even if they are not recognised ones, probably the most rewarding for me is of course when they get something and when they get good marks in a test or, you know, will I be able to pick on them to explain it to the rest of the class. I have a couple of girls who... I do some support classes as well as regular classes so it is nice to see them coming on. (Aoife, Interview 1, pp. 3-4).

- Differentiation was understood as important and was held in aspirational terms. However, inclusion was often compartmentalised as an advanced 'skill-set', to be managed alongside (not integrating and integral to) subject pedagogical concerns. Moreover, there was genuine fear/anxiety in relation to attempts to treat pupils differently.
- Cultural literacy is an important area of personal/professional competence. In this study, essentialist understandings of culture were often deployed, manifesting student teachers' surface engagement with pupils' cultural scripts. This, in turn, hindered student teachers' capacity to develop and engage diverse (cultural) 'ways of being and knowing' in the classroom.
- Student teachers often had to feel their way in pursuit of more inclusionary practices. This is no bad thing *per se*, though concerns are raised when more deliberate, unified institutional practices yield to the predominance of this intuitive, 'strategy-clutching' culture. Seeking 'working techniques' from

other more experienced teachers does not appear to advance effective and/or sustainable inclusionary practices.

The third related challenge of inclusion pertains to methodology:

- At the outset, the very notion of differentiation as a cornerstone of an inclusive pedagogy is something that can be unexpected by those learning to teach, or by those who have little experience of being outside the traditional teacher-learner norm in school-work.
- Being somewhat distant from an inclusive vision at institutional and personal/professional levels can impact negatively on both the psychological mindset of student teachers and their inclusive classroom practices.
- Student teachers' conceptual understanding of methodology – a way of approaching pedagogy that is informed by a particular inclusive educational philosophy – remains somewhat dislocated from authentic inclusive-based practices. Generally, student teachers' inclusion and differentiation work in the classroom appeared methodologically weak.

Aisling: (I'm) not very well prepared I think. I think I could do it if I dealt with them all as part of my teaching day but in different groups and in smaller groups, but as part of one classroom setting I think I am not prepared at all to deal with it. If I were to work with a small group of students who were language students I think I would be well enough prepared to do that, I have teaching strategies to do that. But as part of a full group I don't think I am prepared (Aisling, Interview 1, p. 22).

- Acknowledging one's own value position in relation to 'difference' or 'other' shapes, and is shaped by, experiences. Being able to negotiate 'difference and sameness' through ordinary, experimental and supportive pedagogical experiences can enable deeper, qualitative forms of inclusion.

2.9 Findings Chapter 11: Reading literacy

Fiona: ...some of them wouldn't be able to read and to understand what was going on. And I actually did a thing with them where I asked them to find out the four ways of being freed as a slave and they were all included separately in this paragraph about being a slave. And some of them had tremendous difficulty, a lot of them actually, just picking them out from the text because they weren't bullet points. You know, they were kind of, 'oh it is not there,' and they kind of saw them eventually. (Interview 1, pp. 13-14)

- For the vast majority of student teachers, literacy remains a narrowly bounded or compartmentalised skills issue, varying in range from something

which is not their concern at all, to being a concern only in some or certain subject areas (e.g. Science, History and Geography), to being an issue which is inextricably linked and fixed within the narrow frame of the needs of SEN pupils, generally referring to those pupils experiencing difficulties with written language. Literacy for a small number of student teachers remains a personal issue with written language and can consequently often be a corresponding area of concern or focus in their teaching practice.

- As well as possessing a narrow understanding of reading literacy, the data revealed that the student teachers surveyed appeared to lack an organised and consistent understanding of how literacy is acquired and developed. This was bound up in the enduring traditional belief among the student teachers that the development of literacy was beyond the remit and responsibility of the individual subject teacher at second level.
- Broader, more informed perspectives of literacy (e.g. around strategic comprehension of text and the development and use of pupils' digital literacy) were revealed in some cases but were more the exception rather than the rule.

Caron: ...there is an awful lot of vocab in science so an awful lot of my teaching has revolved around literacy, so it would be like introducing words, introducing the word, introducing the Irish word, trying to get the correlation and trying to find ways for them to remember the Irish words (Interview 2, pp. 3-4).

