The Experiences of Primary Pre-service Teachers Enacting Assessment for Learning in Physical Education during School Placement

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Abstract

Title: The Experiences of Primary Pre-service Teachers enacting Assessment for Learning in Physical Education during School Placement

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Assessment for learning (AfL) has been widely acknowledged in the literature as having significant gains for teaching and student learning if implemented effectively (Black & Wiliam, 1998). Yet despite such recognition of the effectiveness of using assessment strategies, embedding assessment within the teaching of physical education is considered ‘as one of the most troublesome topics’ (López-Pastor et al., 2013, p. 57). This study explored the experiences of primary pre-service teachers (PSTs) enacting assessment for learning (AfL) in physical education during school placement. In addition, the impact of mentoring, continuous upskilling opportunities, and the realities of school placement on PST enactment of AfL were examined.

School placement components of initial teacher education programmes are integral to pre-service teacher development, however, PSTs’ ability to transfer theory into their school placement remains a challenge (Lorente-Catalán & Kirk, 2016). Ogan-Bekiroglu & Suzuk (2014) found that although PSTs identified key elements of assessment literacy in theory, they had difficulty in implementing this into practice. Through an extensive review of the literature, it is evident that no research on PSTs’ assessment literacy in teaching primary physical education has been conducted. While research on primary teacher assessment literacy revealed low levels of assessment literacy for primary teachers in the teaching of physical education (Dinan-Thompson & Penney, 2015), no further research on primary teachers’ or PSTs’ assessment literacy around physical education is evident.

Using a longitudinal action research approach (Pettigrew, 1990; McNiff, 1998) the practitioner-researcher teacher educator engaged in participant observation with five primary PSTs. Data was generated using researcher field notes, primary PST reflective journals and individual primary PST interviews. Drawing on the views of Collins, Brown, & Newman (1989), a cognitive apprenticeship framework positioned with the social constructivist paradigm was adopted as the theoretical framework.

Findings indicate that PSTs were functioning at a low level of assessment literacy in enactment of assessment for learning in phase one following the completion of a primary physical education module as part of their teacher education programme. The use of a cognitive apprenticeship framework proved effective in raising PST assessment literacy, coupled with regular exposure to teaching primary physical education on school placement. The realities of school placement, such as, the outsourcing of physical education lessons, multi-use of facilities, and behaviour management impacted on PST enactment of AfL. The impact of teacher educator modelling with primary school students proved more effective than the integrated approach to AfL in the physical education module, preparing the PSTs for the complexities of implementing self and peer assessment to a greater extent than when practiced with peers. The need for explicit opportunities for PSTs to practice implementing AfL in their teaching of primary physical education, through modelled practice, is essential in ITE programmes.
Authors Declaration

I hereby certify that this material, which I now submit for assessment, is entirely my own work and has not been taken from the work of others, save to the extent that such work has been cited and acknowledged within the text of my work. I further declare that this thesis has not been submitted as an exercise for a degree at the University of Limerick and any other Institution or University.

Signed: ________________________________

Suzanne Macken.

___________________________  ___________________________
Professor Ann MacPhail   Dr. Antonio Calderón
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# Table of Contents

**ABSTRACT** | I  

**AUTHORS DECLARATION** | II  

**ACKNOWLEDGEMENTS** | III  

**LIST OF FIGURES** | V  

**LIST OF TABLES** | VI  

**ABBREVIATIONS** | VII  

**CHAPTER 1 - INTRODUCTION** | 1  

1.1 Background and rationale for the study | 1  
1.1.1 Primary physical education in Ireland | 5  

1.2 Research questions | 9  

1.3 Overview of Thesis | 9  
1.3.1 Chapter 2 - Theoretical and conceptual frameworks | 9  
1.3.2 Chapter 3 - Literature review | 10  
1.3.3 Chapter 4 - Methodology | 10  
1.3.4 Chapter 5 - Results | 11  
1.3.5 Chapter 6 – Discussion Research question 1 | 11  
1.3.6 Chapter 7 – Discussion Research question 2 | 11  
1.3.7 Chapter 8 – Discussion Research question 3 | 11  
1.3.8 Chapter 9 - Conclusions and implications | 12  

**CHAPTER 2 - THEORETICAL AND CONCEPTUAL FRAMEWORKS** | 13  

2.1 Social Constructivism | 14  
2.1.1 Zone of Proximal Development and PST development. | 16  
2.1.2 Social constructivism; context, community, and communication | 19  
2.1.3 Social constructivism and the construction of knowledge. | 20  

2.2 Cognitive apprenticeship | 21  
2.2.1 Use of a cognitive apprenticeship model. | 23  
2.2.2 Key components of cognitive apprenticeship. | 25  

2.3 Conceptual Framework | 32  
2.3.1 Assessment Literacy – existing definitions. | 33
2.4 Models for the development of PST assessment literacy. 36
2.5 Conceptual framework for this study 38
2.6 Summary 42

CHAPTER 3 - LITERATURE REVIEW 43

3.1 Definitions and principles of Assessment for learning 44
3.1.1 The uniqueness of Afl. 45
3.1.2 Impact of AfL on teaching and learning. 46

3.2 AfL and physical education 48
3.2.1 PST engagement with AfL. 50

3.3 AfL and primary physical education 51

3.4 AfL strategies 54
3.4.1 Clarifying learning objectives. 54
3.4.2 Sharing success criteria. 56
3.4.3 Observation and questioning. 57
3.4.4 Feedback. 58
3.4.5 Peer assessment. 59
3.4.6 Self-Assessment. 61

3.5 Assessment literacy in primary physical education 62

3.6 Summary 64

CHAPTER 4 - METHODOLOGY 65

4.1 Qualitative Research 65

4.2 Research Design 68
4.2.1 Longitudinal action research. 68
4.2.2 Rationale for action research. 72
4.2.3 Ethical considerations 76

4.3 Participants and Context 77
4.3.1 The teacher educator as a practitioner-researcher 77
4.3.2 Research context 79
4.3.3 Pre-service teachers 80
4.3.4 Sampling 82

4.4 Procedure 83
4.4.1 Phase one: School placement 1 November – December 2016 (3 weeks). 84
4.4.2 Phase two: Upskill sessions. 85
4.4.3 Phase three: School placement 2 March 2017 (3 weeks). 85
4.4.4 Phase four: Upskill sessions November 2017 (3 one-hour sessions). 86
4.4.5 Phase five: School placement 3 January 2018 (3 weeks in a 10-week block). 86
4.4.6 Phase six: Upskill sessions (1-hour one-to-one session). 87
4.4.7 Phase seven: School placement 4 February – March 2018 (4 weeks out of a 10-week block). 87

4.5 Data Collection 88
4.5.1 Participant observation. 88
4.5.2 Field notes. 90
4.5.3 Reflective journals. 92
4.5.4 Post-lesson debrief 93
4.5.5 Interviews 95
4.5.6 Focus Groups. 97

4.6 Data Analysis 98

4.7 Trustworthiness 102

4.8 Limitations 105

4.9 Summary 106

CHAPTER 5 - RESULTS 107

CHAPTER 6 - PSTS’ ASSESSMENT LITERACY IN ENACTING AFL IN PRIMARY PHYSICAL EDUCATION 116

6.1 Assessment Comprehension 116
6.1.1 Changes in PSTs’ perceptions of AfL 118
6.1.2 Absence of an assessment module and implications for PST assessment literacy119
6.1.3 Dis(connect) between content and practice 120
6.1.4 Greater alignment between curriculum, pedagogy and assessment 122
6.1.5 AfL as an embedded practice 123
6.1.6 Acknowledgement of the role of students. 125
6.1.7 Impact on PST planning 127

6.2 Assessment application 129
6.2.1 Greater student autonomy 133
6.2.2 Facilitation of self- and peer assessment 136

6.3 Assessment Interpretation 140
6.3.1 Isolated content to progressive planning 140
6.3.2 Provision of feedback 142
6.3.3 Advancements in PST planning 143

6.4 Critical engagement with assessment 146
Appendix C Volunteer Information Sheet 228

Appendix D Detailed upskill session outline 229
Appendix E Outline of PME programme modules 232
List of Figures

Figure 1  Vygotsky’s Zone of Proximal Development (ZPD, 1978)
Figure 2  Four stages model based on Vygotsky’s Model of Development (1978).
Figure 3  Conceptual Framework for development of assessment literacy
Figure 4  Goals in qualitative research
Figure 5  Timeline of engagement in data collection and planning
Figure 6  Data collection methods across seven phases
Figure 7  Sample data synthesis
Figure 8  Data reduction
Figure 9  Triangulation of data
Figure 10  Assessment literacy components proposed by Hay and Penney (2013)
Figure 11  Jessica’s Assessment Literacy development
Figure 12  Nicola’s Assessment Literacy development
Figure 13  Alice’s Assessment Literacy development
Figure 14  Monica’s Assessment Literacy development
Figure 15  Dylan Assessment Literacy development
Figure 16  All PST assessment literacy development per phase
Figure 17  Summary chart of PST assessment literacy
Figure 18  Sample WILF chart generated with the students
List of Tables

Table 1  Participant profile of experiences and beliefs around physical education and assessment for learning

Table 2  Contextual information for schools in each phase of school placement

Table 3  Upskill content

Table 4  Participant profile of experiences and beliefs around physical education and assessment for learning

Table 5  Outline of phases within this study

Table 6  Content and duration of upskill sessions

Table 7  Assessment for learning strategies pertaining to this study

Table 8  Seven phase study overview

Table 9  Summary of professional masters of education programme and physical education module

Table 10  Design of school placement phases in study

Table 11  Details of upskill session content
Abbreviations

AfL – Assessment for Learning
ARG – Assessment Reform Group
CEPEC - Colleges of Education Physical Education Consortium
DES – Department of Education and Skills
IPPEA – Irish Primary Physical Education Association
ITE – Initial Teacher Education
NCCA – National Council for Curriculum and Assessment
OECD – Organisation for Economic Co-operation and Development
PME – Professional Masters of Education
PST – Pre-service teacher
ZPD – Zone of Proximal Development
Chapter 1 - Introduction

1.1 Background and rationale for the study

Research on initial teacher education (ITE) has continually stressed the impact of ITE programmes in preparing pre-service teachers (PSTs) to deliver quality teaching and learning (Darling-Hammond, 2006). Acknowledging the centrality of ITE programmes for the development of core and broad PST conceptions about teaching and learning, Darling-Hammond and Bransford (2005) explained that such foundations give PSTs ‘traction’ for later development (p. 3). Despite developments in teacher education, much criticism remains surrounding the impact of teacher education programmes on PST preparation for the reality of the classroom. One particular challenge identified by Darling-Hammond (2006) is ‘the difficult process of helping people learn to enact their intentions in complex settings’ (p. 41). However, a disparity appears to remain between the knowledge gained within ITE programmes and the realities of what PSTs encounter during the school placement components of their programmes (Cochran-Smith, 2005; Korthagen, 2010; Glocker-Frey, Deutscher, & Renkl, 2018).

The impact of assessment as an everyday practice to enhance teaching and learning continues to increase in the research literature (Black, 2013; Black & Wiliam, 1998; Klenowski, 2009; Shepard, 2000; Wiliam & Leahy, 2015; DeLuca, Chapman-Chin, LaPointe-McEwan & Klinger, 2018). In terms of assessment practices, Hay (2006) explains that historically the tendency was for teachers to focus on the practice of assessment rather than focusing on the impact of assessment on teaching and learning. However, while calls for innovative assessment practices have been made (McDowell, 1995; DeLuca & Volante, 2016), major gaps seem to remain in the enactment of assessment (Svennberg, Meckbach, & Redelius, 2014;
Tolgfors & Ohman, 2015). Research has highlighted an over-emphasis on didactic teaching modes, and inconsistencies in programme content within specific assessment courses in ITE. As a result, it is considered that PSTs are being denied access to the thinking behind the decisions encountered in the context of everyday practice in classrooms (Mertler, 1999), indicating that teacher education programmes remain ineffective in the preparation of PSTs in relation to assessment practices (Alkhaurusi, Kazem, & Al Musawi, 2011; Beziat & Coleman, 2015; Volante & Fazio, 2007).

For primary PSTs, the main purpose of school placement is to continue their professional development in the context of the school setting (Hascher & Kittinger, 2014) and to transfer the content knowledge, pedagogical content knowledge, and general content knowledge gained from their ITE programme to a setting that provides specific frameworks and support (Alkan & Demirhan, 2005; Ball & Forzani, 2009). School placement provides opportunities for PSTs to apply and adopt a wide range of pedagogies across all primary curricular areas. Furthermore, there is a consensus regarding the value of school placement experiences for PSTs in teacher education programmes (Bates, Ramirez, & Drits, 2009; Langdon, Alexander, Dinsmore, & Ryde, 2012; Smith & Levi-Ari, 2005). Caires, Almeida, and Vieira (2012) describe it as ‘a dynamic and continuous process of mutual interactions and adaptation’ (p. 164), where PSTs attempt to implement the theoretical and practical elements encountered in their ITE programme in the authentic context of the classroom setting (Allen & Wright, 2014 Caires & Almeida, 2005; Evelein, Korthagen, & Brekelmans, 2008; Hammerness, 2006, 2013; Hatlevik & Smeby, 2015). Despite this, challenges remain in PSTs’ ability to transfer the knowledge gained in their ITE programmes to the reality of the primary classroom (Hadyn-
Davies, Kaitell, Randall, & Spence 2010). Often the trend is to abandon the pedagogical principles learned in ITE programmes, and exhibit more survival strategies that hide or enable PSTs to overcome the inadequacies that a more experienced teacher may not possess (Shoval, Erlich, & Fejgin, 2008). The quality of assessment content delivered to PSTs has been highlighted as inconsistent across ITE programmes, and has been proven to have implications for their assessment literacy when inadequate assessment training is evident in the programme (Mertler, 1999; King, 2010).

In physical education, assessment is still perceived as being a challenge, and although assessment for learning (AfL) has often been referred to as a catalyst for change, the pace of change appears to be quite slow in the teaching of physical education, with many PSTs relying more on summative than formative assessment practices (Leirhaug & MacPhail, 2015; Lopez-Pastor, Kirk, Lorente Catalan, MacPhail, & MacDonald 2013; Volante & Fazio. 2009). Concerns remain regarding teachers’ assessment literacy in the teaching of primary physical education (Dinan-Thompson & Penney, 2013; Ní Chróinín & Cosgrave, 2013). With a new appreciation of the potential of AfL to enhance teaching and learning, when embedded in practice, recommendations include the need for teachers and PSTs to observe lived examples of how AfL can be enacted (Black & Wiliam, 1998; Wiliam et al. 2004; Wiliam, 2011). Considering the benefits attributed to AfL for teaching and learning (Black & Wiliam, 1998; Clarke, 2009), the need for PSTs to be able to develop their thinking and construct knowledge of AfL that guides their teaching is integral and fundamental in teacher education programmes.

Research on assessment in primary physical education found teachers lacked sufficient knowledge of how to effectively enact a range of assessment practices and
skills, and were unable to interpret the assessment data retrieved in the classroom context (Dinan-Thompson & Penney, 2015; Ni Chróinín & Cosgrave, 2013). Furthermore, PSTs need to gain sufficient knowledge that allows them ‘to keep the purposes of each type of assessment in mind as this is fundamental to helping them learn to judge the appropriateness of one over the other’ (Andrade, 2010, p. 348).

Recent studies have indicated the lack of assessment literacy among teachers, particularly among PSTs (DeLuca & Volante, 2016; Kluger, Volante, & DeLuca, 2012; Mertler, 2009; Popham, 2011; Volante & Fazio, 2007). In this study, assessment literacy refers to that proposed by Hay and Penney (2013) whereby the teachers should demonstrate assessment comprehension, application, interpretation of assessments, and an ability to critically engage with the assessment data, while ensuring that both students and teachers play an active role in the assessment process. This will be discussed further in chapter 2. Research found that teachers feel unprepared to engage in the effective assessment of their students (Mertler, 1999, 1998; Plake, 1993), highlighting the need for assessment literacy of teachers (Tolgfors, 2018). While Graham (2005) found that engaging in formative assessment practices created a greater awareness among PSTs of the need for assessment to be an ongoing process, this may not necessarily develop PSTs’ knowledge skills or confidence consistently (DeLuca and Klinger, 2010). Furthermore, Mertler (2003) explains that despite receiving training within their ITE courses, this was not sufficient to generate comfort and confidence regarding making assessment decisions, and PST understanding is often diluted when PST are initially confronted with the reality of school placement (Lunenberg, Korthagen & Swennen, 2007). However, as most assessment courses are delivered for a short duration, many in one semester, it is not surprising that with such little and one-off instructional time
provided to PST that builds a strong foundation of theoretical and practical elements, that PST do not have adequate knowledge of ‘more integrated and complex concepts of assessment for learning, communication of assessment information, and the linkages between classroom environment and assessment’ (DeLuca & Bellara, 2013, p. 367).

Furthermore, primary physical education teacher education has been severely impacted by reconfigured teacher education programmes. Reconfigured programmes have resulted in less contact time during ITE programmes, and poor PST confidence levels in teaching primary physical education (Carney & Armstrong 1996; Faulkner, Reeves, & Chedzoy, 2004; Caldecott, Warburton, & Waring, 2006; Garrett & Wrench, 2007, Harris, Cale, & Musson 2012; Elliot, Atencio, Campbell, & Jess 2013).

1.1.1 Primary physical education in Ireland

In Ireland, the generalist teacher has the responsibility for teaching primary physical education as one of twelve curricular areas. According to Keating (2017), the primary physical education curriculum is not being delivered uniformly or systematically within schools. Studies in Ireland suggest one of the main reasons for the poor delivery of physical education in primary schools relates to the inadequate pre-service training, and time devoted to teach physical education in ITE programmes (Coulter & Woods, 2007; Cosgrave & Murphy, 2010; House of Oireachtas, 2005). PSTs in Ireland typically engage in one physical education module throughout their 2 year or 4 year course, ranging from between 18 (PME) to 38 (undergraduate) hours across one or two semesters (Fletcher & Mandigo, 2012). During this limited time, PSTs are faced with the challenge of having to reflect on
and critique their prior experiences, and learn the content and pedagogy needed to teach physical education in the primary school (Fletcher & Mandigo, 2012).