- What does emerge strongly from the overall data is the necessity and priority for teacher education programmes like the PGDE to provide much more rigorous theorised programmes in understanding literacy and literacy education. In conjunction with such programmes, second level student teachers also need to be provided with classroom strategies to foster the multiple literacies of their pupils so as to transcend the above limitations. This is immediately necessary in view of the accepted impact of teacher education on teachers' effective reading instruction and on student reading and general achievement and progress in schooling.

2.10 Findings Chapter 12: School-University partnerships

Aisling: There is one maths teacher all right that I go to a lot and she has sat down with me and gone through her file for 1st to 6th years so she shows me how it is all laid out and she just seems particularly forgiving that I am a student teacher and don't really know what I am doing and she remembers her PGDE so she is very good, I can go to her with anything really. (Interview, 1 p. 5)

- The structure of the PGDE course and the way that second-level schools are organised dictate the nature of the opportunities to learn to teach that are available to the student teacher. There is insufficient recognition and support at system level for the role that teachers and schools play in ITE.
- Overall, we found, based on survey and interview data, that there is typically little or no opportunity for student teachers to observe in the classroom or to teach some lessons under the supervision of a class teacher before taking on responsibility for a subject with a class. For this to change, teaching needs to be seen as a collegial rather than a solitary activity.
- Student teachers in our survey value teaching practice in schools above all other aspects of the PGDE programme. However, their experience and the level of responsibility they are given, and the level of support they receive within the school can vary widely. A notable feature from both the interviews and the survey was the variation (see Table E) in the teaching practice experience of students depending not only on the school in which they were placed but on the individual encounters they had with teachers within that school.
- The atmosphere, social and cultural of the individual school, the amount and type of support and mentoring that the student teacher receives are all crucial, as are the student teacher's access to resources.

Aoife: It sounds awful but I am unfortunate enough that the older science teachers in my school, the ones that are there longer, aren't really willing to help you out that much and they are very territorial about even so much as moving lab equipment from one lab to another is a cardinal sin ... in this school everyone kind of keeps to themselves unfortunately ...even the other H-Dips in the school have the same feeling, they are all told what to do but don't bother the teachers by coming back and asking more questions, unfortunately that is just the way that school is. (Interview 1, p. 4)

- Mentoring and other ways of participating in ITE can be a source of continuing professional development for practicing teachers, allowing them to reflect on and articulate their own practice in order to communicate what they do and to share their experience and knowledge. Through increased interaction with the university, it could also bring them into contact with new developments in pedagogy and subject knowledge.

Table E: Extent to which PGDE students were able to discuss teaching matters with staff in their teaching practice school (n=133)

As I think about the PDE so far this year, I...	Agree or Strongly agree	Undecided	Disagree or Strongly disagree
Got a lot of help about planning lessons from the teaching staff in my school	24 (18%)	18 (14%)	58 (68%)
Had an opportunity to talk daily about how my lessons went with one or more teaching staff	67 (51%)	15 (11%)	31 (38%)
Felt I was supported in learning to teach by the teaching staff in my school	89 (68%)	21 (16%)	20 (15%)
Rarely had a chance to talk with teachers in my teaching practice school about professional matters	22 (17%)	11 (8%)	72 (75%)
Had easy access in my TP school to textbooks and other resources in planning my lessons	86 (65%)	11 (8%)	36 (27%)
Had someone in my school I could talk to on a daily basis about learning to teach	79 (59%)	19 (14%)	28 (26%)

3.0 Issues

Chapter 13 in the report identifies and discusses seven overarching implications of the findings listed above for research, policy and practice in Initial Teacher Education. The seven overarching implications focus on:

1. The contested nature and scope of competences and curricular visions
2. 'It's OK to be a learner on the Dip?': The incompatibility of autonomous professionalism and learning to teach
3. Extending professional dialogue, observation and mentoring
4. 'Learning to teach' and 'learning to include': curricular and cross-curricular competences
5. Strengthening the school-university dimension of ITE
6. Insights from cross-professional comparisons: graduated and supported enculturation into practice
7. The importance of student teachers' perspective as learners: promoting professional identities and curricular vision.