In 2012, undergraduate ITE programmes were extended from a three-year course to a four-year course, while all post-graduate ITE programmes were extended from an eighteen month postgraduate higher diploma into a two-year Professional Masters of Education degree (Teaching Council, 2015). The extended programmes were implemented in order to facilitate an innovative reconceptualisation of the programmes already in place (Teaching Council, 2011). According to The Teaching Council (2013), school placement is a crucial part of initial teacher education. It provides PSTs with an opportunity to ‘learn about teaching and learning, to gain practice in teaching and to apply theory in a variety of teaching situations and school contexts’ (p. 7). In addition, teacher educators are considered as crucial players in supporting PSTs, and must include behaviours that model the role of a teacher in their own practice (Korthagen, Loughran, & Lunenberg, 2005, 2007; Lunenberg, Korthagen, & Swennen, 2007). According to Ní Chróinín, Fletcher, and O’Sullivan (2015), teacher educators need to provide better support for PSTs in their learning and use of pedagogy to facilitate more effective and meaningful experiences for PSTs in the primary school classroom context. Loughran (2006) argued that PSTs should be challenged to reflect and develop greater depth of understanding where teacher educators provide access for PSTs to ‘the thoughts and actions that shape such practice; they need to be able to see and hear the pedagogical reasoning that underpins the teaching they are experiencing’ (p. 5).

Factors such as limited experience of and exposure to teaching primary physical education during their school placement experiences have significant impact on overall PST confidence, personal understandings of teaching practice, and
diminished opportunities for PSTs to practice teaching physical education (Haydn-Davies et al., 2010; Randall, Richardson, Swaithes, & Adams, 2016; Tsangaridou, 2008). In Ireland, the Physical Education Curriculum (DES, 1999), acknowledges the role of external providers and advises that such employment should occur in collaboration with the classroom teacher, working side-by-side and supporting teachers in teaching primary physical education.

Gaps identified by Capel (2016) in PSTs’ teaching of physical education included an overemphasis on the learning processes, social integration and self-actualisation, and insufficient attention given to social responsibility and discipline mastery. Furthermore, priority was often given to the development of content knowledge and a focus that was influenced by their immediate practical concerns about teaching. Concerns about themselves and their own teaching of the material PSTs teach are often prioritised over pedagogical content knowledge (Capel, Hayes, Katene, & Velija, 2011), resulting in fragmentation between theory and practice experienced by PSTs (Forland Standal, Mordal-Moen, & Moe, 2013).

The aim of this study was to explore to what extent PSTs are enacting AfL in their teaching of primary physical education during school placement. The review of literature identified key research across assessment, PST assessment literacy (Chen, 2005; MacLellan, 2004; Mertler, 2003), primary teacher assessment literacy (Dinan-Thompson, 2013; Volante & Fazio, 2009), AfL in the area of post primary (Leirhaug & MacPhail, 2013; MacPhail & Halbert, 2010), and primary teaching of physical education (NíChróinin & Cosgrave, 2013). However, no empirical research that reports on PST enactment of AfL or assessment literacy of primary PSTs in teaching primary physical education is evident, highlighting a gap in the body of research conducted to date. Consequently, this leaves it unclear to what extent that PSTs are
enacting AfL in their teaching of primary physical education during school placement. Furthermore, the absence of research on the realities of school placement experiences and the impact on PST enactment of AfL in teaching primary physical education provides little insight on how PSTs learn and apply the knowledge gained in teacher education programmes into their teaching (Cochran-Smith, 2005).

So far, research on PSTs’ enactment of AfL in the teaching of primary physical education has not been studied, leaving teacher educators unaware of the extent to which PSTs demonstrate assessment literacy in relation to enacting AfL in primary physical education. Furthermore, Darling-Hammond et al. (2005) emphasise that ‘teacher educators must constantly model practices; construct powerful learning experiences; thoughtfully support progress, understanding and practice; carefully assess students’ progress and understandings; and help to link theory and practice’ (p. 441). Despite this interest, the optimism in the role of assessment in enhancing and supporting teaching and learning has been described as ‘viral and normative in the networks of educational policy makers across the globe’ (Looney, 2014, p. 234).

According to Popham (2010) ‘one of the most serious problems in today’s education profession is that the level of educators’ assessment literacy is so abysmally low’ (p. 175). There appears to be general agreement recognising a poor competence of many teachers in developing and implementing assessments, which can be attributed to inadequate training and support during ITE programmes (Koh, 2011; Bol, Nunnery, Stephenson, & Mogge, 2000; Hargreaves, Earl, & Schmidt, 2002; Stiggins, 1995).

This study seeks to add to the body of literature on AfL by exploring the extent that primary PSTs enact AfL in the teaching of physical education.
1.2 Research questions

In order to achieve the aims of this research, the following research questions were explored:

Research question 1: To what extent do PSTs demonstrate assessment literacy in relation to enacting AfL in primary physical education over a two year PME programme?

Research question 2: What impact does mentoring and continuous opportunities to upskill have on PSTs’ experiences with AfL in their teaching of primary physical education?

Research question 3: What impact do the realities of school placement have on PSTs’ experiences with AfL in their teaching of primary physical education?

The need to understand the PSTs’ level of assessment literacy where AfL was delivered in a blended discrete approach through practical and pedagogical content knowledge in the module, and in the absence of a specific course on assessment and evaluation provided a further rationale for this study. A cognitive apprenticeship approach within a social constructivism framework was used, with the concept of assessment literacy proposed by Hay and Penney (2013), guiding the teacher educators understanding of the experiences of PST enacting AfL strategies in their teaching of primary physical education.

1.3 Overview of Thesis

Following the introduction, this doctoral thesis is composed of nine chapters, each of which is outlined below.

1.3.1 Chapter 2 - Theoretical and conceptual frameworks

Chapter two provides an overview of the theoretical and conceptual frameworks that underpin this study. The view that a cognitive apprenticeship within a social
constructivist paradigm has the potential to enhance PST knowledge and understanding, will be discussed and the key elements and component of a cognitive apprenticeship model as alluded to by Collins, Brown and Newman (1989) are described. The approach and belief where knowledge is co-constructed through interactions in particular contexts will be explored, drawing on the construction of PST knowledge through cognitive apprenticeship within Vygotsky’s Zone of Proximal Development (1978). The conceptual framework employed in this study is described with reference to supporting literature. A range of definitions of assessment literacy are outlined, the impact on PSTs and the justification for the adoption of the definition adopted for this study is included.

1.3.2 Chapter 3 - Literature review

A comprehensive review of the literature was conducted and is presented within this chapter, including national and international perspectives. The literature review provides a range of perspectives and research findings on AfL, AfL in post primary physical education, and primary physical education and AfL strategies. The literature reviewed identified gaps in research specific to the use of AfL by PSTs in teaching primary physical education, and the absence of research on PST assessment literacy in relation to enacting AfL in primary physical education, and therefore provided a rationale for this study.

1.3.3 Chapter 4 - Methodology

This chapter provides an overview and rationale for the selection of a longitudinal action research approach. Furthermore, the use of participant observation and field notes, semi-structured and focus group interviews, and PST reflective journals are highlighted with relevant literature justifying their inclusion and suitability for this study. Rich descriptions of each phase of the study, data
analysis procedures employed and ethical considerations pertaining to this study are outlined in detail.

1.3.4 Chapter 5 - Results

This chapter presents visual graphics that display the findings of the study in relation to the extent in which the PSTs’ demonstrated assessment literacy in their enactment of AfL across all phases of this study. The findings of the study using the conceptual framework of assessment literacy where the four inter-related components proposed by Hay and Penney (2013) guide the presentation of the findings in this chapter.

1.3.5 Chapter 6 – Discussion Research question 1

The chapter discusses the findings in relation to Research Question 1, the extent to which PSTs demonstrate assessment literacy in the enactment of AfL and reference made to alignment to and conflicts identified with the literature reviewed in chapters 2 and 3. Themes that were produced from the data analysis will be discussed using the four inter-dependent components of assessment literacy proposed by Hay and Penney (2013).

1.3.6 Chapter 7 – Discussion Research question 2

This chapter discusses the findings in relation to the second research question – the impact of mentoring and continuous opportunities to upskill on PSTs’ experiences with AfL using the framework proposed by Hay and Penney (2013) and reference made to the literature that supports and contradicts the findings.

1.3.7 Chapter 8 – Discussion Research question 3

This chapter discusses findings on the impact of the realities of school placement on PSTs’ enactment of AfL, with reference to pertinent literature, using the four inter-dependent components of assessment literacy (Hay & Penney, 2013).
1.3.8 Chapter 9 - Conclusions and implications

Chapter 9 reaffirms the research findings with reference to the research aims and questions. Recommendations for practice and future research will be provided in relation to potential approaches for enhancing PSTs’ assessment literacy in the enactment of AfL and improved PST assessment literacy in their enactment of AfL in the teaching of primary physical education. Further recommendations will include how teacher educators can facilitate greater opportunities for PSTs to practice AfL within their teacher education programme.
Chapter 2 - Theoretical and Conceptual Frameworks

Considered as one of the most important aspects in research approaches, Eisenhart (1991) describes a theoretical framework as ‘a structure that guides research by relying on a formal theory…constructed by using an established, coherent explanation of certain phenomena and relationships’ (p. 205). A theoretical framework provides the structure that enables researchers to explain how the research will be approached in relation to epistemology, methodology, and analysis across the thesis as a whole (Grant & Osanloo, 2014). Generally it is considered that researchers will identify the theoretical framework in advance of the research design, but in some cases the theory is developed throughout the course of the study and the data analysis.

Theory often reflects a particular paradigm that is consistent with a certain philosophy as ‘it organises a complex environment, like a physical education class, and helps you to know where to look, what question to ask, and which answers are more likely to provide new insights’ (Ennis 1999, p. 133). Creswell (2003) explains that a clear understanding of the paradigm is essential when designing a research study, to obtain rich data that the teacher educators can interpret and ascertain what is real, relevant, and important for PSTs in enacting AfL during school placement. In the context of this study, the belief held is one where PSTs construct their own knowledge, influenced by their prior knowledge and understanding of assessment strategies, the cultural and contextual factors that impact on their knowledge and understanding, and therefore, the researcher is positioned within the parameters of a social constructivist epistemological discourse (Cottone, 2007). A social constructivist approach to the research was adopted, using a cognitive apprenticeship framework, to most effectively encapsulate and present the experiences of five PSTs
enacting AfL in their teaching of primary physical education while on school placement, and the extent that the PSTs demonstrated assessment literacy in their enactment of AfL. The use of a cognitive apprenticeship framework allows for an investigation on PST experiences of enacting AfL in their teaching of physical education on school placement that situated learning or legitimate peripheral participation alone do not provide (Dennen, 2003). Furthermore, this framework facilitates exploration of the impact of mentoring, continuous opportunities to upskill, and the realities of school placement on PST enactment of AfL.

2.1 Social Constructivism

Au (1998) describes social constructivism as ‘the idea that there is no objective basis for knowledge claims, because knowledge is always a human construction’ (p. 298). The emphasis is placed on ‘the process of knowledge construction by the social group, and the inter-subjectivity established through the interactions of the group’ (p. 299). Social constructivism, a branch of constructivism, is concerned with the belief that knowledge is gained through individual experiences (Schreiber & Elise Valle, 2013). Thus, as PSTs begin their teacher education programme with pre-existing beliefs and experiences, coupled with the diverse range of contexts when on school placement, the use of a social constructivist approach was most suited to this study where the practitioner-researcher teacher educator sought to understand the impact of the aforementioned on the PSTs.

Additionally, the need to understand the uniqueness of individual PSTs and how knowledge in relation to AfL is constructed, explore the extent to which PSTs demonstrate assessment literacy, the impact of mentoring, continuous opportunities to upskill, and the realities of school placement on PST enactment of AfL, influenced the rationale to adopt a social constructivist paradigm. This uniqueness
and the complexities associated with PST knowledge construction are rewarded, encouraged and used through social constructivism as an integral part of the learning process (Gredler, 1997; Wertsch, 1997).

Social constructivism dates back to the 1930s and the work of Vygotsky who emphasised the influence of social factors on how students learn. Vygotsky’s theories on learning strongly influenced social constructivism, believing that learning involves continuous movement through social interactions within what Vygotsky calls the Zone of Proximal Development (1978). This relates to the distance between the actual development level of the PST and the potential development level that occurs through guidance from, and collaboration with peers or the teacher educator who are more experienced than the learner (Figure 1).

![Figure 1: Vygotsky’s Zone of Proximal Development (ZPD, 1978)](image)

**Figure 1**: Vygotsky’s Zone of Proximal Development (ZPD, 1978)
Drawing on the theories of Vygotsky (1978), the belief that experiences and backgrounds play a pivotal role in how PSTs learn and gain knowledge and understanding of AfL is central to this research (Schreiber & Elise Valle, 2013). Furthermore, the belief that learning occurs through social and collaborative interactions with others, where PSTs can create their own meanings from such interactions and the multiple perspectives held, is a key aspect of social constructivism (Vygotsky, 1978). In this study, the theoretical framework is informed by literature and considers the ZPD as an element that is subsumed within the social constructivist paradigm and provides a context for the use of cognitive apprenticeship within the theoretical framework. Drawing on the need for scaffolding in PST development throughout the action research cycles in this study, the inclusion of the ZPD is a signpost for the use of social constructivism and cognitive apprenticeship. The view that PSTs create their own meaning and truth through dynamic interactions between teacher educators, teachers, other learners and tasks is fundamental to employing social constructivism in this study (Sternberg & Williams, 1998).

### 2.1.1 Zone of Proximal Development and PST development

Vygotsky’s (1978) concept of the zone of proximal development (ZPD) refers to the social context of learning and the distance between what the PST is capable of achieving presently and the potential learning that could be achieved through the guidance of a more experienced person or, in this study, the teacher educator. The teacher educator and PSTs will work together throughout the multiple cycles of action research in the phases of this study, within the ZPD until the PSTs can successfully go beyond the zone when enacting AfL in their teaching of primary physical education.
Interactions within the ZPD provide opportunities for learning to occur, where PSTs engage in activities and approaches that may be considered as unattainable should the PSTs attempt to enact them without the support that is facilitated through cognitive apprenticeship. Cognitive apprenticeship, the situated nature of learning, and social interactions in the learning environment are inextricably linked in developing greater knowledge and understanding for PSTs through a social constructivist paradigm. The multiple phases in this research will involve the teacher educator observing PST development through the four-stage model outlined by Vygotsky in each individual phase and return recursively to the ZPD as each new phase begins (Figure 2). Furthermore, the impact of mentoring and continuous opportunities to upskill on the PSTs’ construction of knowledge and understanding in enacting AfL, and the extent to which they demonstrate assessment literacy can be observed throughout this study.
As each new phase of this study commences, greater focus will be placed on the enactment of particular AfL strategies, informed by the PST progression through the four stages of Vygotsky’s model (Figure 2). However, Rochler and Conthen (1997) explain that progress through the ZPD will be shaped by the varying needs for each individual learner, with varying levels of support required. The ZPD is explicitly linked to the learning that occurs as a collaborative process described in the literature pertaining to a social constructivist paradigm, with dialogue between the teacher educator and the PSTs, and acknowledges the individuality of learning. Furthermore, reference to the ZPD in this study, that emphasises that learning may need to be scaffolded, informs, and provides a context for the use of a cognitive apprenticeship which will be discussed later in this chapter.

**Figure 2.** Four stages model based on Vygotsky model of development (1978).
2.1.2 Social constructivism; context, community, and communication.

According to Hausfather (1996), Vygotsky saw learning not as development, but as a process that results in development (p. 5). The view that learning is gained through experiencing, where factors such as communities and contexts, i.e. the schools, the children, the module and delivery of the module, impact on and influence PSTs’ learning during their PME programme, was a key rationale for the use of a social constructivist approach. Adams (2006) explains that educators must acknowledge the variance in the learning styles of individuals, meaning each PST will construct knowledge differently. Furthermore, the differences are rooted in the various ways that PSTs acquire, select, interpret, and organise the information presented to them, and how they demonstrate an ability to enact and embed AfL in their teaching of physical education. Social constructivists view knowledge construction as active where it cannot be separated from the social environment in which it is formed (Adams, 2007). This social environment includes the interactions between the people in it, i.e. other learners, and the physical aspects of such environments (Kirk & MacDonald, 1998). In this study, PSTs complete the school placement component of their programme in three different schools across their two-year programme and encounter diverse social environments that impact on their construction of knowledge.

Using a social constructivist framework places a focus on thinking about how PSTs think about learning rather than what PSTs are attempting to teach in the teaching of primary physical education (Hein, 1991). Additionally, the extent to which the PSTs demonstrate assessment literacy (Hay & Penney, 2013), through the enactment of AfL in their teaching of physical education rather than the content they deliver, and whether links between curriculum, pedagogy, and assessment can be
explored. Acknowledging that there is ‘no knowledge independent of the meaning attributed to experience (constructed) by the learner, or community of learners’ (Hein 1991, p. 1), the qualitative methods employed in this study allow for rich understandings of individual PST’s prior and present experiences to be understood. Further acknowledgement of the PSTs, is highlighted across the literature (Prawat, 1996; Hollins, 1996; Hurst, Wallace, & Nixon, 2013), that emphasises the freedom and explorations that engaging in social interactions can have for learners, that replicates the experiences of the PSTs in this study in their teaching of physical education on school placement, the impact of the physical education module, and the cognitive apprenticeship approach applied across the phases of this study. Knowledge is not considered to be independent from the learner but is constructed as the PSTs learn, and is a social and personal experience that occurs within a variety of contexts. However, Hein (1991) stresses that learning is not instantaneous and must develop across time, and furthermore, the teacher educator acknowledges the fluctuating nature of learning for PSTs in this study (Adams, 2007).

2.1.3 Social constructivism and the construction of knowledge.

A social constructivist approach enables observation of the learning trajectory of each PST and factors that impact on the pace of their individual learning, and factors that impact on their enactment of AfL in their teaching of primary physical education. Social constructivism places the responsibility for learning with the active involvement of the learner, i.e. the PST (Von Glasserfield, 1989), with facilitation and guiding of the PSTs’ understanding.

Assuming a subjective approach to the research, where the findings are created as the investigation proceeds, with no previous hypotheses being present, or to be tested, was paramount to understanding the experiences of the PSTs and how
their assessment literacy and knowledge of AfL was constructed (Guba & Lincoln, 1994). Maintaining an openness, facilitated through a social constructivist epistemology, where the PSTs perspectives can be represented and interpreted through language, actions and interactions is central to this study. Social constructivism acknowledges the complexities of the PSTs as leaners and includes the PSTs’ perspective, with the assumption that language is an essential system for individuals to construct reality and reality must be experienced and not simply discovered (Galbin, 2014; Gergen & Gergen, 1991).

The use of a social constructivist framework acknowledges how the beliefs and experiences held by the teacher educator impact upon the delivery of the primary physical education module, the PSTs’ enactment of AfL in their teaching of physical education, and through a subjectivist approach, understand how knowledge is constructed by PSTs as a consequence (Cohen, Mannion, and Morrison, 2007). Furthermore, the use of a social constructivist paradigm lends itself to the use of the qualitative research methods used in this study (Cohen, et al., 2007). Language is a dominant feature in this research where interviews, focus group interviews and post-lesson debriefs with PSTs, and discussions throughout the upskill sessions, informed by previous phases, aim to facilitate greater understanding for the teacher educator, and represent the perspectives and experiences of the PSTs enacting AfL in their physical education lessons. The dominance of language will facilitate the use of a cognitive apprenticeship framework in this study.

2.2 Cognitive apprenticeship

The theory of cognitive apprenticeship, as an embedded layer in the social constructivist theoretical framework offers an appropriate model for this study. Central to this framework is the ZPD (Figure 1), where cognitively the use of
scaffolding will assist the PSTs in selecting activities in a number of ways and ensuring learning takes place (Dennen, 2003). Additionally, on an emotional level the use of a cognitive apprenticeship facilitates PST development, through mentoring and scaffolding, that allows them to maintain a sense of achievement as they progress through the ZPD. The theory of cognitive apprenticeship is firmly rooted in the constructivist and social constructivist paradigm. Apprenticeships have existed for decades, and although traditionally associated with skills in the field of trade and craftsmanship, the core concepts of an apprenticeship model remain as central methods for teaching and learning (Dennen, 2003). The concept of apprenticeships involves the provision of structures and modelling by a more experienced person, that facilitates learner development, where a collaborative approach is employed to work towards the achievement of specific goals (Dennen, 2003). Unlike traditional approaches to teaching and learning, apprenticeship ‘embeds the learning of skills and knowledge in their social and functional context’ (Collins, Brown, and Newman 1989, p. 454).

Cognitive apprenticeship, based on the theories of Vygotsky (1978), involves learning through ‘guided-experience’ (Collins et al., 1989, p. 457), and is considered as an ‘instructional tool’ (LeGarde, Farmer, & Buckmaster, 1993) that is the most helpful for learners. Collins et al. (1989) explain that cognitive apprenticeship involves the exemplification of conceptual and factual knowledge and its situation in the contexts of its use e.g. school placement context. Cognitive apprenticeship acts as a vehicle for the development of discipline-specific knowledge and additionally, the skills required to apply knowledge within individual discipline contexts. Hennessy (1993) outlines how cognitive apprenticeship programmes promote situated learning by giving PSTs ‘the critical opportunity to observe, engage in and
invent or discover expert strategies in context’ (p. 20). However, Dennen (2003) cautions that such a framework still presents some difficulties, where large PST numbers leave teacher educators or experts unable to provide in-depth support and guidance. Furthermore, the individual and specific needs of PSTs will vary, and Dennen (2003) explained how PSTs cannot ‘simply be waiting and watching on the side-lines’ for instructional plans to be implemented (p. 137). This study employed a cognitive apprenticeship approach for individual PSTs and a group of five PSTs, across a two-year period, and strove not to encounter the difficulties alluded to by Dennen (2003).

2.2.1 Use of a cognitive apprenticeship model

Cognitive apprenticeship teaching models are designed to bring ‘tacit processes’ into the open and provide transparency for the learner, where the learner observes, enacts and refines their practice in implementing them with the help of a more experienced person or indeed their peers. The research questions, and the design of this study using and action research approach enables cognitive apprenticeship to be employed across all phases, school placement based and upskill college-based phases, where PSTs will construct knowledge and understanding through interactions with the teacher educator, and students during school placement, guided by a social constructivist framework. However, the key to the use of a cognitive apprenticeship model is the need for knowledge and understanding to be developed in the context in which the learner will be situated, i.e. realities of school placement in the primary school.

The PSTs had completed a ten-week college-based physical education module as part of their programme, prior to commencing their first school placement. Brown, Collins, and Duguid (1989) highlighted links to situated learning
where pedagogy is conducted in authentic settings such as the classroom as opposed to within the confines of a lecture-based approach during their ITE programmes. Cognitive apprenticeship is firmly linked to situated learning, where learning occurs in authentic contexts. The de-contextualisation of knowledge does not provide PSTs with the skills to understand how to effectively apply authentic tasks (Duffy & Jonassen, 1992). Collins et al. (1989) highlighted that critical to learning is the enactment of practices and tasks ‘that reflect the multiple uses to which their knowledge will be put in the future’ being (p. 20) where the purpose of and active use of knowledge can be applied in different contexts. However, Jonassen (2002) stressed this will only stimulate the transfer of learning when it is embedded in authentic instruction (Andrews, 2002). For PSTs, the need to be situated in the learning experience is critical, with knowledge acquisition becoming part of the learning activity. For PSTs to gain knowledge in embedding AfL strategies in their teaching, they must experience this embedded authentic instruction in the school setting with expert feedback serving to stimulate and motivate them in the learning environment, which was not facilitated by the teacher educator in the physical education module. Cognitive apprenticeship, through situated learning, allows for true immersion with PSTs as cognitive apprentices, learning about the profession in an authentic context. Situated learning in cognitive apprenticeships allows PSTs to experience the complexity and ambiguity of learning in the real world where learning is dilemma driven rather than content driven. However, while Bjork, Richardson-Klavehn (1989) warn that knowledge is context-bound if taught in a single context, the diverse primary school classroom setting where PSTs completed their school placement involved multiple contexts within the broad primary school context that required varying approaches to enacting AfL by the PSTs.
While some forms of situated learning involve communities of practice and legitimate peripheral participation, the approach in this study focused solely on the use of a cognitive apprenticeship model. Jonassen (1991) emphasised that cognitive apprenticeship seeks to understand what the learner knows and how this knowledge is acquired rather than the active performance of doing. This research sought to understand the links between the physical education programme and the transference of knowledge acquired through the physical education module to PST teaching on school placement. As cognitive identifies the impact of a cognitive apprenticeship approach for self-efficacy, collaboration, and achievement levels, greater understanding of the PST experience is desired (Johnson & Johnson, 2007). Key to the development of knowledge and a cognitive apprenticeship approach is the need to understand existing individual knowledge for PSTs.

2.2.2 Key components of cognitive apprenticeship

Collins et al. (1989) list six components or steps that are involved in using a cognitive apprenticeship model: (a) Modelling where approaches and processes are demonstrated, and the learner observes, (b) Coaching/mentoring where the learner practices and advice is provided, (c) Scaffolding where the learner approximates the practices in more complex situations and support is provided, (d) Articulation where the learner articulates and clarifies their own thinking through practice and scaffolding fades, (e) Reflection, where the learner compares and contrasts their performance to that demonstrated, and (f) Exploration where the learner explores, refines and individualises their performance and knowledge of the skills and processes across time. The cognitive apprenticeship components will be explored in relation to their impact on the extent that PSTs demonstrate assessment literacy in
their enactment of AfL in primary physical education, when faced with the realities of school placement.

2.2.2.1 Modelling

Modelling involves experts, i.e. teacher educators, enacting tasks and pedagogical practices that enable PSTs to observe and acquire knowledge and understanding that can be applied to their own practice. That is not to say that such practices should be replicated in a ritualistic manner, but through reflection PST should apply and adapt the demonstrated practices to the specific contexts in which they are being implemented. This is the process of demonstration, followed by imitation, at both behavioural and cognitive levels. As a core component of cognitive apprenticeship, modelling can occur at various stages, including during scaffolding and mentoring of PST development, whereby the expert modelling facilitates opportunities for PSTs to optimise the effective implementation of such practices.

Modelling, through situated learning, enables practices to be modelled in real-life contexts and PSTs learn conditions for applying the knowledge gained in authentic settings (Collins et al., 1989). Providing opportunities for PSTs to observe expert performance allows PSTs to learn how processes unfold and through verbal interactions and explanations, the teacher educator can highlight why particular practices and processes occur in particular ways and need to be adapted depending on different contexts and learners. Key to teacher modelling is the need for the expert to talk out loud and provide transparency through verbalising the decisions made in relation to the enactment of particular practices, and furthermore the consequences of not employing specific practices.

The use of modelling by the experienced peer, i.e. the teacher educator, demonstrating the use of AfL, as an embedded practice for the PST during the upskill
phases, will be employed in this study. Further use of modelling will include the use of specific video resources that allow the PSTs to observe experienced teachers embedding AfL in their teaching of primary physical education. Tharpe and Gallimore (1988) acknowledge the complexities associated with assisting learners, where constant decision making, and planned structures and formations rely on the expert possessing the relevant skills and knowledge to assist. In this study, the teacher educator will draw on her own knowledge and additional resources that facilitate PST learning and enactment of AfL.

The use of cognitive modelling where teacher educators ‘talk out loud’ about the processes of enacting AfL for PST is central to the construction of PST knowledge and understanding (Tharpe & Gallimore, 1988). Despite the inclusion of such modelling in the PST’s physical education module, this study seeks to examine the impact of modelling practice throughout the PST teaching during school placement, through video resources and through a modelled lesson during the upskill phases. Dennen (2003) emphasises the importance of PSTs ‘seeing the target in action’ (p. 817) where teacher educator models the embedding of AfL in their teaching of the programme and in authentic context with groups of learners.

Wilson and Cole (1996) explain that teacher modelling provides opportunities to demonstrate and discuss tacit knowledge that can facilitate student development of the cognitive processes. However, the need to provide a safe and secure environment in which to practice such processes, under direct supervision from experts, is essential to motivate and build PST confidence in the enactment of AfL within their teaching. Exposing PSTs to teacher educator modelling is consistent with a cognitive apprenticeship framework, and allows learning to occur in contexts that can motivate PSTs to enact complex skills within their own practice
(Atkinson, 1997). The inclusion of a lesson, taught with a group of primary school students, will seek to advance PST knowledge and understanding of the enactment of AfL as a core teaching pedagogy, and that has meaningful links with the curriculum as opposed to being an additional element to be included. This approach can have a significant impact on PST construction of knowledge and understanding when placed in the new environments encountered across school placements.

2.2.2.2 Coaching/Mentoring

Mentoring involves more experienced people or experts guiding the learner, through advice and support. Mentoring serves the purpose of supporting and facilitating the professional development of PSTs, especially when implemented in a school-based context (Loughran, 2003; Tomilson, Hobson, & Malderez 2010). The use of explicit questioning is perceived as an effective strategy when mentoring PST, where dialogue with teacher educators seeks to evoke articulation of PST understanding and provided depth and richness to their reflections. Collins et al., (1989) outline how mentoring focusses on the ‘enactment and integration of skills in the service of a well-understood goal through highly interactive and highly situated feedback and suggestions’ (p. 17) where immediate interaction and feedback specific to the problems that arise can be initiated. In this study the teacher educator will seek to guide, rather than direct PST learning, in relation to the enactment of AfL in their teaching of physical education, with PST reflection and interaction at the fore.

Although mentoring is often associated with that provided in the school placement context, mentoring within this framework addresses professional development in both in college-based upskill phases and throughout PST school placements. Mentoring is perceived as a method not only to support PSTs’ enactment of AfL, but furthermore to challenge PSTs to progress beyond where their
current perceptions are regarding their own ability (Smith, 2007). For the PSTs in
this study, mentoring involved guiding and supporting, without judgement or criteria
(Bray & Nettleton, 2006). The use of prompts to enactment particular AfL strategies
will further facilitate PST learning of when and where particular strategies could be
employed. Mentoring will occur on a number of levels where the PSTs will be
mentored, if required, during school placement phases and throughout the upskill
phases.

2.2.2.3 Scaffolding

Referring to the theoretical framework (Vygotsky’s ZPD), scaffolding in this
study refers to support for the PSTs and reassurance to maintain motivation for
PSTs, who are enacting, taking responsibility for and internalising the process
(Tharpe & Gallimore, 1988). Wood, Bruner, and Ross (1976) first introduced the
term scaffolding for learners defining it as ‘a process that enables a child or novice to
solve a problem, carry out a task, or achieve a goal which would be beyond his [or
her] unassisted efforts’ (p. 90). Dennen (2003) explained that modelling, and
suggested responses alone, may not result in the desired level of instructional goals
by learners. Scaffolding in relation to the structuring of tasks and enactment of AfL
strategies in this study will serve to motivate the PSTs to focus on the learning goals
rather than the management of their lessons and tasks (Dennen, 2003) While PSTs
encounter theory and practice in the teacher education programme, the articulation
and enactment of this knowledge to the varying contexts they are in during each
school placement will be explored. The success of scaffolding is dependent on its
adaptability to each learner’s needs.

Scaffolding is considered a collaborative process of social interactions that
focuses on the intentions of individual learners (Yelland & Masters, 2007). While
research highlighted the appropriateness of scaffolding for problem solving, this study seeks to explore the use of scaffolding within a social constructivist and cognitive apprenticeship model in supporting and developing PST assessment literacy, and their enactment and embedding of AfL in their teaching of primary physical education.

The nature of scaffolding is to provide support that reduces the level of complexity and difficulty that PSTs associate with enacting AfL, to enhance student understanding in physical education, and to ensure successful achievement within such processes (Mercer, 1995). Alexander (2004) emphasised the importance of dialogue in scaffolding that works towards achieving ‘common understanding through structured, cumulative questioning and discussion which guide and prompt, reduce choices, minimise risk and errors, and expedite “handover” of concepts and principle’ (p. 23). The social constructivist and cognitive apprenticeship frameworks underpinning this study, value the social interactions that will be explored.

It is acknowledged that individual ability, preconceptions held in relation to the teaching of primary physical education, and the pace at which knowledge and understanding is constructed and developed, may have significant influences on the extent of scaffolding required to develop PST assessment literacy and the enactment of AfL in their teaching. Generally it is considered that as PSTs improve, the level of scaffolding provided by teacher educators fades (Collins et al., 1989). However, as PSTs encounter a variety of school placement contexts across their programme, the need for further scaffolding may occur but in an alternative form that suits the contextual factors at that time (Jarvela, 1995).
2.2.2.4 Articulation, reflection, and exploration

The process of demonstration and verbalisation of the knowledge gained is central to cognitive apprenticeship. PSTs often struggle to transfer theory to practice (Volante & Fazio, 2007), but through use of a cognitive apprenticeship approach it is envisaged that the PSTs will serve to expose and clarify the process of AfL enactment within particular domains (Collins et al., 1989). The refinement of theory and process through cognitive apprenticeship in this study will aim to enable PST to form meaningful links, through reflection, between the teacher educator performance in the upskill session and the PST performance, where the PSTs will be able to identify problems and positives in their own performances (Collins et al., 1989).

Central to a framework of cognitive apprenticeship is reflection. Collins et al. (1989) call this ‘abstracted replay’ where PSTs compare their own performance to that modelled by the expert (p. 5). For reflection to be effective, it must evoke responses that promote greater PST knowledge and understanding, and enable PSTs to adapt or use similar methods with other learners or in other contexts (Dennen, 2003). The use of post-lesson debriefs will facilitate PST reflection on their enactment of AfL in their lessons, and provide a target for further reflection through use of a reflective journal (Collins et al., 1989).

Exploration forces PSTs to implement particular goals within a broader set of goals (Collins et al., 1989). Furthermore, the revision and adaptation of how goals are achieved is dependent on the contexts in which PSTs are placed for school placement. Enacting AfL with one specific class group may be significantly different to how AfL is enacted with another class group which leads to greater problem solving by PSTs as scaffolding fades. As PSTs in this study will complete four
different blocks of school placement across their two-year programme, this element
will be explored.

In summary, this chapter thus far has presented the theoretical framework for
this study. Serving as a blueprint for the research (Grant & Osanloo, 2014), the
theoretical framework can emerge prior to and throughout the research. However
while some use the term theoretical and conceptual framework interchangeably, this
study considers them as independent, and central in their own right. The conceptual
framework is considered as the means by which the research problem will be
explored (Grant & Osanloo, 2014) and is outlined in the next section.

2.3 Conceptual Framework

A conceptual framework is described as ‘a tool to scaffold research and,
therefore, to assist a researcher to make meaning of subsequent findings’ (Smith,
2004). Furthermore, a conceptual framework includes a series of concepts,
assumptions, expectations, beliefs and theories that both inform and support the
research (Miles & Huberman, 1994). This section outlines the conceptual framework
that frames this study and a review of relevant literature that lays the foundations for
this framework. The first section provides existing definitions of assessment literacy
and will allude to the definition and framework for assessment literacy applied
within this study. Following this, an extensive review of the literature pertaining to
models for assessment literacy in ITE and research on the chosen framework will be
discussed. Finally, the impact of key cognitive apprenticeship components on PSTs
and how they will be employed in this study to assist in the construction of PST
knowledge will be outlined.
2.3.1 Assessment Literacy – existing definitions.

The tradition of assessment literacy is traced back to Stiggins (1991) who is credited with introducing the concept. Stiggins (1991) outlined that the best way to understand what assessment literacy is, is to understand what it means to actually be without it. Being assessment illiterate he believes is where one does not understand how to gain quality achievement data and what to do in relation to evaluation of such data. Considered as an integral part of teacher practice (Xu & Brown, 2016), Stiggins explains that those who are not assessment literate, ‘lack the tools to be critical consumers of assessment data’ (1991, p. 535). Paterno (2001), cited in Mertler (2003), defines assessment literacy as ‘the possession of knowledge about the basic principles of sound assessment practice, including terminology, the development and use of assessment methodologies and techniques, familiarity with standards of quality in assessment...and familiarity with alternative to traditional measurements of learning’ (p. 9).

The North Central Regional Educational Laboratory offer a simpler definition where they place the emphasis on “the readiness of an educator to design, implement, and discuss assessment strategies” (n.d.). It is worth noting that this definition contains little reference to the interpretation of such strategies and the knowledge surrounding their impact on teaching and learning. It is considered that being assessment literate eliminates feelings of intimidation and apprehension regarding the ‘sometimes mysterious and always daunting technical world of assessment’ (Stiggins 1995, p. 240). Stiggins (1995) specifies that assessment-literate educators should be able to know: (a) the content and learning outcome to be assessed; (b) the purpose of having assessment; (c) the best way to assess the students’ skills and knowledge; (d) the development of quality instrument to assess
students’ performance; (e) the potential problems with the assessment; (f) the prevention of the problem; and (g) the awareness of the potential negative consequences of poor, inaccurate assessment.