3.1 The contested nature and scope of competences and curricular visions

Competences in teacher education are and have been contested. Curricular visions vis-à-vis how best to teach subjects are also both contested and changing as new images of what it means to be a good teacher are constantly presented. Reform-oriented approaches to teaching are encountered through the rolling reviews of syllabi at Junior and Senior cycle (Looney & Klenowski, 2008) as well as overall reviews of both cycles in Ireland, e.g. the new vision of what it means to be a good maths teacher as a result of Project Maths, or the difference between the contemporary emphasis on communicative language teaching over past models based on the grammar-translation method. The combined impact of contestation and curriculum change ensures that the initial teacher education endeavour is challenging in terms of both pedagogy and research and is being undertaken in a dynamic context. In this study, we have argued for a perspective on competences that focuses on both the process of learning to teach and the outcomes of this process rather than on the acquisition of a set of narrowly defined skills. As such, we have sought to draw attention to how competence as a teacher is not only about learning outcomes, relevant though these are in terms of policy and pedagogy. In the context of contestation and changing curricular visions some dilemmas and challenges arise for both ITE and pedagogy research:

- What counts as competence – the conventional or the reform-oriented vision of good teaching?
- Given the power of the apprenticeship of observation (Lortie, 1975; Sugrue, 2004) in learning to teach, how can this be adequately acknowledged in ITE pedagogy and research, while at the same time focusing on reform-oriented understandings of the good teacher?

3.2 ‘It’s OK to be a learner on the Dip?’: The incompatibility of autonomous professionalism and learning to teach

One of the key findings of this study is that it is difficult for PGDE students to present themselves as learners in their teaching practice schools. This was evidenced in a number of ways:

- Limited opportunities for observation despite a range of supports/mentoring,
- An emphasis on the school setting as one for working rather than learning, and
- The perception expressed by students that it was better for them to be invisible as learners.

How can we explain this phenomenon? First, the legacy of autonomous professionalism in teaching and schools in Ireland, what the OECD (1991) review team termed “the legendary autonomy” of the teacher, has consequential implications for teacher education at all stages of the continuum (OECD, 1991). Writing a decade ago, Hargreaves (2000) outlined what he saw as four ages of professionalism: the pre-professional age, the age of the autonomous professional, the age of the collegial professional and the fourth age- post-professional or post-modern. In many respects the dominant professional culture in Irish schools is that of the autonomous professional. This is evident in numerous ways in this study, including the manner in which opportunities for student teachers to observe or be observed were very rare. Significantly, current arrangements, both cultural and structural, for learning to teach create a contradiction whereby student teachers feel compelled to present themselves as ‘invisible learners’. As such, student teachers feared revealing their learner identity to the extent that they felt that if it was revealed, they would feel undermined and compromised as an authority figure.

3.3 Extending professional dialogue, observation and mentoring

One of the strongest imperatives in current teacher education reforms is the call for lengthening the student teachers’ experience in schools. Within an autonomous professionalism culture of teaching, this more than likely will confirm rather than challenge the sink or swim model, and its associated view of teaching as a private professional activity. Furthermore, as the scope of teaching changes, due to changes in curricular and cross-curricular expectations for teachers, merely lengthening teaching practice may leave beginning teachers with few options other than relying on their apprenticeship of observation, thereby foreclosing on opportunities to experience new aspects of practice with support and feedback from peers, senior colleagues in schools and university tutors. As we noted in this study: (i) the nature of support provided on TP in schools was focused at the exchange and coordination levels rather than at deeper levels of professional collaboration (e.g. observation, co-planning and co-teaching), (ii) the lack of opportunities to ‘talk shop’, particularly in relation to planning lessons or to observe and/or co-teach lead to a situation in which PGDE students’ horizons of observation are limited, with a resultant premature foreclosure of professional identity formation in ITE. What Sundli (2007) calls ‘the mentoring mantra’ has become part of the culture of teacher education internationally as a means of deepening professional learning in ITE. Few would question the merit of developing and advancing mentoring as a key feature in ITE – nor do we. Nevertheless, as appealing as it is, without a deliberate and purposeful attention to

the meaning of mentoring within the existing culture of autonomous professionalism, in which teaching is seen and valued as a largely private professional endeavour, it is unlikely to provide the kinds of learning opportunities that can provide a powerful basis for life-long collaborative professional learning. That is, an ITE experience which powerfully supports and advances curriculum reforms and their new images of competence in teaching – both curricular and cross-curricular.