The Standards For Teacher Competence In The Educational Assessment of Students (American Federation of Teachers, National Council on Measurement in Education, National Education Association, 1990), were standards set out in an attempt to reach some consensus on what teachers should have in relation to assessment knowledge in the United States. Seven standards or requirements in classroom assessment deemed necessary for teachers were outlined. These include (1) the skills teachers should possess in relation to the selection of assessment methods that are appropriate for assessment of the learning outcomes, (2) development of assessment instruments appropriate for assessment of the learning outcomes, administration, scoring, (3) interpretation of all assessment findings, and (4) the ability to use assessment results in order to make decisions about students’ learning, teachers’ teaching, school development, program, or curriculum. This definition makes more explicit reference to interpretation and decision making in relation to teaching and learning subsequent to engaging with assessment strategies which ultimately should be seen as the goal of assessment (Hay & Penney, 2009). Stiggins (1999) argued for a revision of these standards and, in turn, proposed seven competencies that teachers should possess in order to be considered assessment literate: (i) connecting assessments to clear purposes; (ii) clarifying achievement expectations; (iii) applying proper assessment methods; (iv) developing quality assessment exercises and scoring criteria, and sampling appropriately; (v) avoiding bias in assessment; (vi) communicating effectively about student achievement; and (vii) using assessment as an instructional intervention.
In Ireland, no explicit standards exist for primary PSTs. The Teaching Council (2017) recommends that ITE programmes should include opportunities for PSTs to ‘develop students’ understanding of, and capacity to critically engage with, curriculum aims, design, policy, reform, pedagogy and assessment’ (p. 13) within their programmes and the school placement component should provide opportunities for PSTs to assess student learning. Furthermore, opportunities for PSTs to develop their competence in promoting and assessing literacy and numeracy are highlighted by the Teaching Council (2017) with integration with curricular and foundation modules recommended.

However, Popham (2011) emphasised the importance of the context in which assessment concepts and procedures will be enacted within, and extended previous definitions of assessment literacy where he considers that assessment literacy ‘consists of an individual’s understandings of the fundamental concepts and procedures deemed likely to influence educational decisions’ (p. 267). Put concisely, being an assessment-literate teacher involves knowing how to develop and select suitable assessment tasks, employ a variety of assessment methods that are appropriate to particular contexts and interpret assessment data that serve the purpose of enhancing teaching and enable students to play a pivotal role in the construction and development of their own learning.

Focussing on more formative approaches, Chappuis, Chappuis, Stiggins, and Arter (2012) define classroom assessment literacy as having the knowledge and skills necessary for compiling data about students’ achievement, and for effectively using the assessment process and the assessment data to enhance students’ achievement. To consider oneself assessment literate means that teachers should have sufficient knowledge and confidence to encompass all elements related to
assessment that lead to more effective teaching and student learning. Hay and Penney (2013) identify evident gaps in the definitions provided, where inadequate attention to the perspectives of both students and teachers are considered. Lian and Yew (2016) emphasise that ‘assessment literacy embodies a wide matrix of skills and knowledge which vary significantly from population to population’ (p. 296). While many definitions exist in regard to assessment literacy it can be concluded through examination of some of these definitions that no definitive definition can be used as it can be viewed not only through different perspectives but furthermore within the different contexts for those concerned. For the purpose of this study, the definition provided by Hay and Penney (2013), that recognises the need for both the student and teacher perspectives to be acknowledged, and relate to the tactical and sociocultural aspects of practice will be adopted. Hay and Penney (2013) explain that the focus should be on developing knowledge and an ability to implement assessment, including making interpretations of the assessment data in a way that optimises the value of assessment through critical engagement.

2.4 Models for the development of PST assessment literacy.

Assessment approaches based on the social constructivist paradigm (outlined previously) promote the integration of assessment and instruction in both teaching and learning (Pilcher, 2001). DeLuca and Bellara (2011) propose two different models for developing PST assessment knowledge during initial teacher education programmes. The first model involves explicit instruction through specific courses on assessment in education (Volante & Fazio, 2007). While Popham (2011) stresses the importance of specific assessment courses that enhance PST knowledge and understanding, researchers remain conflicted on the benefits of such courses, with some arguing that classroom assessment should not be de-contextualised from the
classroom, school or discipline specific contexts. The second model, also recommended by Shepard (2000), favours an integrated approach, where assessment is embedded within curricular, foundational or professional studies modules. Such an approach facilitates greater development of PST knowledge and understanding of assessment practices, assessment goals and approaches rooted in subject specific and classroom contexts, viewed as integral to PST development (Shepard, 2000). DeLuca and Bellara (2011) explain that courses that are theory-laden, and are disconnected from teachers’ daily assessment practices, potentially contribute to low levels of assessment literacy among PSTs. The teacher educator employs the second model in the delivery of the primary PST physical education programme. Hay and Penney (2013) stressed the need for empirical work that focusses on teachers existing assessment literacies, where knowledge of how to implement and interpret the outcomes of assessment through critical awareness is developed, providing optimum benefits for teachers and students. Research has highlighted concerns in regard to the low level of assessment literacy being displayed by practicing teachers in schools where inaccurate and inappropriate use of assessment is impacting negatively on student attainment levels (Beziat & Coleman, 2015; Stiggins, 2014; Campbell, Murphy & Holt, 2002; Ogan-Bekiroglu, 2009; Ogan-Bekiroglu & Suzuk, 2014).

Popham (2009) discussed the concerns teachers possess in relation to classroom assessments, and highlighted that having inadequate knowledge has the potential to ‘cripple the quality of education’ (p. 4). Despite calls for teachers to gain practical knowledge about assessment strategies and tools for assessment, through specific courses on classroom assessment (Volante & Fazio, 2007), this may not be a simple solution to the problem as often PSTs were unable to transfer their
assessment literacy into their assessment practices (Ogan-Bekiroglu & Suzuk, 2014; Wissehr & Siegel, 2008). While PSTs recognised the need to align assessment with learning outcomes and instruction and used a variety of methods, inclusion of the methods used often did not fully align with those presented by the PSTs (Wissehr & Siegel, 2011).

2.5 Conceptual framework for this study

Hay and Penney (2013, p. 73) offer a definition that encompasses social constructivism and propose that for an individual to be assessment literate, they must possess four key elements they associate with assessment literacy;

- **Assessment comprehension** – this focuses on the knowledge and understanding of assessment expectations and conditions of efficacy.
- **Assessment application** – focusing on the conduct of assessment in terms of either teacher implementation or student engagement.
- **Assessment interpretation** – focusing on making sense of and acting on the information that is collected through assessment practices, including traversing and negotiating the social relations of assessment.
- **Critical engagement with assessment** – focusing on awareness of the impact of consequences of assessment and challenging the naturalness of assessment practices.

It is these elements that provide the conceptual framework that underpins this study and will guide the study of PST enactment of AfL in the teaching of primary physical education. Figure 3 provides a visual representation of the conceptual framework. In phase one the teacher educator aims to establish the current levels of the PSTs’ assessment literacy, specifically AfL. Inspired by the four inter-dependent
components alluded to by Hay and Penney (2013), and the literature reviewed previously, the approach adopted will be one that argues that for PSTs, constructing knowledge in authentic settings during school placement, and the enactment of AfL strategies, occur through language and social interactions within a social constructivist paradigm (chapter 2). The use of key cognitive apprenticeship components, as a means to facilitating developments in PST assessment literacy of AfL in their teaching of primary physical education, are included in this study. Through assuming the role as a participant observer, the teacher educator explores teacher educator modelling, mentoring and scaffolding (see chapter 2) during the PSTs teaching of physical education as required, as a means to support PST assessment literacy, in the enactment of AfL strategies.

Hay and Penney (2013) explain the inter-dependence of these elements, where the absence of one element can significantly impact and influence the level of PST assessment literacy. They further explain that the development of knowledge and the capacity to enact assessment and interpret the outcomes of assessment data that optimises learning for students through a critical awareness of the purpose and consequences of assessment is central to PST assessment literacy.
Figure 3. Conceptual Framework for development of assessment literacy (Hay & Penney, 2013; Collins et al., 1989).

The framework of assessment literacy proposed by Hay and Penney (2013) adopted in this study, provides a structure upon which to explore PST assessment literacy of AfL in teaching primary physical education, using the four inter-dependent components, where AfL was immersed within the practical content throughout the physical education module. The teacher educator used a talk aloud approach to highlight how to enact AfL as practical content knowledge and pedagogical content knowledge was developed with the PSTs. Furthermore, the conceptual framework considered the proposed amendments outlined by Poth (2013) for teacher education programmes;

1. greater alignment of the knowledge and skills developed in initial teacher education programmes with current classroom realities, and
(2) a shift to a modelling focused instructional approach whereby students experience the type of assessment practices as teachers they will be expected to implement.

Acknowledging these amendments, this study sought to explore the impact of mentoring and continuous upskill sessions, within a social constructivist and cognitive apprenticeship theoretical framework, on PST assessment literacy in AfL during their teaching of primary physical education while on school placement. Referring to the literature highlighting how educational assessment is often treated and included at a superficial level (Masters, 2013), and the need to understand the contribution of the physical education module in facilitating PSTs’ as assessment literate teachers, this framework explores PST application of a diverse range of AfL practices and their ability to implement and interpret assessments that lead to more effective teaching and learning at classroom level (Stiggins & Chappuis, 2005).

Alkhaurusi et al. (2011) stress that developments in PST assessment literacy can only truly occur when course content is connected to field experiences, which optimises the opportunities for PST to maximise their knowledge and understanding through applying the content within authentic contexts. Situated learning is allied with a cognitive apprenticeship framework, and situated learning opportunities (while not available in the module) were presented through intermittent school placement experiences and the upskill phases of this study. This facilitated exploration of the impact of a modelling, mentoring and the provision of continuous opportunities to upskill prior to and during school placement on PST assessment literacy.
2.6 Summary

This chapter presented the theoretical and conceptual frameworks adopted in this study. The use of a social constructivist framework acknowledges the co-construction of knowledge and the importance of dialogue in developing PST knowledge. An understanding of how individual experiences and the social interactions of PSTs in individual contexts, can impact on the construction of knowledge are central considerations in employing a social constructivist stance. In addition, the use of cognitive apprenticeship, where PSTs develop knowledge through teacher educator modelling, as they advance through the ZPD is central to this study.

The conceptual framework provides a foundation upon which to understand current levels of PST assessment literacy following an ITE programme module in primary physical education, specifically in the enactment of AfL during school placement. This framework provides a structure for the qualitative data collection methods and has implications for the research design. Drawing on the theoretical framework, the framework using the cognitive apprenticeship components of modelling, mentoring and scaffolding, seeks to advance PSTs enactment of AfL and develop their assessment literacy.
Chapter 3 - Literature Review

Considered as integral to teaching and learning, assessment continues to remain a troublesome area for teachers, where assessment knowledge of how to implement and interpret assessment practices that result in optimum learning for students (Black & Wiliam, 1998; Popham, 2008). With increased expectations on teachers to make judgements on student learning that lead to amendments in their practice (Brevik, 2015; Brevik & Blikstad-Balas, 2014), the emphasis on quality PST assessment preparation is increasing. Teacher education programmes are essential for equipping PSTs with knowledge about assessment and in particular the knowledge and skills needed to develop assessment tasks that effectively and accurately evaluate students’ progress and knowledge (Cizek, 2000; Darling-Hammond, 2006; Darling-Hammond & Bransford, 2005). Teacher educators have a critical role in developing PSTs’ assessment knowledge, and can no longer afford to neglect the assessment literacy of PSTs. A plethora of research, identifying the benefits to students of meaningful, relevant and worthwhile assessment, is evident (Black, 2013; Black & Wiliam, 1998; DeLuca, Chapman-Chin, LaPointe-McEwan & Klinger, 2018; Klenowski, 2009; Popham, 2011; Shepard, 2000; Stiggins, 2008 Wiliam & Leahy, 2015). However, the short duration of ITE programmes and variety in the approaches adopted restrict the effectiveness and consistency of PST assessment education in ITE programmes, has resulted in a lack of PST knowledge of how to engage with assessment practices (DeLuca & Volante, 2016; Taras, 2007).

With the view that ‘assessment does not stand outside teaching and learning but stands in dynamic interaction with it’ (Gipps, 1995, p. 15), this chapter reviews literature relating to the broader concept of AfL and then address research conducted on AfL in physical education at both post-primary and primary levels. However, no
research was evident on PSTs use of AfL in the teaching of primary physical education, and therefore the literature reviewed refers to teachers’ use of AfL in Ireland. Finally, a comprehensive review of literature pertaining to the implementation of AfL strategies concludes this chapter. The review of literature identified gaps in the wider research body on AfL and assessment literacy and served as a basis for the theoretical and conceptual frameworks in this study.

3.1 Definitions and principles of Assessment for learning

Traditionally assessments were largely summative oriented and served little purpose for ongoing teaching and learning. Assessment for learning (AfL) has gained considerable interest among researchers where it is viewed as a more effective approach to facilitating learning and supporting students in developing an understanding of content and subject matter (Black & Wiliam, 1998; Stiggins, 2005; Wiliam, 2011). AfL is considered as the process of seeking and interpreting evidence that can be used by teachers and learners to inform students of where they are in their learning, set targets for future learning and identify strategies for how best to get there (The Assessment Reform Group, 2002). However, while this definition includes reference to the learner, the role of the learner as an active agent in everyday classroom practice is not hugely emphasised. Klenowski (2009) alludes to the definition provided by the Third International Conference on Assessment for Learning in New Zealand (2009) who proposed that AfL is ‘a part of everyday practice by students, teachers and peers that seeks, reflects upon, and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning’ (p. 264). The inclusion of ‘everyday practice’ situates AfL as ongoing and central to everyday learning that involves both the teacher and learner in the process.
3.1.1 The uniqueness of AfL.

Drawing on the definitions provided, what distinguishes AfL from other forms of assessment is that it occurs throughout the learning process in the day-to-day interactions between teachers and students, rather than subsequent to it and involves both the teacher and student as active participants. In addition, reflection guides both the learner and teacher responses and learner is further enhanced through information from dialogue, demonstration and observation (Klenowski, 2009). The information generated identifies key learner needs, and is used to plan and provide feedback that can be immediately implemented within the lesson (Stiggins, Arter, Chappuis & Chappuis, 2004). Traditionally, it was considered that as long as the quality of teaching was of a good standard then little adaptations to teaching were required outside of remedial support for some students. Additionally, the blame and responsibility was placed with the learner for progress or understanding within learning occur (Wiliam, 2011). While Black and Wiliam (1998) highlighted the benefits that implementation of AfL had for lower attainers, however, the use of AfL has proven to have positive effects on both teaching and learning and is considered to be ‘at the heart of good teaching’ in physical education (Spackman 1998, p. 4).

Stiggins (2005) explained the dominance of summative assessment within classroom assessments conducted by teachers, and although a shift away from summative assessment is evident, the traditional testing procedures for academic achievement and accountability still occupy a greater space within assessment practices in schools. Stiggins highlighted that performances within such summative assessments were considered as ‘an emotional trigger’ for future application by students in their education (2005, p. 325). Stiggins (2005) cautioned that for AfL to be effective, achievement goals and targets must be clear and attainable. While the
the notion that summative assessment can be used in formative ways is evident, the concept that formative assessment, through use of AfL strategies, where students are active agents in the learning process and come to ‘understand the scaffolding they will be climbing’ and how they can improve (Stiggins, 2005, p. 6), will be adopted throughout this study.

3.1.2 Impact of AfL on teaching and learning.

Although formative and AfL are often used interchangeably in research, explicit differences differentiate one from the other. Formative assessment can be used in a variety of ways with some being ‘on-the-fly’, some planned for and then where it is embedded within the curriculum (Shavelson et al, 2008). However for AfL, the focus is on embedding assessment within practice, alignment of curriculum, pedagogy and assessment and consistent placement of the students ‘inside the assessment process’ (Stiggins, 2005; Stiggins & Chappuis, 2006; Penney, Brooker, Hay, & Gillespie 2009). AfL is a means to assess children’s day-to-day or lesson-to-lesson progress and when used effectively has the potential to ‘trigger an optimistic response to assessment results from within the learner’ (Stiggins, 2005, p. 328).

Much research has highlighted the need for student participation and centrality in the learning process (Lopez-Pastor et al., 2013; Stiggins & Chappuis, 2012). The enactment of AfL requires students to assume a particular role that not only involves the collection of evidence of their own achievements but in establishing clear goals for future learning and communicating evidence of their learning to the wider community along each stage of progression (Stiggin & Chappuis, 2005; Stiggins, 2005). AfL occurs in the classroom and can yield substantial merits and gains in student achievement (Black & Wiliam, 1998) that build confidence and maximise achievement for learners (Stiggins & Chappuis, 2005). The Assessment Reform
Group (ARG, 2002) outline ten key research-based principles of assessment for learning where AfL;

- is a part of effective planning of teaching and learning including provision of feedback
- focuses on how students learn
- is central to classroom practice
- is a key professional skill for teachers
- is sensitive and constructive
- fosters motivation of the learner through placing an emphasis on achievements and progress
- promotes understanding of goals and criteria
- helps learners know how to improve
- develops the capacity for self-assessment
- recognises all educational achievement

These ten principles act as a scaffold that guide those enacting AfL in their teaching (Crooks, Gross, & Dymott, 2006) and emphasises both the teacher and student role in assessment practices. Stiggins (2004) discussed the rise of AfL as a priority in teacher education and practice, however cautionary words emphasise that AfL should not simply be enacted in practice but the spirit of AfL must be embraced for true enhancement to student learning (Lysaght & O’Leary, 2013). Marshall and Drummond (2006) acknowledge the difficulty that teachers face in using AfL stating that only one fifth of teachers in their study reflected the spirit of AfL that promoted learner autonomy. Supporting this view of evidence highlighting AfL procedure dominance as opposed to the spirit of AfL being dominant, Webb and Jones (2009) explained that a culture of assessment, through strategies such as teacher modelling,
must be developed in the classroom for effective results to emerge from the procedural approach to assessment.

### 3.2 AfL and physical education

A range of literature is evident surrounding the use of AfL strategies by teachers in physical education (Leirhaug & Annerstedt, 2016; Leirhaug & MacPhail, 2015; MacPhail and Halbert, 2010; Tolgfors & Ohman, 2015), pre-service teachers at post-primary level (Lorente-Catalan & Kirk, 2015) and primary teachers’ use of AfL (Ni Chróinín & Cosgrave, 2013). The potential of AfL to enhance both teaching and learning in physical education is increasingly being acknowledged and advocated for as one that focuses on the everyday learning of students. (Hay & Penney, 2013; Leirhaug & MacPhail, 2013; Lopez-Pastor et al., 2013; MacPhail & Halbert, 2010). Efforts have been made to place students at the centre of the learning process, and promote an AfL culture to increase confidence is one example of the change that is emerging. Hay and Penney (2013, p. 110) emphasise that AfL is:

> a tool that can be utilised to generate discussions and new thinking about learning and learning opportunities in PE within and beyond schools. It is concerned with quality and equitable learning opportunities and experiences now and in the future, for all students.

While acknowledging the perceived benefits of AfL, further acknowledgement is needed of the time required to ensure teachers understand how to effectively employ AfL and time to implement this knowledge is essential if AfL is going to have a critical impact on student learning. Furthermore, the need for professional development frameworks that provide ongoing support for teachers to meet the reality of teaching in rapidly changing school contexts has been advocated across the literature (Gardner et al., 2011; Leirhaug & Annerstedt, 2016).

Overall research related to AfL and physical education highlights (1) a lack of knowledge of how to effectively embed AfL within teaching (Leirhaug; 2016;
Leirhaug & MacPhail, 2015; Smith, 2011; ), (2) greater value was attributed to teacher feedback over student feedback (Hattie; 2009; Leirhaug, 2016), (3) the impact of disparities between grading and the AfL criteria and processes being enacted (Annerstedt & Larsson, 2010; Leirhuag; 2016), and (4) a number of issues arising out of the lack of alignment between curriculum, pedagogy and assessment (Klenowski & Wyatt-Smith, 2014; Lund & Veal, 2013; Penney et al., 2009). Leirhaug and Annerstedt (2016) highlight the need for ‘PE subject-specific development of pedagogical tools and strategies’ through professional learning activities in relation to AfL (p. 626). They further explain, in line with indications from previous research, how effective implementation of AfL provides greater focus for learning and helps establish an awareness of what assessment tasks are valuable in the physical education context. A reluctance by teachers to engage in particular AfL strategies, such as self and peer assessment, is evident with many associating greater challenges with these particular strategies, and enacting them at an exploratory level and more summatively in their teaching (Leirhaug & Annerstedt, 2016; Leirhaug & MacPhail, 2015).

Research indicates that there is a tendency for teachers to focus on summative assessments that relate to effort and participation, as opposed to key areas of progression that link with curriculum and learning outcomes in the teaching of physical education. Such an approach to assessment in physical education prevents teachers from making valuable adjustments to their teaching which ultimately has the potential to enhance student learning on a continuous basis (Jeffries, Jeffries, & Mustain, 1997). Developmentally appropriate assessment tools can help determine where students are in the learning process and can maximise student learning when the results of the assessment strategies used by the teacher, impact on teacher
instructional decisions, and if the results are communicated to students with the aim of improving learning, formative assessment has occurred (Lund & Veal, 2013).

Questions pertaining to the validity of AfL and an acknowledgement as assessment is evident in the surrounding literature (Annerstedt & Larsson, 2010; Arnesen, Nilsen, & Leirhaug, 2013; Hay and Penney, 2013), where it is considered that some forms of assessment do not always impact positively on teaching and learning (Lorente-Catalan & Kirk, 2015). Leirhaug and MacPhail (2015) found that teachers fail to reflect on the unintended and harmful consequences for students and an awareness of the distribution of power within the critical engagement with assessment practices, alluded to by Hay and Penney (2013) is essential. Hay and Penney (2009) argue that assessment should promote learning with authentic and valid alignment between curriculum, pedagogy and assessment. Sadler (1998) explains however that AfL is not simply a process that enables teachers to adjust curriculum and pedagogy, but the information gathered through use of such strategies should enable children to play an active role in their learning through acquisition and understanding of the information and an awareness of what to do with the information.

3.2.1 PST engagement with AfL.

At post-primary level, Randall et al. (2016) found that many PSTs indicated a lack of knowledge on how to effectively make judgements of children’s progress within physical education, which highlights that while PST knowledge of assessment strategies may be present, the knowledge of how to interpret and critically engage with the information remains a challenge. The impact of AfL for PST and teacher development of assessment practices that facilitates student engagement and learning in physical education has been highlighted throughout much research (Hay &
Penney, 2013; Leirhaug & MacPhail, 2015; Lopez-Pastor & Kirk, MacPhail, & MacDonald, 2013). Interestingly, little, if any, research appears to have explored PSTs’ use of AfL in their teaching of primary physical education.

3.3 AfL and primary physical education

Evidence of knowledge relating to the importance of assessment appears to be present among those teachers involved however strategies for how to effectively implement assessment strategies specific to physical education were welcomed by teachers (Ní Chróinín & Cosgrave, 2013). Although teachers are not adverse to gaining additional knowledge about how to implement assessment strategies within their physical education teaching the challenges often associated with this process such as the potential increased workload, time and impact on physical activity levels and content knowledge still exist (Bailey, 2000; Piotrowski, 2000; Gallo, Sheehy, Patton, & Griffin 2006; Morgan & Hansen, 2007). Teachers have alluded to the fears held about the loss of fun within physical education lessons should they place pressure on students through engaging with assessment with it often being a component of physical education that is either forgotten or not valued (Morgan & Hansen, 2007).

In Ireland the Primary School Curriculum (DES, 1999) recommends a number of assessment strategies for use within the teaching of physical education and further advises that information gathered through assessment should be recorded to assist teachers in future planning and for communicating the progress of children with teachers and parents. The curriculum further advises that all children’s needs and abilities should be facilitated through utilising a range of assessment tools. Despite such recommendations limited provision of resources or in-service to support teachers in implementing effective AfL strategies in physical education and
across the wider primary school curriculum is evident. The Professional Development Service for Teachers (PDST, 2014) provided a resource presentation that lays the foundational theoretical base of AfL for primary teachers but lacked explicit reference to particular curricular areas. However, in 2016, the College of Education Physical Education Consortium (CEPEC) produced a research informed online video resource to provide concrete examples of practicing teachers embedding key AfL strategies in their teaching of primary physical education. This resource was the first physical education-specific resource provided since the introduction of the curriculum in 1999. While some research has been conducted surrounding the use of assessment for learning by primary school teachers, this remains an area that is relatively lacking sufficient exploration of how primary school teachers use assessment within their teaching of physical education in Ireland (Ní Chróinín & Cosgrave, 2013; Macken & O’Leary, 2010)

The study of Ní Chróinín and Cosgrave (2013) offers the most significant overview of the impact of employing assessment for learning strategies in teaching primary physical education in Ireland. The findings align with the concerns regarding the fun being taken out of the subject, alluded to by Morgan and Hansen (2007), but more significantly highlight how the use of AfL can lead to improved status for physical education in the overall context of the primary curriculum. The inclusion of the students as active participants in the learning process facilitated greater focus on the learning in physical education and similar to Patton and Griffin (2008), the employment of peer-assessment provided students with autonomy over their learning and a vested interest in their own learning was apparent where specific learning goals provided targets for students to work towards. Furthermore the use of specific criteria and targets served as a source of motivation to improve and students
learned to interact with each other in meaningful ways to progress their learning (NCCA, 2007; Ni Chrónin & Cosgrave, 2013).

Teachers began to reflect on their previous practices in physical education that led to a greater array of methodologies being implemented, more focused future planning, and greater awareness of a variety of assessment approaches that aligned with those advised in the primary physical education curriculum. Improved content knowledge that supported student development enabled teachers to scaffold children’s learning and heightened teacher awareness of the next stages required in student development, aligning to previous research findings in a post-primary context (MacPhail & Halbert, 2010). Similarly, in Australia Haynes and Miller (2014) examined pre-service primary teachers’ ability to assess children’s fundamental movement skills. The PSTs indicated that improved self-knowledge of the content by PSTs was influential and had the potential to guide their assumptions about assessing movements with children.

While peer and self-assessment were strategies that were less evident within the findings by Ni Chrónin and Cosgrave (2013), teachers alluded to the fact that they often attempted to implement too much and keeping it simple resulted in greater enhancements to teaching and learning. Peer assessment as discussed earlier, requires time for teachers to develop as a strategy that is both beneficial to teachers and students. This could suggest that further professional development for teachers would lead to greater implementation of peer assessment in the teaching of primary physical education.

Overall, the work of Ni Chrónin and Cosgrave (2013) provides optimism for assessment at primary school level, where enacting AfL provided a scaffold and structure for teaching in teaching primary physical education. Patton and Griffin
(2008) emphasise the alignment between curriculum, pedagogy and assessment that is facilitated through employing particular assessment strategies in teaching physical education, a finding also evident in the study of Ni Chrónín and Cosgrave (2013). Despite this optimism, the enactment of assessment in physical education remains a contentious issue among teachers who consider it as complex process (Doherty & Brennan, 2010). A lack of knowledge of how and when to implement assessment that enhances student learning and teaching is nothing new with teachers feeling ill prepared in being able to make appropriate and useful judgements about student attainments.

3.4 AfL strategies

While many frameworks for AfL have been provided, fundamentally the variance exists in the structure of how they are outlined rather than in the acknowledgement of what should be deemed as an AfL strategy. The strategies provided below are adapted from that of Clarke (2009) and William and Thompson (2011).

3.4.1 Clarifying learning objectives

The first step in enacting AfL in teaching is the clarification and sharing of specific learning objectives with the students. In advance of this, the need to establish where the learners are in their learning, through identifying the gap (Sadler, 1989) is essential for teachers to identify new, achievable learning goals for the students. Despite research linked to improvements in focus, motivation and student ownership of their learning through the provision of clear, attainable learning objectives (Macken & O’Leary, 2010; Clarke, 2009), it is concerning that teachers are not consistently enacting this key element of AfL in their teaching and providing students with what Clarke (2009) describes as the ‘secret weapon’ to facilitating
effective teaching and learning. According to Clarke (2001) the first ‘active’ element of formative assessment in the classroom is the sharing of learning objectives with students. Often poor achievement is the result of students failing to understand what teachers are requiring them to do or what the purpose of what they are doing involves (Black & Wiliam, 1998). Clarke (1998) emphasises a focus on and collaborative approach to their learning is facilitated through knowing the learning objective. Communicating the learning objectives with the students allows for transparency in the learning process (OECD, 2005), placing student autonomy and voice as central and students are not simply, as Moss and Brookhart’s (2009) describe, ‘operating in the dark’. According to Black and Wiliam (1998), clearly explained learning objectives are necessary so that ‘pupils can assess themselves only when they have a sufficiently clear picture of the targets that their learning is meant to attain’ (p. 142).

Sharing learning objectives as an assessment strategy benefits the students’ learning in a number of ways. According to Clarke (1998), shared learning objectives leads to the student becoming more focused during tasks, improves their behaviour, builds communication skills while carrying out tasks in the lesson and it enables children to self-evaluate on a regular basis through the support of the learning objectives. Teachers and students need to know where the lesson and learning is going and how the activities build towards achieving that outcome. Moss and Brookhart (2009) use the term ‘flying blind’ where neither students nor teachers can identify evidence of what students know and where they are in relation to the learning targets set.

The Irish Primary School Physical Education Curriculum (DES, 1999) considers assessment as integral to teaching and learning and states that it should be
implemented in a manner that does not impinge on valuable teaching time. A key element highlighted within the curriculum is the need for clear outline and provision of learning objectives to guide teacher assessment. Despite the fact that teachers provide and build learning objectives into their planning documents, there appears to be a lack of consistent sharing of learning objectives and success criteria with students in schools (National Council for Curriculum and Assessment (NCCA), 2007). However, the NCCA (2007) acknowledge that despite the fact that teachers provide and build learning objectives into their planning documents, there appears to be a lack of consistent sharing of learning objectives and success criteria with students in schools. Improved motivation, decision making in relation to student’s own learning, and knowledge have all been highlighted as key benefits of providing children with specific learning objectives (Clarke, 2001, p. 19). However making reference to the learning objective within the initial stages of a lesson does not suffice in facilitating effective teaching and learning and often teachers display the learning objective in a prominent position without consideration to the language level and omit to make sufficient reference to it throughout the lesson (Leahy et al., 2005).

### 3.4.2 Sharing success criteria

Success criteria act as a guide for both teachers and students, providing a framework upon which AfL strategies can exist (Heritage, 2007). Clarke (2002) highlights that success criteria ‘summarise the key steps or the ingredients the student needs in order to fulfil the learning objective – the main things to do, include or focus on’ (p. 8). Moss and Brookhart (2009) explain that by using success criteria students understand the criteria upon which their work will be judged and therefore have greater control over their learning. The use of explicit success criteria enables
both teachers and learners to see how learning evolves, identify areas of achievement and collaboratively identify the next stages in their learning. As identified earlier in this chapter, the active involvement of students in the development of their own learning is essential and must be key in the generation of success criteria. Reminding us that students are active participants inside the assessment process, Stiggins (2005) cautions that student success occurs not simply through frequent embedded assessment, but the subsequent actions that occur as a result of employing AfL.

Despite this, the NCCA (2015) explain that while teachers may plan for the use of learning objectives and success criteria, teachers are not always good at sharing these or using AfL as a ‘powerful vehicle’ for learning (Clarke 2009, p. 8) with students. The generation of success criteria using a collaborative approach between both the students and teacher, provide a clear picture of how to accomplish particular tasks, inform the student of how their work will be judged and provided explicit criteria upon which the teacher and students can focus on for observations and feedback (Shepard, 2000).

3.4.3 Observation and questioning

Sadler (1989) advocates the use of success criteria to guide observation, questioning and as a basis for providing effective feedback by both teacher to students and students to students. Black, McCormick, James, and Pedder (2006) consider questioning as essential for teachers to identify the current level of existing student understanding but stress the need for learning to occur in a social and community environment, with students at the core of the process and assuming a dominant role. Exploring understanding should involve the exchange of ideas regarding student learning and clarification by the teacher through such interactions with students. These interactions resemble the construction of knowledge as
acknowledge within a social constructivist paradigm. The centrality of teacher observation has long been acknowledged (NCCA, 2007) where focused observations serve the purpose of informing teachers of student knowledge and understanding. Specific to physical education, observation is considered at the heart of good assessment practice (Pickup & Price, 2010) but to be truly effective, observation must be guided by clear criteria that provide focus for the observer, facilitate effective questioning and feedback and contribute to the development of pedagogical knowledge (Lounsebery & Coker, 2008).

### 3.4.4 Feedback

A key aspect of AfL concerns effective feedback (Hattie & Timperley, 2007) that serves to enhance rather than deliberate student learning. Bloxham (2007) explains that feedback should have a direct impact on student learning and levels of achievement. Communicating learning, with explicit links to success criteria, reduces the uncertainty about student progress and is intended to facilitate opportunities for students to modify and adjust their performances (Ashford, Blatt, & Vande Walle, 2003; Black & Wiliam, 1998; Shute, 2008). Moreover, verification of the achievements, linked to the learning objectives and success criteria should be specific to the attainment levels and include clear indications of how the learner can advance in their learning (Clarke, 2005; Crooks 1988; Tulis, Steuer, & Dresel, 2016). Feedback should build on the responses from previous efforts (Klinger & De Nisi, 1996), and help close the gap in student knowledge and understanding through use of student friendly language and explicit criteria (Black & Wiliam, 1998; Hattie & Timperley, 2007). However, for feedback to be effective, it must be instantaneous (Crooks, 1988) and students must be given sufficient opportunities to implement the content of the feedback, and make adjustments necessary to achieve the success
criteria generated (Sadler, 1989). Clarke (2005) refers to this as feedback that is focused on actions that seek to improve and advance student learning. Black and Wiliam (2003) conclude that ‘good feedback causes thinking’ (p. 631). While the focus has been on teacher feedback, research indicates that students acting as resources for one another, has similar merits (Slavin, Hurley, & Chamberlain, 2003).

### 3.4.5 Peer assessment

The use of peer and self-assessment are considered crucial in enhancing learning (Bloxham, 2007) and make considerable contributions to learning by accessing elements of learning and learner development that may not be accessible through alternative approaches (Black & Wiliam, 2003). Peer assessment is considered as a strategy that engages students further as active agents in the learning process, and makes them accountable for the learning of one another (Race, 1998; Vickerman, 2009; Zariski, 1996). Furthermore, peer assessment enables students to be facilitators of learning and serves to enhance student understanding of success criteria and the attainment of specific learning goals (Black, Harrison, Lee, Marshall, & Wiliam 2003; Bloxham & West, 2004). Research has indicated the increase in learning that occurs through the enactment of peer assessment (Cartney, 2010) where feedback is given on specific performances by peer using explicit success criteria (Carvalho, 2013; Falchikov, 2007). Linking the feedback to explicit success criteria, provides focus and indicators for students to work towards where they can identify where their learning is at, where their learning is going, how they will get there and finally where to next within their learning journey (Hattie & Timperley, 2007). Furthermore, peer assessment provides opportunities for students to engage in reflection about their own learning, improve conceptual understanding, develop communication skills and enhance their self-assessment skills (Black et al., 2003;
Falchikov, 2005). Benefits are included for both the givers and receivers of peer assessment as it is a source of feedback, consolidation and reflection (Black & Wiliam, 1998; Falchikov, 1995). However, Wiliam (2011) advises that teachers must develop the skills for effective enactment of peer assessment in their students in order to achieve optimum benefits. Although considered as a catalyst for change (Damon, 1984), the enactment of peer assessment with students can be counter-productive if students are not sufficiently prepared. Factors such as poor social relationships, overly praiseworthy feedback and the pressures of being judged by peers have been deemed as challenges that may limit the effectiveness of peer assessment (Pryor Lubisi, 2002; Frankland, 2007; Croussouord, 2012). Cassidy (2006) stressed that ‘the introduction and successful implementation of peer assessment is notoriously problematic, particularly in terms of concerns regarding the reliability, validity and resistance from students’ (p. 510). Similarly, Azarnoosh (2013, p. 2) acknowledged that ‘students’ attitudes, language levels, familiarity with assessment criteria, the type of skill being assessed and the possible presence of bias such as gender and friendship’ all contribute to the challenges that are associated with peer assessment. Despite this key recommendations within the literature stressed that for efficacy levels in the enactment of peer assessment to be established, teacher need to provide students with support on how to engage in effective peer assessment (Bailey, 2001; Cheng & Warren, 1997; Boud & Falchikov, 2007).

Suggested approaches to scaffolding students in their enactment of peer assessment emphasise the need to provide a social environment that is secure and enables student to provide feedback in a collaborate manner that facilitates critical yet effective feedback (Van Gennip, Segers, & Tillema, 2009). However, a safe environment alone does not ensure the effective enactment of peer assessment.
Teacher modelling is considered key for student understanding on how to enact peer assessment, where prompts and strategies are used in conjunction with explicit criteria, until the students become familiar with providing feedback to their peers (Min, 2006; Topping, 2009). Aligning to the Vygotskian theory of learning within the ZPD, scaffolding of students by experts, i.e. the teacher, is central to the enactment of effective peer assessment (Topping, 1998).

### 3.4.6 Self-assessment

Self-assessment involves students taking ownership of their learning through monitoring and regulating, and subsequently setting targets identified for development within their learning (Wiliam, 2007). Andrade (2010) explained that self-assessment enables students to be both consumers of feedback and sources of their own feedback. Self-assessment is considered as ‘a process of formative assessment during which students reflect on the quality of their work, judge the degree to which it reflects explicitly stated goals or criteria and revise accordingly’ (p. 92). Facilitating self-assessment is considered to enable greater student independence and confidence, where students make crucial decisions about their existing and future learning (NCCA, 2007; O’Leary, 2006). Klenowski (1995) emphasises the improved focus on success criteria that self-assessment evokes from the students as active agents in the assessment process. However, like peer assessment, teacher support is considered as critical to enacting such an approach, but research indicates that teachers can support students in this process (Ni Chrôinín & Cosgrave, 2013). So it is critical that PSTs are able to effectively enact self-assessment to provide optimum learning opportunities for students.