3.4 Learning to teach and learning to include: curricular and cross-curricular competences

One of the key insights from this study was that PGDE students' perceptions of their own competence tend not to encompass the promotion of either inclusion or reading literacy. In essence, as evidenced in both survey and interview data, it seems for PGDE students, learning to teach does not necessarily mean learning to include. In this context, as we have argued, the 'new teacher professionalism' demands a more supportive, public and collaborative vision of ITE in order to foster visions of competence that mean 'learning to teach well' also means 'learning to include'. Summarising points we have made earlier in this report, we argue that:

- Since people come into teaching with well-formed initial teaching identities, teacher education involves the re-negotiation of those cultural scripts.
- This task of renegotiation demands opportunities for support, feedback and student teacher inquiry on central issues such as: professional identity including student teachers' own school biography (Chapters 3.1 and 3.2); affect and development of teaching efficacy (Chapter 5); design, preparation and planning curriculum in light of new understandings of teaching subject matter (Chapters 6-8); the dynamics of inclusive learning in classrooms (Chapter 9) and the role of conventional and new literacies in different subject areas (Chapter 10)
- Learning to be a good teacher of maths, science or modern languages involves interweaving of the different elements. In particular, we have argued for the integration of subject content, inclusion, reading literacy in the PGDE given changing understandings of teacher professionalism. Based on the evidence we have gathered, the attainment of this integration presents challenges for teacher education.

3.5 Strengthening the school-university dimension of ITE

The current relationship between universities and schools that provide teaching practice tends very much towards the work-place/host model (Maandag, 2007; see Appendix 1), with little recognition for the role that schools can play in the formation

of beginning teachers. There is considerable scope for recognising the important influence that school-based experiences have on the development of student teachers and for re-considering and possibly extending this role.

From the data we gathered, both in the interviews and the survey, there was considerable variation in the levels of support provided to student teachers across schools participating in the PGDE, e.g. in terms of types of mentoring available, opportunities for observation. There is a need here for constructive dialogue and debate between all the stakeholders - schools, universities, student teachers, students in the schools, the Teaching Council - which would lead to a clearer understanding by all of the stakeholders about what is expected, what is desirable, and what the optimum conditions for learning to teach are and how they can best be provided. The experience of learning to teach is different for each student teacher, given the variation in students' own personalities and previous experiences, the different subjects and school settings, the different tutorial groups they attend and so on. Some variation is inevitable; it is vital however that the university-based components of the PGDE take this into account and ensure that the student teacher has opportunities to encounter different ways of teaching. The Byrne report (2002) suggested that teaching practice should take place in at least two different settings, which would give the student teacher a more balanced experience. This would however require a major re-structuring of the way that the teaching practice element of the PGDE is currently organised and facilitated by schools and universities, and a re-think of the way that student teachers are regarded within schools.

3.6 Insights from cross-professional comparisons: graduated and supported enculturation into practice

Whereas we found that ITE was characterised by a 'sink or swim' model, this is not the learning dynamic typically found across other professions. A range of studies on workplace learning provide powerful examples that incremental assumption of responsibility, a sheltered workshop approach rather than an immediate immersion in 'reality', and a continuum of settings that provide a graduated set of experiences of professional realities, are more typical in other professions (e.g. medicine, nursing, clinical psychology, social work) (Eraut, 2007; Grossman et al, 2009). In our own university, conversations with colleagues suggest that such graduated experiences form a core design feature of initial professional education in some other professional education programmes.

3.7 The importance of student teachers' perspective as learners: promoting professional identities and curricular vision

A notable feature of education in Ireland and elsewhere over the last decade has been an emphasis on the perspective and voice of the learner in schools (Parker-Jenkins, 1999; Lundy, 2007; Smyth et al, 2004) and in tertiary education (Williams, 2004). Understanding and representing student teachers' experiences of the PGDE was a central aim of the *Learning to Teach Study* (LETS). Their voice and their perspectives were important to our growing understanding, as researchers and as teacher educators, of how competence and perceptions of competence develop over the course of the PGDE. The lessons learned about how student teachers experience the PGDE challenge us to extend our practice by taking cognisance of the demands posed by learning to teach. Among the themes that are likely to have an impact on our thinking are: the emotional and cognitive dissonance experienced during the PGDE, the visibility/invisibility theme (Chapters 3, 4 and 5), the variation in support available to student teachers in schools, their conceptions/misconceptions of core concepts central to new curriculum visions (e.g. communicative language teaching, the 'real-world' in mathematics) and their sense of being competent typically not encompassing responsibility for inclusion and reading literacy. So, for example, while PGDE student teachers acknowledged the importance of reading literacy and inclusion as dimensions of their work, nevertheless their conceptions of these were typically limited and marginal rather than central to their emerging professional identities and experiences of competence. Addressing this issue poses pedagogical and ethical issues for teacher educators. On the one hand, providing support for PGDE students' emerging perceptions of competence is important. Nevertheless, if this sense of competence is narrowly conceived and not necessarily in keeping with wider aims of the profession in terms of values, knowledge and skills, then the professional community as a whole (universities/colleges, schools and the wider profession) has a role in addressing the emerging identities of learner teachers – being both supportive and challenging in doing so. This onus to be both supportive and challenging is premised on recognition of the central role of identity in the emergence of competence for learners (Gash, 2000). As such, teacher education has a role in fostering space for student teachers to explore inherited and initial perceptions and beliefs about teaching, learning and knowledge as the basis for reconstructing their knowledge and teacher identity.

4.0 Recommendations

4.1 System level

That:

1. The relevant agencies (i.e. Teaching Council, DES), in consultation with colleges/universities and schools, provide guidelines on how schools can provide more systematic, developmental and graduated support for student teachers (including a focus on observation of experienced teachers and associated discussion, student teachers being observed and associated discussion and formative feedback). In light of the insights learned from the NPPTI and the recently initiated National Induction Programme, the relevant agencies (i.e. Teaching Council), should provide guidelines on how experienced teachers can share their professional knowledge with student teachers, that is, helping accomplished teachers 'to uncover and share their practice' (Lieberman & Pointer Mace, 2009).
2. That relevant agencies (i.e. Teaching Council), in promoting professional standards for teaching and accreditation processes, address the extent to and ways in which inclusion and reading literacy are embedded within ITE programmes. In light of ITE-specific professional standards within college and university programmes, it is recommended that relevant agencies support the specification of professional standards that address inclusion and reading literacy in ITE
3. Based on the assumption that accomplished teachers in schools have much to offer student teachers but cannot offer the full range of subject learning opportunities especially in a reform-oriented curriculum context (e.g. Project Maths), images of good' and/or 'new' practices need to be provided via digital video resources developed at a national level through the support of relevant agencies (e.g. NCCA, SLSS, Project Maths).

4.2 Teacher education institutions

4. In light of the fact that key concepts in and across subject areas are complex and multi-dimensional (e.g. promoting more 'realistic' pedagogy in maths and science, communicative method in languages, fostering active learning in maths and science, differentiation, challenging essentialist understandings of culture) student teachers need more time and appropriate opportunities for deepening their knowledge of these core curricular and cross-curricular concepts

5. There is a need for ITE programmes to pay more attention to inclusion and reading literacy in terms of how these are understood within ITE programmes and how relevant knowledge, skills and dispositions are fostered among student teachers within modules focused on inclusion and reading literacy as well as in pedagogy/methods and foundation studies
6. In addressing inclusion and reading literacy, teacher education programmes must present them as core competences for all teachers as a means of supporting the formation of teacher professional identity. This is essential in order to challenge preconceptions among student teachers that inclusion and reading literacy are an 'advanced and/or separate skill set' running parallel to subject teaching competence. It is particularly relevant given the multicultural nature of second level Irish classrooms, and especially the inclusion of pupils for whom English is a second language.
7. There is a need for teacher education providers to develop policies, in collaboration with schools, on how best to draw upon the expertise of accomplished teachers in supporting the next generation of teachers learn to teach, centred on enhancing observation and pedagogy-focused dialogue opportunities between student teachers and the experienced teachers in Teaching Practice schools. There also need to be more opportunities for dialogue between teachers and teacher educators.
8. In order to foster a more integrated and multi-dimensional sense of professional identity among student teachers, ITE programmes ought to make greater use of case-based learning (e.g. where issues of reading literacy and inclusion are embedded within subject matter teaching) and enhance existing inquiry modes of professional learning in ITE (e.g. portfolios)