The need for engagement with assessment strategies within physical education contexts, is essential for teachers to ensure enhancements to both teaching
and learning (Ní Chróinin & Cosgrave, 2013; James, Griffin, & France 2005; MacPhail & Halbert 2010; Patton & Griffin 2008; Rink et al., 2007). However Morgan and Hansen (2007) emphasise that a lack of content knowledge can attribute to the barriers associated with assessment in physical education. Without adequate content knowledge then it is impossible for pre-service teachers to embed assessment within their teaching where explicit knowledge of success criteria provide the foundations for engaging with assessment.

3.5 Assessment literacy in primary physical education

Research relating to primary teachers assessment literacy reported poor levels of assessment literacy overall and the need to improve the classroom assessment literacy of primary school teachers (Yamtim & Wongwonich, 2013). Interestingly, despite this, teachers displayed knowledge in their selection of appropriate assessment methods to use, however they were unable to utilise such methods to determine the levels achieved within the learning outcomes which may highlight an inability to transfer assessment practices to the school context.

While a growing body of research is evident within physical education and assessment practices in the teaching of physical education, limited if any specific research has been conducted in relation to the assessment literacy of primary PSTs teaching physical education. Dinan-Thompson and Penney (2015) explain that the majority of research has been directed to those engaged in teaching physical education at post-primary level. While Dinan-Thompson and Penney (2015) explored the assessment literacy of primary school teachers teaching physical education, there appears to be no research that explicitly investigates the assessment literacy of PSTs teaching physical education in the primary school.
Dinan-Thompson (2013) offers an interpretation, based on her work in ‘becoming curriculum literate’ (Dinan-Thompson, 2009: xxix) seeing assessment literacy as what ‘we read, see, hear and how we enact assessment practices as a teacher of and in PE’. Referring to the conceptualisation set out by Hay and Penney (2013), Dinan-Thompson and Penney (2015) found that the majority of assessments used for teaching physical education in the primary school were skill and ability-based assessments where outputs and comparative practices were common practices (Hay, 2009). Observation and ‘tick and flick’ are still considered as the most effective form of assessment within the teaching of physical education and while optimism could be taken from some evidence of peer assessment in primary physical education, assessments are predominantly teacher led and lack sufficient student involvement (Dinan-Thompson and Penney, 2015). Teachers appeared to engage to some level with the elements articulated by Hay and Penney (2013) of comprehension, application, interpretation and critical engagement, however the approaches use tend to lack alignment to curriculum and pedagogy, occur sporadically, and lack student involvement. A focus on accountability and greater emphases on summative assessment identifies that assessment literacy for primary teachers occurs around the critical engagement with the process. Dinan-Thompson and Penney (2015) explain the need for assessment comprehension to facilitate critical engagement stating that ‘without knowing of conditions that foreground learning; that align curriculum, pedagogy and assessment; that are explicit in learning behaviours and outcomes; that identify teacher valuing and power; then criticality may only ever be superficial’ (p. 495). With the apparent absence of research on PSTs’ assessment literacy in enacting AfL in the teaching of primary physical education, the researcher (teacher educator) sought to explore to what extent
PSTs enact AfL in their teaching of primary physical education during school placement, and the extent that PSTs demonstrate assessment literacy in relation to enacting AfL in primary physical education.

3.6 Summary
In summary, this chapter draws on the literature pertaining to AfL, and its enactment. While a shift in the interest of AfL as a means to enhancing teaching and learning is evident from the literature, the challenges of enacting AfL appear to remain whereby teachers feel unprepared and supported in implementing it as an integrated element of teaching. The role of students has been deemed essential, where students play an active role in their learning, through AfL strategies that facilitate greater ownership of their learning by placing them as key stakeholders in the assessment and learning process. Gaps in PSTs’ knowledge are evident and the lack of literature on PST assessment literacy in teaching physical education identifies a gap in the literature on the extent that PSTs are enacting AfL in their teaching of primary physical education during school placement and on PST assessment literacy in the teaching of primary physical education. Furthermore, the absence of literature and the literature conducted on teacher assessment literacy in primary physical education (Dinan-Thompson & Penney, 2015), provides a rationale for the conceptual framework outline in chapter two.
Chapter 4 - Methodology

This chapter provides an overview of the research methodologies adopted, the views that underpin this study, and the epistemologies that inform it. The rationale for qualitative research using a longitudinal action research approach is discussed, including justification for the inclusion of particular data collection methods used in this study. The methods of data analysis will be described and the ethical considerations that pertain to this study will be outlined. The teacher educator will discuss the limitations in conducting this longitudinal action research with specific reference to the role of a practitioner researcher engaged in full time work in initial teacher education. A rationale for the use of qualitative research methods in this study is provided with reference included to relevant literature.

4.1 Qualitative Research

Qualitative research methods, using an action research approach, were deemed appropriate for this study as the teacher educator sought to understand the experiences of PSTs and their enactment of AfL in a school setting. This included the processes and actions that impacted on the implementation of AfL when PSTs were faced with the reality of school placement. Bryman (2008) explained that differences between quantitative and qualitative research methods initially could be viewed as the employment of measurements for quantitative researchers and the omission of measurements for qualitative researchers. However, such a superficial view of the distinctions between the two approaches does not allude to the epistemological or ontological foundations that underpin each approach. Qualitative research has a greater focus on words rather than quantity (Bryman, 2008) where themes are generated from analysis of the data collected. The strength of a qualitative research approach in this study derives from the focus on situations and
people using an inductive approach (Maxwell, 2005). An emphasis on the social world and how people interact, interpret, and construct meaning within it is a characteristic of qualitative research (Bryman, 2008), aligning with a social constructivist framework in this study. Creswell (1997) defines qualitative research as ‘an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting’ (p. 15). Conducting this study during the PSTs’ school placement component enabled the researcher to observe the experiences of the PSTs implementing AfL strategies in the natural and authentic setting of multiple classroom contexts. According to Atkinson et al (2001), qualitative is an ‘umbrella term’ (p. 7), where a number of different approaches fall within this wider framework. Myers (2009) explains that interviews, observation, documents and participant observation are possible sources of data which can be used within qualitative research and were employed in this study. Qualitative researchers attempt to make sense of, to interpret, and study things in their natural settings with the goal of understanding the experiences they have and the meanings they bring to them (Denzin and Lincoln, 2000, p. 3). For this research, qualitative research methods facilitated greater understanding of the experiences of the PSTs, and the extent to which they demonstrated assessment literacy in the enactment of AfL in primary physical education.

Maxwell (2005) presents five intellectual and three practical goals for which qualitative research are approaches are particular suited (Figure 4).
Within the intellectual goals, Maxwell (2005) explains that not only is qualitative research effective in gaining the participant’s perspective, but also the meaning that is derived from the reality that the teacher educator is trying to understand, the contexts and how this can influence individual actions. The reality of this research is the need to understand the experiences of PSTs when transferring theory and pedagogical practices surrounding AfL encountered in their physical education module into practice. The flexibility afforded to researchers through a qualitative approach allows for modifications to be made through the research and sees research as a process rather than outcome based. The complexity of exploring PSTs understanding and enactment of AfL practices in school placement situation is important for the teacher educator’s approach to, and the development of, the delivery the PME physical education module and to facilitate PST knowledge and learning on how to effectively apply AfL in real contexts. The practical goals referred to by Maxwell (2005) were evident throughout this study where data was generated through sustained immersion and participant observation across all school placements completed by the PST, allowing for formative evaluations. As a result and to be consistent with Maxwell’s (2005) recommendations, the research questions
and, theoretical framework, this was designed and followed a seven-phase process. Each phase was revisited for consideration and modifications at the completion of each one where a collaborative approach in this longitudinal action research approach, involving the teacher and the PSTs, was adopted to advance the knowledge gained of the reality for PSTs.

4.2 Research Design

This section provides a rationale and justification for the use of a longitudinal action research approach and how sustained engagement with the PSTs was maintained throughout the study.

4.2.1 Longitudinal action research.

Action research has been recognised for decades as effective in helping researchers, practitioners and teachers better understand their work through a process, incorporating reflection of problems identified within their work as opposed to research that is driven by the generation of hypotheses (Glanz, 2002; McNiff & Whitehead, 1996). Action research is generally undertaken by a person or a group of people with the aim of identifying and understanding problems within given contexts to improve and promote change their practice (Elliott, 1991; Kemmis & McTaggart, 1982). Casey, Fletcher, Schaefer, and Gleddie (2018) explain that at the core of action research is a desire to improve by ‘learning and changing from within’ (p. 13). Although McNiff and Whitehead (1996) explain that action research can employ both quantitative and qualitative methods, given the context and purpose of this research, qualitative research methods were employed. The need to generate rather than test a hypothesis in relation to the experiences of PST enacting AfL while teaching physical education on school placement was best facilitated through
qualitative research methods and formed more meaningful links with the goals alluded to by Maxwell (2005) (listed in the previous section).

In contrast to traditional forms of research, action research is a process, and within that process actions are required. Lewin (1946) states where research is concerned, there is ‘no research without action and no action without research (Marrow, 1977, p. 193). Although knowledge can be produced through research, it is the manner in which knowledge gained through conducted action research that is fundamental to improving practice (Elliott, 1991). Despite the cautionary words of Hammersley (2004) about the unstable nature of action research where research and actions cannot occur simultaneously, action research continues to be promoted as an effective method for understanding and developing practice in the field of education. Bryman (2008) explains that action research involves the researcher and members of a particular social setting collaborating to identify a problem and then working to form a solution to the problem. Furthermore, action research generally requires practitioners to engage in research related to their own practice and is driven by the researcher’s own professional values as opposed to methodological considerations (McNiff, 2005).

For longitudinal research, issues of time are critical and can influence the perspective of the researcher (Pettigrew, 1990). Sustained periods of time in what Pettigrew describes as ‘the emergent process’ facilitates continuities to be identified and have the potential to reveal ‘the temporal patterns, causes, and movements from continuity to change and vice versa’ (1990, p. 273). However, time in this study refers to the social construction of time rather than chronology where persistent patterns can be identified and events that influence the experiences of change can be understood (Ladurie, 1979; Morgan, 1986). Furthermore, Pettigrew (1990) provides
some cautionary words explaining how longitudinal research approaches are considered complex social tasks that can be overwhelming for the researcher. This study had blocks of time where the researcher was not engaged in data collection and therefore had specific periods of time to organise the data collected in each phase prior to recommencing engagement in the field (Figure 5)

<table>
<thead>
<tr>
<th>Year</th>
<th>Phase</th>
<th>Activity</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td><strong>Phase One</strong></td>
<td>School placement and participant observation</td>
<td>November/December</td>
</tr>
<tr>
<td>2017</td>
<td><strong>Phase Two</strong></td>
<td>Upskill sessions</td>
<td>February</td>
</tr>
<tr>
<td></td>
<td><strong>Phase Three</strong></td>
<td>School placement</td>
<td>March</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data analysis and planning Phase Four</td>
<td>March - October</td>
</tr>
<tr>
<td></td>
<td><strong>Phase Four</strong></td>
<td>Upskill sessions</td>
<td>November</td>
</tr>
<tr>
<td>2018</td>
<td><strong>Phase Five</strong></td>
<td>School placement and participant observation</td>
<td>January</td>
</tr>
<tr>
<td></td>
<td><strong>Phase Six</strong></td>
<td>Upskilling</td>
<td>February</td>
</tr>
<tr>
<td></td>
<td><strong>Phase Seven</strong></td>
<td>School placement and participant observation</td>
<td>March</td>
</tr>
</tbody>
</table>

**Figure 5.** Timeline of engagement in data collection and planning

As highlighted earlier, action research does not simply involve the practitioner but includes all people within the setting. The versatility and flexibility associated with action research has resulted in it being an attractive approach for
practitioners and in particular for the practitioner researcher in this study, where depth of understanding within authentic settings could be gained. Furthermore, the PSTs were involved in the action research approach throughout this study. Stinger (2014) argues that ‘action research works on the assumption that all stakeholders – those whose lives are affected by the problem under study – should be engaged in the processes of investigation’ (p. 15). Accordingly, Casey et al. (2018) endorse the role of the participants within action research approaches.

The nature of an action research approach facilitated the longitudinal nature of this study and enabled the teacher educator to apply it in a similar manner across all seven phases in this study. Refinement was required following each lesson and each phase which aligns with the systematic and cyclical approach associated with action research which is historically traced back to Lewin (1945) and alluded to by McNiff (2002). Lewin (1945) described four action research phases which include planning, acting, observing and reflecting and are both recursive and indeed cyclical (McNiff, 2002). While Aidinopoulou and Sampson (2017) discuss the ‘spiral flow’ that enables repetition of the phases once reflection and refinement has occurred, what is not addressed within the research cycles outlined thus far is the presence of multiple cycles of action research that occurred within the action research approach (Casey et al., 2018). Casey et al. (2018) argue that those pertaining to a spiral effect within the research occurs on multiple levels on both micro and macro levels within a study and are not limited or restricted to what they call a ‘complete action research cycle’ (p. 15). Furthermore, Casey et al. (2018) propose an alternative five stage cycle of action research inspired by Lewin’s (1946) conceptions using think, plan, act, evaluate and reflect as the individual stages. The model proposed by McNiff (2002) encompasses seven stages of action research namely to observe, describe,
plan, act, reflect, evaluate and modify. For the purpose of this study the model offered by McNiff (2002,) coupled with the multiple cycles of action research within an action research cycle, that varied depending on the number of lessons taught by each PST, as proposed by Casey et al. (2018) has been adopted in consideration of the methodological approaches employed (Figure 5). Based on the findings on educational action-research in physical education and based on the theoretical framework of this study, it is considered that it will be an appropriate approach to understand the experiences of PSTs enacting AfL in their teaching of primary physical education during school placement and how knowledge and understanding is constructed.

4.2.2 Rationale for action research

In the last decades, educational research, using action research as an approach, has been extraordinary in the opportunities it facilitates for educational change, and the generation of knowledge that informs such change (Cochran-Smith & Lytle, 1993; Noffke, 1995).

4.2.2.1 The teacher educator

The teacher educator works as a lecturer in primary physical education, in an initial teacher education setting. The benefits attributed to action research through studies pertaining to its’ effectiveness in promoting educational change for PSTs (Casey & Dyson, 2009; Noffke, 1995; Peters & Gray, 2007; Price, 2001), was the basis for employing an action research approach. This was driven by the desire to 1) gain knowledge about the extent to which PSTs’ employ and embed AfL strategies in their teaching of primary physical education, (2) what extent do PSTs demonstrate assessment literacy in relation to enacting AfL in primary physical education, (3) to understand how the realities of school placement impact on PSTs’ enactment of AfL
in teaching primary physical education and (4) to explore what impact mentoring and continuous opportunities to upskill have on PSTs’ experiences with AfL in their teaching of primary physical education. As a teacher educator, a degree of dissatisfaction existed in relation to the limited time allocated to physical education in the PME programme.

Ryan et al. (2016) describe the support for PSTs that can be provided through the use of action research. Acknowledging the personal experience associated with action research (Stenhouse, 1975), Ryan (2008) stresses how engaging PSTs in a process of change through cycles of action research can facilitate greater depth in their understanding of their own learning even at early stages of their course programmes. In this study, a longitudinal qualitative action research approach was employed and enabled the teacher educator to observe PSTs in authentic settings during school placement to ascertain the level in which they implement AfL in their teaching of primary physical education. Action research was considered as a means of understanding issues related to the transfer of theory to practice for teachers and PSTs. Elliot (1991) identifies action research as a means to conducting ‘insider’ curriculum evaluations that can enhance knowledge of problems within theory and practice (p. 45). Elliott (1991) alludes to the fact that teachers often feel threatened by theory and to understand this, researchers need to look at the problem ‘through the eyes’ of teachers. However, MacPhail (2011) cautions that teacher education should not remain within the confines of an ITE programme and experiences should be understood through a continuum of experiences, where teacher education is seen as a lifelong process. Similarly, from a practitioner researcher perspective, action research enabled the teacher educator to explore the extent to which PSTs in this study implemented a particular theoretical element, i.e. AfL, into their teaching of
primary physical education. Action research had the potential to generate data that was specific to the PSTs’ individual and everyday practices and experiences. Furthermore, change in the researcher’s practice in the physical education module for subsequent groups occurred through data generated through the research.

As evaluation is deemed integral to action research, this study enabled the teacher educator to evaluate the AfL component and philosophy used within her ITE physical education module. Elliott (1991) describes action research as an approach that ‘integrates teaching and teacher development, curriculum development and evaluation, research and philosophical reflection, into a unified conception of a reflective educational practice’ (p. 54). Action research facilitated the shaping and development of the researcher’s practice through concrete data that informed all ITE programmes and facilitated change that is effective to the researcher’s and PST’s practice. Greenwood and Levin (1998) would argue, however, that action research is more than practical problem-solving, but is instead ‘a disciplined way of developing valid knowledge and theory while promoting positive social change’ (p. 98). A strong feature and argument for the use of action research is not purely related to the flexibility but the ability to complete it ‘on the spot or in-situ’ and to address concrete problems in immediate situations (Cohen & Morrison, 1994). Furthermore research highlights the transformation and change that can occur for PSTs through action research (Ryan et al., 2016).

4.2.2.2 The pre-service teachers

Although the teacher educator in this study employed action research as a practitioner to better understand and improve practice within her initial teacher education module delivery, the PSTs, engaged in multiple action research cycles throughout all phases of this study (Casey et al., 2018).
Action research has the dual potential to help PSTs seek alternatives to current practice, and also helping them reproduce what already exists (Noffke 1995, p. 7). Elliott (1991) explains that generalisations about teachers’ practices often results in feelings of threat where individual contexts, lived experiences and factors beyond their control are not considered. Furthermore, Trumbull (2004) explains that ‘as teacher educators seeking to improve our own practices and to help others practice differently, we can, and must, write our research so that others can see themselves in that setting and can understand in emotional and practical ways what is going on’ (pp. 1224-1225).

The action research approach employed enabled ‘practical wisdom grounded in reflective experiences of concrete cases’ (Elliott 1991, p. 53) to be gained by the teacher educator. This provided valuable information that was utilised to initiate change in PST practices of AfL through upskill phases through the study employing cycles of action research outlined by McNiff (2002).

Through reflective practice, using reflective journals and post lesson debrief sessions; the PSTs examined and reflected on their use of AfL in their teaching of primary physical education across four blocks of school placement. While the cyclical approach adopted included the seven stages adopted by the researcher (McNiff, 2002), the point at which the PSTs engaged with the stages differed in terms of a starting point, where the PSTs began the cycle through reflection. The PSTs reflected on how AfL was enacted in their praxis in various contexts and explored ways to support change in their practice. The benefits of engaging PSTs in action research is that the evidence of the reflections could be revisited, re-examined and shared many times before they were required to complete another school placement, therefore providing time for modifications to be made prior to their next
practicum. While the PSTs had not actively engaged in action research prior to this study, all PSTs demonstrated an ability to participate in the each component of the action research cycles throughout this study.