4.3 Partnerships in ITE: Schools and universities

9. There is need for schools involved in ITE to provide more systematic and graduated support on teaching practice, in collaboration with colleges/universities, for those entering the profession, otherwise efforts on curriculum reform and on developing a broader sense of teacher identity can be adversely affected
10. In order to provide a more equitable set of experiences for student teachers in schools, protocols need to be devised to ensure student teachers have a minimum level of observation opportunities and associated professional

dialogues with experienced teachers spread over the full length of teaching practice, so as to ensure that these opportunities address the range and complexity of pedagogical practices (i.e. student teachers need to be able to observe advanced skills, in a way consistent with the role and use of observation in other professions, at a time when they are ready to integrate these into their practice) (Conway, Murphy, Hall & Rath, 2011). Consequently, observation should be integrated across the entire learning-to-teach year rather than confined to the first few days or weeks; it could also profitably become part of the induction and early professional development stages of a teaching career.

4.4 Further research

11. In light of the range of findings identified in this study vis-à-vis curricular and cross-curricular competences as well as changing expectations for teachers and teacher education, further study is needed on the dynamics of the consecutive model of initial teacher education at post-primary level
12. The formation of teacher professional identity during ITE and on into induction vis-à-vis the integration of inclusion and reading literacy as core aspects of the professional sense of competence merits further research
13. The role of schools in post primary ITE in Ireland deserves further research, particularly with respect to the influence of school cultures and leadership on opportunities to learn to teach.

5.0 Implications for research, policy and practice

5.1 How do students understand becoming competent?

In addressing this question we might note the scope of, and challenges within, the subject domains. The scope of teacher competence is broad, and always has been, as teachers are expected at once to be academically knowledgeable, capable of planning learning in order to share their own and others' knowledge, act as caring and moral persons, represent and act within societies as civic and cultural persons (Darling-Hammond & Bransford, 2005). None of this makes learning to teach easy. Furthermore, as societies advance even more demands in terms of what has been called the 'new teacher professionalism', what it means to learn to teach, as well as to undertake teacher education, is becoming increasingly demanding and complex. The calls for teachers to teach for inclusive learning, where inclusion means working with students who are educationally disadvantaged, have special needs and/or are

newcomer students to Ireland, all broaden the teacher education endeavour. Similarly, rolling reviews of both subject areas and junior and senior cycle at second level mean that good teaching within subject domains is not necessarily static (Looney & Klenowski, 2008). These emerging re-definitions and images of good subject teaching further challenge the teacher education project, as neophyte teachers negotiate and try to reconcile powerful images of 'good' teaching from their apprenticeship of observation vis-à-vis what these changes mean for being a good teacher now and in the future, for example, in teaching mathematics. As evidenced in this study, the societal and ideological context impacts on student teachers very significantly in terms of the scope of teaching as a practice. How teachers reconcile and integrate their own emerging sense of professional competence with these new teaching imperatives is not an easy task, as illustrated in this study whereby beginning teachers felt ready to teach, competent in teaching their subject area, and enjoyed teaching but nevertheless did not think similarly in terms of their competence to teach students with SEN or for whom English is a second language.

The challenges within subject domains are both similar and different. They are similar in that the student teachers in our study were all grappling with images of good teaching from their apprenticeship of observation, seeking opportunities to observe or be observed and forming new identities. They are different in that particular subject domains also demand disciplinary-specific knowledge cutting across a range of areas of teacher knowledge (Shulman, 1987; Darling-Hammond & Bransford, 2005). So, while maths and science teachers might grapple with the meaning and design of practical work, language and literacy teachers do not necessarily preoccupy themselves in a similar way. Language teachers engage in very significant ways with two or more languages in the classroom. Like other teachers, language is important for second language teachers, but they have particular concerns and knowledge given that language is both the medium and the target of teaching. Similarly, the meaning of big ideas in maths and science teaching such as 'real' and 'realistic' provide significant challenges for beginning teachers in ways not shared by other teachers, although all teachers might have a shared interest in understanding how to best build on and integrate students' out of school experiences to make learning in school more powerful and meaningful.