4.2.3 Ethical considerations

A formal application was made to the Ethics Board in the University of Limerick where permission was sought to conduct this study. On receipt of permission, a copy of the application and email acknowledging approval was given to the researcher’s ethics research committee. Bryman (2008) cautions that the use of pseudonyms does not eliminate identification of particular participants, but safe guards guided by Holmes (2004) were put in place to reduce the chance of identification. Her recommendations include:

- Not storing participant’s names and addresses or correspondence on hard drives
- Keeping identifier codes and participant’s names separately and in a safe locked cabinet
- Removal or names as necessary on all transcripts
- Safe storage of interview transcripts and audio recordings.

Based on these recommendations, all interview transcripts and field notes were handwritten and typed using the pseudonyms assigned to each PST, and audio recordings were password protected and stored on a separate external hard drive. Additionally, the name and location of the ITE provider was not highlighted, personal interests of each PST were not included in the data, and the PSTs were provided with access to the interview transcripts and field notes to ensure they were presented as accurate reflections of their experiences. All PSTs provided informed consent through email confirmation and in written form and were informed of the
right to withdraw from the study at any stage as participation was voluntary. The letter outlined the purpose of the research and the longitudinal nature. As PSTs were being observed throughout all school placements, this did not remove the likelihood of a school placement tutor engaging in an assessed visit during their teaching of physical education. Interviews were transcribed and offered to the PST to ensure that their views had been represented fairly (Cohen et al, 2007). Permission was sought from all school principals and Boards of Managements throughout phase one, three, and five where an outline of the study was provided through an information sheet and assurances were made that neither the PST, teacher, school nor children’s names would be used in the write up of the study. The same ethical procedures were adopted across all phases and the PSTs were completing their school placement in the same school during phase five and phase seven, blanket permission for both phases was requested.

4.3 Participants and Context

The participants of this study included the researcher as a teacher educator and practitioner researcher, and five PSTs who were completing two-year professional masters of education in primary school teacher education.

4.3.1 The teacher educator as a practitioner-researcher

The researcher (teacher educator) is a lecturer in an ITE institute in Ireland at primary level and has sole responsibility for the delivery and assessment of the primary physical education module at both undergraduate and post graduate level. Prior to commencing her role as a lecturer in ITE, the teacher educator, a qualified primary school teacher, worked in a primary school for twelve years. The teacher educator has a certificate/diploma and masters in primary physical education and is enrolled in a PhD programme on a part-time basis. At the beginning of this PhD
journey, the Professional Masters of Education (PME) course was being introduced to replace the former post graduate higher diploma in primary teaching. With a reconfiguration of the post graduate programme from a level 8 to a level 9 qualification (Teaching Council, 2013) came a reduction in the time allocated for the physical education module. Overall, the varying backgrounds of the PSTs led to frustration on the teacher educator’s part as to how to deliver the module with sufficient attention to curriculum, pedagogy and assessment. With the reconfiguration of the PME programme, and the restrictions that were encountered at post graduate level, the teacher educator sought to explore the experiences of PSTs on the PME programme, and the extent to which they enacted AfL in their teaching of primary physical education. Through a social constructivist approach, the teacher educator employed qualitative methods in a longitudinal action research study. Assuming a subjectivist epistemology, the teacher educator acknowledges how her role as a teacher educator may impact on the actions of the PSTs. Furthermore, the teacher educator's interest and previous research in AfL in the teaching of primary physical education provides a knowledge base that informs the interpretations made. In addition, the theoretical framework of social constructivism and cognitive apprenticeship guided the subsequent actions that were taken following participant observation of the PSTs teaching primary physical education. The teacher educator played a central role, through use of modelling, mentoring, and scaffolding that assisted in developing the PSTs assessment literacy and in the co-construction of knowledge with the PSTs in enacting of AfL. Engaging in dialogue with the PSTs, coupled with the social interactions within the school placement settings, was key to PST construction of knowledge as alluded to within a social constructivist epistemology. The qualitative methods employed in this study allowed for
observation, dialogue and discussion that allowed for the PSTs perspectives to be represented as was reality for each individual. Based on the recommendations of Nichols and Maner (2008), who highlighted the concerns regarding PSTs displaying behaviours to suit what they anticipated the researcher expected, the teacher educator did not highlight the focus of her observations in phase one.

Despite the merits of engaging in practitioner research through an action research approach, a number of difficulties arose and in particular with the longitudinal nature of this action research approach. Commitments to teaching on other programmes, negotiations around timetabling, and school placement supervision, were key considerations for the researcher to ensure lecture commitments and data collection using participant observation did not coincide. The researcher arranged for lectures to be scheduled at times that would not interfere with data collection. Casey et al. (2018) highlight the need for researchers to be ‘authentic to ourselves’ (p. 125), that enables people to ‘see themselves in our shoes’ (p.125). Furthermore, acknowledging the research biases in this study by highlighting the complexities associated with data collection and the potential impact on the enactment of the phases in this study, provides an account that may resonate with other practitioner researchers in the field (Casey et al., 2018)

4.3.2 Research context

The research was conducted in an initial teacher education institution in Ireland. The ITE institution delivers both undergraduate and postgraduate qualifications in primary teacher education, and undergraduate programmes in education studies and early childhood education. Further postgraduate qualifications in further education and multiple master’s courses are available. The primary teaching qualifications include a four-year bachelor of education and a two-year
professional masters of education (PME). The undergraduate programme includes a 5 ECTS physical educational module, spread over two semesters, one in year one and one in year two. The professional masters of education includes a 2.5 ECTs module in physical education that is taken in one semester in year one of the course.

The PSTs enrolled on the two-year PME programme, completed three blocks of school placement within their programme. Their first school placement occurred at the end of their first semester in late November and early December and was three weeks in duration. This was a senior school placement with children aged 8-12 years. Their second block of school placement, also three weeks in duration, occurred in spring time within the first year of their course and was with children aged 4-6 years. In year two the PSTs completed a ten week block of school placement with two assessed blocks within that block (one three-week block and one four-week block). All blocks of school placement are assessed and contribute to the overall level of qualification awarded on completion of the PME programme. PSTs receive two school placement tutor visits as a compulsory minimum requirement, with additional visits at the discretion of the school placement department. The PSTs complete their placements across three different schools, two in year one and one school in year two in a variety of socio economic areas. The PSTs began the PME programme, with a diverse range of backgrounds and interests and holding a range of undergraduate qualifications.

4.3.3 Pre-service teachers

Five PSTs enrolled on a professional masters of education (PME) participated in this study (Table 1). PSTs face a rigorous interview process to gain entry into the PME programme with approximately one-fifth of the candidates interviewed being accepted on the programme. All PSTs who begin the PME
programme, must have an undergraduate qualification (level 8) and an Irish language
grade at an honours level their post primary Leaving Certificate exam.

Table 1: Participant profile of experiences and beliefs around physical education and
AfL (retrieved from interview, phase one)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Attitude to PE</th>
<th>PE at school</th>
<th>School bio P1 (10-12 year olds)</th>
<th>School bio P3 (4 - 6 year olds)</th>
<th>PE Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>Positive</td>
<td>Positive</td>
<td>Indoor and outdoor spaces</td>
<td>Mixed gender</td>
<td>Practical assisted learning</td>
</tr>
<tr>
<td>Nicola</td>
<td>Reluctant</td>
<td>Captain of soccer</td>
<td>Indoor and outdoor space</td>
<td>Girls school</td>
<td>Knowledge about peer assessment</td>
</tr>
<tr>
<td>Dylan</td>
<td>Positive</td>
<td>Focused PE</td>
<td>Indoor and outdoor space</td>
<td>Boys school</td>
<td>Initial apprehension</td>
</tr>
<tr>
<td>Jessica</td>
<td>Nervous</td>
<td>focused PE</td>
<td>Indoor and outdoor space</td>
<td>Indoor and outdoor spaces</td>
<td>Prepared well</td>
</tr>
<tr>
<td>Monica</td>
<td>Positive</td>
<td>Hockey coach</td>
<td>Indoor and outdoor space</td>
<td>Boys school</td>
<td>Longer duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>positive</td>
<td></td>
<td></td>
<td>Need for peer teaching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>influence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Enjoyed it</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Learning practical to</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>teach practical</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>gave better</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>understanding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>and memory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>retention</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Longer duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>needed</td>
</tr>
</tbody>
</table>

The PSTs attended a primary physical education module twice a week for ten weeks
in semester one of their programme. The PSTs completed their school placement
blocks in three different schools throughout their two-year programme (Table 2).
Table 2. Contextual information for schools in each phase of school placement.

<table>
<thead>
<tr>
<th>PST</th>
<th>School A (Phase 1)</th>
<th>School B (Phase Two)</th>
<th>School C (Phase 5 &amp; 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicola</td>
<td>Girls primary school</td>
<td>Disadvantaged status</td>
<td>Disadvantaged status</td>
</tr>
<tr>
<td></td>
<td>Single gender (girls)</td>
<td>Single gender (boys)</td>
<td>Single gender (boys)</td>
</tr>
<tr>
<td></td>
<td>Senior class SP</td>
<td>Junior class SP</td>
<td>Senior &amp; Junior SP</td>
</tr>
<tr>
<td>Alice</td>
<td>Mixed gender</td>
<td>Irish medium school</td>
<td>Mixed gender</td>
</tr>
<tr>
<td></td>
<td>Senior class SP</td>
<td>Mixed gender</td>
<td>Senior &amp; Junior SP</td>
</tr>
<tr>
<td>Monica</td>
<td>Mixed gender</td>
<td>(Junior class SP)</td>
<td>Junior SP (P5)</td>
</tr>
<tr>
<td></td>
<td>Senior class SP</td>
<td></td>
<td>Senior SP (P7)</td>
</tr>
<tr>
<td>Jessica</td>
<td>Disadvantaged status</td>
<td>Disadvantaged status</td>
<td>Disadvantaged status</td>
</tr>
<tr>
<td></td>
<td>Single gender (boys)</td>
<td>Mixed gender</td>
<td>Junior SP (P5 &amp; P7)</td>
</tr>
<tr>
<td></td>
<td>Senior SP</td>
<td>Junior SP</td>
<td>Single gender (girls)</td>
</tr>
<tr>
<td>Dylan</td>
<td>Single gender (girls)</td>
<td>Single gender (boys)</td>
<td>Junior (P5)</td>
</tr>
<tr>
<td></td>
<td>Senior class SP</td>
<td>Junior class SP</td>
<td>Senior SP (P7)</td>
</tr>
</tbody>
</table>

4.3.4 Sampling

This study employed the use of purposive sampling, a non-probability form of sampling (Bryman, 2008). The goal of purposive sampling is to sample participants in a strategic manner. Often participants are sampled with the aim of achieving variety in the resulting sample however; within this study purposive sampling was used to ensure the researcher was able to access and observe participants throughout all school placements as geographical locations changed for each placement. The inclusive criteria were those PSTs who lived within a one hour drive from the researcher’s work place with the ITE provider. Further inclusion factors were the availability of the PSTs for observation within their scheduled timetable for teaching physical education. A recruitment email was sent to all PSTs who fulfilled the sampling criteria, informing them about the duration, proposed methods for data collection, issues relating to confidentiality and their right to withdraw from participation in the study at any stage. Initially eight participants had been short listed for participation in the study but two participants were subsequently
excluded as access was denied by one school principal and one PST was unable to give definite timetables details to facilitate observations in Phase One.

4.4 Procedure

The physical education module was delivered prior to phase one of this study across a ten-week period (20 hours) in semester one of the PME programme (year 1). Further details of the modules undertaken at this time are outlined in Appendix E. The PSTs completed two school placements in year one, one junior and one senior placement, and one ten-week block in semester two of year two of their PME programme. Four phases (phases one, three, five and seven) out of seven involved the PSTs completing school placement and the researcher observing their enactment of and opportunities for the enactment of AfL strategies. The ten week block included two blocks of teaching, one three week at the beginning (phase five) and one four week block at the end (phase seven). The intermittent weeks involved placement in other school settings within the same school, i.e. learning support.

Semi-structured interviews and focus groups were conducted with the PSTs in each of the school placement phases. Phases two, four and six involved specific upskill sessions (Table 3), informed by the data collected in the phases prior to each upskill phase, and aligning to the AfL strategies identified in the literature (Clarke, 2009; Wiliam and Thompson, 2011), where efforts to improve the PSTs’ assessment literacy using multiple approaches were made.
<table>
<thead>
<tr>
<th>Upskill phase Content</th>
<th>Phase Two</th>
<th>Phase Four</th>
<th>Phase Six</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining assessment</td>
<td>Debrief of experiences of PSTs</td>
<td>In school individual focused upskill</td>
<td></td>
</tr>
<tr>
<td>Exploration of forms of assessment</td>
<td>Information sharing of what worked well</td>
<td>Self and peer assessment</td>
<td></td>
</tr>
<tr>
<td>AfL and theory</td>
<td>AfL and effective implementation</td>
<td>Sharing of PST strategies</td>
<td></td>
</tr>
<tr>
<td>AfL strategies</td>
<td>Lesson modelling with children</td>
<td>Use of video taken in Phase Four</td>
<td></td>
</tr>
<tr>
<td>Use of CEPEC Resources</td>
<td>Small group work and video debrief</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of AfL in lesson delivery</td>
<td>Self and peer assessment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: AfL=Assessment for Learning; NCCA= National Council for Curriculum and assessment; PST= pre-service teachers; CEPEC = Colleges of Education Physical Education Consortium*

### 4.4.1 Phase one: School placement 1 November – December 2016 (3 weeks)

Phase one began with a covert role as a participant observer where the researcher did not disclose the focus of her observations to the PSTs. The PSTs were aware that the researcher was observing the approaches and methodologies used by them in their teaching of physical education and that the subsequent phases would be informed by participant observation in phase one. All PSTs were completing their first school placement in a senior class in a primary school with children aged 10 to 12 years. The researcher observed the PSTs teaching physical education across three weeks and used field notes to record evidence demonstrating the use of AfL and potential opportunities for the use of AfL within the PSTs’ lesson but where no evidence was present. Post lesson debriefs took place between the PST and the teacher educator where feedback and advice was provided and the PSTs sought
advice and highlighted emotions in relation to the lesson. On completion of the school placement requirement, the teacher educator conducted one to one semi-structured interviews with the PSTs.

4.4.2 Phase two: Upskill sessions

Phase two involved the teacher educator meeting with the PSTs for three one-hour time slots to engage in upskill sessions, informed by the data collected in phase one. The content of these upskill sessions is presented in Table 3 and elaborated on in appendix D. In the process of reflecting on the observations conducted, field notes generated, and interview transcripts, the teacher educator planned the upskill content with the aim of enhancing the PSTs knowledge and understanding of assessment and the enactment of AfL in their teaching of primary physical education.

4.4.3 Phase three: School placement 2 March 2017 (3 weeks)

The PSTs completed their second school placement in an infant class with children aged 4-6 years. This was a new experience for the PSTs as they had previously taught children aged 10-12 years in phase one. The PSTs were aware of the focus of the teacher educators’ observations throughout this phase and the teacher educator assumed the role of a participant observer, taking field notes and engaging the PSTs in a post-lesson debrief. The teacher educator was particularly interested in how the PSTs used the planned learning objectives and success criteria to direct their questioning, observations and feedback. While some content related to self and peer assessment was delivered within the upskill sessions, this was limited, and therefore the teacher educator was interested to see if the PSTs would challenge the view held by the teacher educator that additional upskilling may be required to engage in this strategy effectively. Following this, the teacher educator conducted a focus group interview with the PSTs.
4.4.4 Phase four: Upskill sessions November 2017 (3 one-hour sessions)

The PSTs were unavailable during September and October due to other programme requirements so the upskill sessions took place in November as a half-day block. In addition, the timing of the upskill was important in order for the PSTs to implement the strategies as close to their school placement as possible. Phase four involved the researcher and the PST planning a lesson collaboratively and then the teacher educator modelling the use of AfL with a group of students (Table 3 and Appendix D). The PSTs then engaged in authentic teaching experiences with students where the teacher educator supported them in providing feedback related to the success criteria that had been generated with the primary school students. The focus of this upskill session was to highlight how to embed AfL within the delivery of the lesson with the students as active agents i.e. greater student involvement. The teacher educator modelled how to engage the students in peer and self-assessment and the PSTs observed the students and facilitated greater peer assessment by the students. One PST (Dylan) was unable to attend the upskill session.

4.4.5 Phase five: School placement 3 January 2018 (3 weeks in a 10-week block)

Phase five involved a variety of class groups with some PSTs teaching in the junior classes and some in the senior. Within this block two PSTs, Jessica and Alice, had external providers teaching physical education and taught no lessons, despite the school placement requirements of one lesson to be taught as a minimum. The teacher educator repeated the methods adopted in phases one and three where evidence and opportunities for AfL were recorded through field notes. One–to-one semi-structured interviews took place post school placement when the PSTs were finished their non-teaching school placed requirements in their overall ten-week block. Similarly, the
interviews focused on their experiences of using AfL and the factors that impacted on their ability to enact AfL strategies within their teaching of physical education.

4.4.6 Phase six: Upskill sessions (1-hour one-to-one session)

The PSTs were completing a ten week school placement during this phase, and therefore; it was not possible to engage the PSTs in group upskill sessions. It proved more effective to visit the PSTs in their school and highlight areas of success for them, share the experiences of the other PSTs and identify further opportunities for them to develop their use of AfL in teaching physical education. The focus on self and peer assessment was common for all PSTs and discussions surrounding planning with new requirements by the school placement department were included (Table 3 and Appendix D). Issues arose regarding the employment of external providers for two of the PSTs and the decision to observe the PSTs while the external providers taught was taken by the teacher educator to facilitate greater participation and opportunities where they could engage in AfL within the lesson. The teacher educator acted as a gate keeper between the PST and external providers, assisting in engaging the PSTs in professional conversations with the external providers to assume more active participation in the lesson delivery.

4.4.7 Phase seven: School placement 4 February – March 2018 (4 weeks out of a 10-week block)

The final phase of this study involved the same approach as outline for phases one, three and five with the teacher educator observing the PSTs on school placement. Alice, Dylan and Nicola were teaching all lessons timetabled for physical education, Monica and Jessica had external providers delivering the physical education programme, and therefore, taught the minimum requirement of one physical education lesson while on school placement across the four-week block.
Those PSTs with external providers delivering the physical education content actively sought to gain experience through participating with groups and implementing AfL strategies.