5.2 How do they develop this competence?

In addressing this question, we have learned about attainment, supports and constraints. Student teachers do not all attain the same level of competence nor do they experience the attainment of beginning competence in the same way. That they do not attain the same levels of competence seems self-evident. The grade distribution among students on teaching practice attests to this fact. We have noted, in this study, the very significant and consequential variation in supports available to student teachers. We are not, in drawing attention to this issue, arguing that a rigid standardisation of student teaching experience is either desirable or feasible. Nevertheless, we are drawing attention to some significant differences in experience and levels of support and scaffolding experienced by student teachers while learning to teach on the PGDE. The development of competence in ITE can be seen as the second of four phases on the continuum of teacher education. That is, the first phase, the apprenticeship of observation forms a hugely influential and much neglected feature of teacher education, shaping much of what is experienced in the second phase that is initial teacher education. In the context of the PGDE, the development of competence is typically characterised by a 'sink or swim' model of learning to teach in schools where there is very significant professional exchange and coordination to support ITE, but very little deeper and more complex professional collaboration centred on the practice of teaching in classrooms (Darling-Hammond, 2006). As such, learning to teach is, in many respects, a relatively private personal experience, with infrequent and short public moments when visited by a tutor or very infrequently (and not typically, across schools) by another teacher. This study has highlighted key experiences in the attainment of beginning teacher competence including, in terms of professional identity, the significance of observation (in their own school biography, the PGDE and on TP), limited opportunities for joint productive activity, the pervasiveness of the 'sink or swim' model, the way in which student teachers are authored and author their professional identities, the visible/invisible dynamic on TP, and the role of affect and efficacy.

5.3 How can theories help us understand learning to teach?

In this study, we adopted socio-cultural theories to help us highlight a distributed understanding of competence and the centrality and nature of assisted practice in learning to teach (Lave & Wenger, 1998; Penuel & Werstch, 1996; Claxton & Wells, 2002; Hall, Murphy, & Soler, 2008). In doing so, we adopted a plural understanding of socio-cultural theories, drawing on a variety of perspectives. We briefly contrasted socio-cultural with other influential approaches to learning, namely, behaviourist and

cognitive approaches. While no approach can offer a comprehensive perspective, we think a socio-cultural approach offered us a rich and informative lens on learning to teach. The adoption of a range of broad principles to underpin our research aided our data analysis and the representation of findings on different aspects of learning to teach that provides various resonances across and within chapters. Furthermore, the adoption of an explicit theoretical stance allowed us to draw upon a wide area of scholarship and studies both within teacher education as well as in the wider field of socio-cultural studies.

6.0 Conclusion

The aim of this research project, the first of its kind on the Postgraduate Diploma in Education in Ireland, commissioned by the Department of Education and Skills (DES), was to develop and implement a study of initial teacher education in the PGDE in Post-Primary Education, in the School of Education, University College Cork. Its objective was to identify the individual and contextual dynamics of how student teachers develop curricular and cross-curricular competences during initial teacher education (ITE). Based on the LETS study, we have identified directions for future research and teaching in relation to the PGDE in UCC, but also we hope more broadly within policy on post-primary teacher education in Ireland (Teaching Council, 2010), as well for contemporary scholarship on initial teacher education and induction in Ireland (e.g. Sugrue, 2004; Leavy, McSorley & Boté, 2007; Morgan, et al, 2009; O'Doherty & Deegan, 2009; Waldron et al, 2009; Harford, MacRuairc & McCartan, 2010; McCormack & O'Flaherty, 2010) and internationally. Many of the findings in LETS are not unique to the PGDE or to UCC but reflect some perennial dilemmas and emerging challenges in teacher education (Darling-Hammond, 2006; Malderez et al, 2007). This fact is important in setting a context for the wider dissemination of the *Learning to Teach Study*.

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Appendix 2: Five models of school-university partnership

Box A1: Five models of university-school partnerships in ITE (based on a five-country cross national study)

Model A: WORKPLACE/HOST MODEL

In this model, the school is the location where the student teacher undertakes a placement. The tertiary institution provides all coursework. This model typically involves some coaching by supervising teachers.

Model B: CO-ORDINATOR MODEL

In this model, the school has a central supervisor or liaison teacher with the tertiary institution. This model is a variation on Model A. The difference is that in this model the school takes on the task of supervising student teachers by appointing an experienced colleague to co-ordinate teacher education.

Model C: PARTNER MODEL

A teacher in the school acts as a trainer of professional teachers. The school is partly responsible for the course curriculum. In addition to coaching the student teacher, the school also provides some of the training itself.

Model D: NETWORK MODEL

In this case, the trainer in the school as the leader of a training team in the school. The school is only partly responsible for the course curriculum. The school has a teacher education training team consisting of one or more trainers at school and coaches who are trained in teaching methods.

Model E: TRAINING SCHOOL MODEL

In this model, the entire training course is provided by the school. The tertiary institution functions as a backup or support institution, focusing on training the trainers at school and developing teaching and training methods.

SOURCE: Maandag et al, 2007

Glossary

Concurrent ITE: Initial teacher education courses such as the B.Ed. where students study an academic subject or subjects at the same time as gaining a teaching qualification.

Consecutive ITE: teaching qualification (post-graduate certificate, diploma, or degree) such as the PGDE where students take a course in pedagogy subsequent to an initial qualification in a teaching subject or subject.

Continuum of teacher education: The whole span of a teacher's career: ITE, induction, EPD and CPD. Conway et al.(2009) also include the apprenticeship of observation (Lortie, 1975) in this continuum.

Foundation courses: disciplinary knowledge for teaching, such as educational psychology, history of education, philosophy of education.

Induction: the first year or years of teaching. The National Pilot Project on Teacher Induction (NPPTI) is exploring ways of supporting teachers and mentors at this crucial time in learning to teach.

Learning Outcomes: Statements of what the learner should know, do, or understand and be able to demonstrate following a period of study

Mathematising: Finding and using mathematical tools to organise and solve a real-life problem. Starting with context-linked solutions, the students gradually develop mathematical tools and understanding at a more formal level. See **Realistic Mathematics Education**.

Mentor: A school-based trainer who is responsible for a trainee teacher or NQT's day-to-day guidance and training during a school placement or during a period of induction or probation.

Methods courses: courses related to the teaching of particular subject matter, classroom management, and assessment.

Micro-teaching: Students videotape and comment on a segment of their classroom teaching and share this with their peers in their methodology tutorial group.

PCK: Pedagogical Content Knowledge – “represents the blending of content and pedagogy into an understanding of how particular topics, problems or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction”. (Shulman, 1987, p. 8). It describes how teachers represent and formulate their subject to make it comprehensible to their students, thereby combining content, pedagogy and learner characteristics.

Portfolio: Students are required to compile a personal portfolio of teaching practice, recording, reflecting on and tracing their professional development during the year.

Practicum: Time spent in the classroom, see **Teaching Practice**.

Primary teaching subject: In the context of the PGDE, this is the main subject being taught by the student teacher during the practicum. It must also be a subject recognised by the Teaching Council, and the student teacher must have studied it to an advanced level during his/her degree. Students are also generally required to teach a second subject during their practicum.

Project Maths: a programme of reform in mathematics teaching and learning, introduced in all second level schools in September 2010, designed to teach mathematics in a way that promotes enhanced skills and real understanding.

Realistic mathematics education: Approach to mathematics education which stresses the importance of real-world contexts as both a source of learning and site in which mathematical ideas can be applied. Originally developed in the Netherlands(Freudenthal, 1991). See also **Mathematising**.

Supervision of teaching practice: Each student teacher is allocated a supervisory tutor at the beginning of the course, who visits and observes their teaching practice on a number of occasions. Students are also visited by a second, “cross-over” tutor, as a quality control measure and to ensure fairness in assessments.

Teaching Council: The professional body for teaching in Ireland, established on a statutory basis in March 2006 to promote teaching as a profession at primary and post-primary levels, to promote the professional development of teachers and to regulate standards in the profession.

Teaching Practice: Students on the PGDE are required to have a minimum of 100 hours- normally 6 hours per week- in direct classroom teaching practice in a post-primary school during their course. Students are required to arrange these placements themselves directly with the school. Students must achieve a pass mark (at least 40%) in their teaching practice and an aggregate of 40% in the remaining modules in order to be awarded the PGDE.



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