### 4.5 Data Collection

The qualitative research method described above involved a number of data collection strategies (Figure 6). Data were collected through field notes generated through participant observation, a PST reflective journal, interview transcripts from semi-structured one-to-one interviews and focus group interviews, and a reflective narrative maintained by the teacher educator throughout all phases of the research.

**Figure 6.** Data collection methods across seven phases (R = researcher)

#### 4.5.1 Participant observation

The teacher educator engaged in participant observation throughout phases one, three, five and seven while the PSTs were completing all school placements across their two-year programme. Marshall (2006) considers observation as a
fundamental element of qualitative research where the teacher educator plays a specific and established role within the setting they are positioned (Denzin & Lincoln, 1998). Participant observation can often fall under the umbrella term of ‘ethnography’ due to the immersion of the teacher educator in the social setting of the participants, but in this study the term participant observation will be used to enable the teacher educator to adopt an action research approach across seven phases as opposed to a complete, sustained period of time in one location. Multiple settings were involved in this study.

Participant observation involved the teacher educator assuming a dual role as ‘an insider’ and simultaneously as ‘an outsider’ and therefore can be considered a complex task where numerous strategies and techniques that utilise the five senses must be employed (Baker, 2006). Denzin and Lincoln (1998) explain how the researcher is ‘playing an established participant role in the scene studied’ (p. 11), stressing that without being part of the social world, we cannot examine it sufficiently. Furthermore, Bryman (2008) emphasises that participant observation is not just a case of observing but more used to describe a prevalent research method that is complimented by multiple other data sources. Studies that involve observation can be defined as those that ‘involve the systematic recording of observable phenomena or behaviour in a natural setting’ (Gorman & Clayton 2005, p. 40). However, participant observation can have various classifications and those presented by Gold (1958) were considered when deciding on the role that the teacher educator would employ as an observer. He provides four roles that include 1) complete participant, 2) participant-as-observer, 3) observer-as-participant and 4) complete observer. The role assumed within this study was that of the participant-as-observer, as complete observation would not enable the teacher educator to mentor
and model AfL strategies or mentor the PSTs as required. A complete participant would not have facilitated the action research approach or employ cognitive apprenticeship components of the conceptual framework used for this study, as the teacher educator was subsumed within the community as a fully functioning member (Bryman, 2008). By adopting participant observation the teacher educator became more involved, but maintained a certain degree of distance through not fully committing to “members’ values and goals” (Adler & Adler, 1994, p. 380). As this study involved multiple phases, a covert role was not appropriate. An observer-as-participant sees the researcher as more of an interviewer, which again allows for very little participation by the teacher educator (Bryman, 2008). Assuming the role as a complete observer would again hinder the multiple cycles within cycles of action research in this study and prevent the teacher educator from any participation, which Bryman (2008) concludes should leave them as potentially dismissed within participant observation.

4.5.2 Field notes

Following the direction of Bryman (2008) and Phillippi and Lauderdale (2017), data were generated through field notes taken while the teacher educator assumed the role of a participant observer throughout all school placements. General guidelines and advice in relation to taking field notes was consulted prior to engaging in participant observation. While researchers often refer to ‘extensive field notes’, it was the focus of the content recorded within the field notes that was important. The purpose of the field notes in this study was to record evidence of occasions where the PSTs used AfL in their teaching of physical education and potential opportunities for AfL strategies to be applied, but where the PST did not implement AfL. With this in mind, a pen and pocket notebook were used throughout
the phases of fieldwork to note all evidence of AfL and opportunities for the use of AfL in the PSTs’ teaching of primary physical education and any key words or themes that were emerging. As Bryman (2008) suggested, notes were taken as close as possible to the event even in the briefest form and then expand upon these field notes as soon as possible subsequent to the observation. That was done to reduce or eliminate possible issues and errors in the interpretation of the shortened field notes by the teacher educator and provide clarity of the details surrounding the observation. Although this process was adopted in phases one, three and seven of the study, in phase five the researcher was returning to lecturing commitments and therefore, the use of an audio recorder was employed immediately after each lesson to expand on the field notes reflective narrative, and was then later transcribed at a time convenient to the teacher educator. While Bryman (2008) advised that this can produce excess transcription, the fear of lecture content delivered with other groups immediately after the observation, impacting on the reality of the lessons observed and blurring the data collected, resulted in the modification of the approach used by the teacher educator.

Throughout the whole data collection period, caution was taken to ensure that the PSTs were not distracted by the teacher educator field notes. Phase one enabled the PSTs to see the dual role played by the teacher educator, as a participant and observer in action, which reduced anxieties and fears held by the PSTs that it would resemble an assessed visit. These initial fears subsided after the first observation and a range of strategies were developed by the teacher educator that facilitated effective participant observation and note taking, without generating anxiety among the PSTs (Ditton, 1977). The strategies employed varied throughout the research due to the variance in contexts and settings across all participants throughout all phases of
school placement within this study. For example, when the PSTs were using particular methodologies such as station teaching, the teacher educator assisted at a station beside the PST to create a more natural presence that did not distract or make the PST feel uncomfortable while they were teaching the children.

4.5.3 Reflective journals

The PSTs maintained a reflective journal, completed after each physical education lesson throughout all school placements where it was hoped that maintaining a reflective journal would lead to a more in-depth examination of each PST’s practice and that the PSTs could identify of problem they experienced in schools in a more systematic, careful and consistent way (Denscombe, 2007). For the teacher educator, the content served as a basis for providing a better understanding of how teaching and their use of AfL strategies, was experienced by the PST during their teaching of physical education on school placement. As Hay (2009) and Ekiz (2001) emphasised, completing a meaningful reflection without guidance is not sufficient and the use of questions or prompts can facilitate systematic examination of teaching. Accordingly, in order to support the teachers in completing their reflective journals a number of prompts were provided to ensure focus was maintained within the reflections. The prompts ensured that the PSTs concentrated on critical events that occurred within their physical education lessons and the impact that these events may or may not have had on their ability to assess effectively within the lesson (Denscombe, 2007; Wragg, 1994).

In phase one the PSTs reflections were guided by prompted questions that focussed on the broad topic of their teaching but the latter questions refined PST thinking to their enactment of AfL strategies. Across all other phases, the prompt questions were explicitly concerned with the PSTs’ enactment of AfL strategies in
their teaching of physical education and aligned to the four inter-dependent components of assessment literacy alluded to in the conceptual framework (Hay & Penney, 2013). Dewey (1933) discussed reflection as an active, deliberative thinking process that addresses practical problems of practitioners, and tries to provide them with possible solutions to their practices. While Kim (2013) explains the autonomy given to teachers and PSTs through maintaining a reflective journal, the school placement requirements of lesson evaluations and planning requirements impacted on the quality of the reflections recorded. Some journal entries provided depth and rich reflections but some, failing to utilise the prompt questions provided, included evaluation reflections that resembled lesson evaluations as set out by the school placement department. Acknowledging the potential of reflective journals to ‘trigger insight about teaching’ that facilitates more effective teaching, the research sought to gain rich reflection through PST engagement with reflective journal writing (Richards & Lockhart, 1995, p. 7). On occasions the entries in the PST reflective journals did not provide sufficient content to ascertain the impact on their teaching but can be attributed to the school placement lesson evaluation requirements alluded to. As all the PSTs participating in this study completed their school placements within a variety of schools, class groupings and socio dynamic contexts and the reflective journal entries enabled them to identify how this impacted on their teaching of physical education and implementation of AfL

4.5.4 Post-lesson debrief

Following Sinelnikov’s (2009) directions, a post lesson debrief took place between each PST and the teacher educator immediately after the lesson (Parsons and Stephenson, 2005). Post-lesson debriefs allowed PSTs to engage in a constructive and objective analysis of their teaching (Bertone, Chaliès, & Clot 2009;
Bertone et al., 2006; Chaliès et al., 2004, 2008), and helped PSTs reflect on their actions while constructing their own identities as teachers (van Huizen, van Oers, & Wubbels 2005; Maclean & White 2007). This involved explicit reference to the enactment of AfL and their experience of using AfL strategies. The PSTs had an opportunity to seek advice and highlight concerns they felt regarding the use of AfL and factors that impacted on the implementation of key AfL strategies. However, in order for the teacher educator to optimise the benefits of the post-lesson debrief, a collaborative approach, where knowledge was co-constructed within a social constructivist framework, and specifically targeted to their progression within the ZPD was necessary. Edwards and Protheroe (2004) explain that a collaborative approach where PST motives in their actions are discussed facilitates greater acceptance by PSTs of the problems of issues identified in their teaching. These debrief sessions were between five and ten minutes as the PST had subsequent lessons to teach with the students and therefore often took place as resources were being gathered and the PST was supervising the students returning to the classroom. It was important that no other curricular areas were impacted upon by the post-lesson debrief sessions. The value of such post-lesson debriefs was immediate, where the views of both the teacher educator and the PSTs could be exchanged. In phase one, a rapport was developed that emphasised a collaborative and supportive role by the teacher educator over the formal school placement tutor role that facilitated a more relaxed relationship between the PSTs and the teacher educator throughout the post lesson debrief sessions. Feedback focussed on AfL strategies with those that were implemented effectively highlighted to generate confidence for the PST and then explicit guidance for how to enact some AfL strategies to a greater extent.
4.5.5 Interviews

Semi-structured interviews were conducted with each of the five PSTs in this research. Interviews enable a certain degree of flexibility where the line of questioning allows the participants to sway slightly from the schedule, allowed the teacher educator to use probing questions and can facilitate richness to the data as deemed appropriate and significant by the teacher educator (Cohen, Mannion, & Morrison, 2007). Each interview took place immediately after the PSTs completed their school placement in phase one, five and seven. Initially it was planned to limit the use of semi-structured interviews to phase one but the dynamics of the focus group interview (discussed in due course) in phase three impacted on the depth and breadth of data collected. The advantage of interviews is that they provided the teacher educator with opportunities to ‘achieve a relatively high level of personal interaction while maintaining an acceptable level of standardisation’ (Sharp 2012, p. 75). The comfortable atmosphere created, through some general questions about their overall school placement, encouraged the PSTs to share their thoughts regarding student culture and its impact on the educational experience of students openly and freely. Interviews are recognised as an interactive practice where knowledge and understanding is jointly constructed between both the interviewer and the interviewee, i.e. the PST (Kvale & Brinkman, 2009). Therefore, while the PSTs were encouraged to participate and share their thoughts and experiences, the teacher educator negotiated times and places that suited both the teacher educator and PSTs, prepared specific questions in line with the research aim, and followed up on responses from the PSTs to ensure the focus of the interview was maintained (Kvale, 2006).
Use of interviews enabled the teacher educator to elicit information from the PSTs that provided greater understanding of each PST’s perspective on the use of AfL and to enable them to describe experiences encountered within various contexts, personal to them. It was important when conducting the interviews that the PSTs’ views and individual experiences were represented with strong emphasis on the inclusion of ‘their version’ of their use of AfL in their teaching of physical education (Denscombe 2007, p. 82). The interviews enabled the PSTs to give their own account and perception about overall problems they encountered in each lesson and phase, their overall perspective on their enactment of AfL and furthermore, issues that they felt impacted on the enactment of or absence of particular AfL strategies. This approach was central to gaining in-depth, rich understandings of the PSTs’ experiences, and recommendations by Creswell (2007) were applied where meaning was derived from the PSTs rather than the opinions of the teacher educator.

Semi-structured interviews were chosen to enable the order of questioning to be flexible. This allowed the PSTs to talk more freely and points could be elaborated on with the aid of prompts or through further questioning that was not outlined in the schedule (Denscombe, 2007). However, it was important, as advised by Cohen et al. (2007), that the semi-structured interviews were not considered as a ‘casual affair’ but rather each interview required careful planning in order to retrieve relevant information where the emphasis was on the enactment of AfL (p. 355). In phase one, the interviews sought to understand the PSTs’ beliefs and prior experiences of physical education in their own schooling to ascertain the beliefs held in advance of beginning the PME programme. Interviews facilitated honest and yet private descriptions of their own schooling which could not have been achieved through focus groups. Engaging the PSTs in questions surrounding their own acculturation
socialisation sought to gain an understanding of what Kvale and Brinkman (2009) call ‘descriptions of the interviewees’ lived world with respect to interpretation of the meaning of the described phenomena’ (p. 27). They continue to explain that they are very close to having a conversation except that it focuses on particular themes and involves a specific technique and approach in order to retrieve relevant information. In planning the questions for the interview schedule, headings were initially quite broad but as the phases advanced more specific headings were used. Accordingly, phase one included questions that sought to gain knowledge and understand the backgrounds and experiences of the PSTs in physical education to date, explored their assessment literacy, and discussed their overall use of AfL strategies during placement, including factors that inhibited them in implementing AfL in their teaching of physical education. The interviews in subsequent phases had a strong focus on AfL, the experiences of the PSTs in implementing AfL, and the ideas generated through the upskill sessions. The interviews were recorded with the permission of the participants and transcribed verbatim, ensuring the nuances of spoken communication, such as colloquialisms and accent, were preserved.

4.5.6 Focus Groups

Focus group interviews were conducted with the five PSTs subsequent to their school placement within phases three and seven. Focus groups are a form of group interview that capitalise on communication between research participants in order to generate data and rich understandings of individual experiences (Morgan, 1998). Although group interviews are perceived as a quick and convenient way to collect data, focus groups explicitly use group interaction where the PSTs were encouraged to talk to one another and not only support each other’s contributions but
also challenge each person’s contribution while providing their own point of view (Bryman, 2008).

Initially this was going to the sole form of interview method post placement in phases outlined but the teacher educator felt that semi-structured interviews were required in addition to focus groups to receive greater depth and detail in the individual experiences of each participant in their given context. This method was chosen as the need to understand the experiences of the participants is required to understand their perspectives. Focus groups provided a platform for variances in opinions on PST experiences while on school placement, and the complexities associated within each individual context. The richness of data retrieved arises from diversity within the group and the dynamics, however, after phase three it was felt that that diversity among the PST experiences did not enable the teacher educator to gain an accurate perspective and sufficient knowledge of what the reality was for each individual PST. Therefore one-to-one semi-structured interviews were used for all remaining phases and focus groups at mid-point and as an exit interview for the group. Bryman (2008) reminds us that experiences and perspectives of individuals are often better captured through one-to-one interviews, which was evident in this study. The focus group interviews were audio recorded and subsequently transcribed verbatim (Cohen et al., 2007).

4.6 Data Analysis

The recommendations of Robson (1998) who cautions that the data collected must be analysed without bias and use data analysis strategies that are consistent, rigorous and systematic were considered in this study. Creswell (2009) refers to the beliefs that some researchers have where various layers exist within qualitative data that must be examined to deepen the researcher’s understanding and enable
representations and interpretations to be made. The teacher educator used a clearly
defined approach, where clear descriptions of the logical and coherent process
adopted in analysing the data were outlined (Atkinson & Delamont, 2005).
According to Cousins (2009) ‘qualitative data analysis explores themes, patterns,
stories, narrative structure and language within research texts (interviews, field notes
etc.) in order to interpret meanings and generate rich descriptions of research
settings’ (p. 31). However, with seven phases included in this study a substantial
amount of data were collected and so data analysis techniques, informed by the
action research cycles, that produced a high quality argument for the study were
required (Maykut and Morehouse, 1994). Patton (2002) discusses the transformation
of data into findings that occurs during qualitative analysis but stresses that ‘No
formula exists for that transformation. Guidance, yes. But no recipe. Direction can
and will be offered, but the final destination remains unique for each inquirer, known
only when, and if, arrived at’ (p. 432). Categories and trends were identified and
involved reflexivity as the data emerged throughout each cycle of action research
(rather than upon cessation of the data collection process), where each phase of data
collection informed the subsequent phase in this study (Stake, 1995).

The process of data analysis began after phase one, where the teacher
educator read the interview transcripts and field notes, writing memos and notes to
inform phase two. The interview transcripts were read and data was grouped from all
PST interview transcripts and organised under specific themes and headings. These
included 1) backgrounds and experiences of physical education and assessment in
their own lives 2) the physical education module structure and delivery of content 3)
teaching physical education on school placement, and 4) assessment literacy and use
of assessment while teaching physical education on school placement. The interview
transcripts, reflective journal entries were then examined and summary charts
highlighting the enactment of AfL in their teaching and lack of enactment in their
teaching of physical education were created, that represented both the teacher
educator’s observation and the reality as experienced by the PSTs (Appendix 1). The
teacher educator then identified elements for inclusion in phase two such as overall
assessment literacy and how to implement AfL strategies in their teaching of
physical education.

Data analysis was guided by Braun and Clarke (2006) and Miles and
Huberman (1994). Miles and Huberman (1994) describe three stages for data
analysis involving data reduction, data display and conclusion drawing and
verification. Subsequent data analysis took place after phase three, phase five and
phase seven using inductive, thematic data analysis across all data (interview
transcripts, field notes, reflective journals and research reflective narrative) and
constant comparative analysis from previous phases where developments in PST
enactment of AfL could be identified (Lincoln and Guba, 1985). The transcripts from
both the focus groups and semi-structured interviews were examined in their
entirety, line by line, and key phrases highlighted manually. Next, the key phrases
were examined and codes assigned (data reduction). Finally these codes were
examined and developed into themes (data display). This occurred after each phase
of the study as data analysis served to inform the content of the upskill sessions in
the intermittent phases (see Figure 5 included earlier in this chapter). As the study
consisted of multiple phases, the need for the teacher educator to become immersed
in the data, digest it, take it apart, reassemble it and subsequently identify patterns
and regularity through reflection and possibly revisiting to collect additional data
was imperative (Wellington, 2000).
Finally the last phase of data analysis involved condensing and synthesising all data across the entire study using the conceptual framework of assessment literacy (Hay and Penney, 2009). The data across all phases was collated for each PST and categorised under the four components Hay and Penney (2013) endorse PST assessment literacy (Figure 7) to track the each PSTs’ overall enactment of AfL and identify the extent of their assessment literacy with an emphasis on AfL.

**Figure 7.** Sample data synthesis (p = phase)

Following this, the data was reduced and themes developed based on each component proposed by Hay and Penney for each participant (Figure 8).
Figure 8. Data Reduction

This allowed for an understanding of why particular AfL strategies were being enacted but others were not present in each PSTs’ teaching of physical education. Finally, all data was organised under each assessment literacy component for all PSTs to present an overall understanding using of the experiences of PSTs in using AfL in their teaching of primary physical education on school placement and the developments that occurred across the seven phases in this study.

4.7 Trustworthiness

Trustworthiness involves ensuring that the conclusions and inferences drawn are ‘faithful to the data’ (Wideen et al.1998, p.162). Lincoln and Guba (1985) propose four constructs for assessing the trustworthiness of qualitative research; credibility, transferability, dependability and confirmability. The importance of documenting the research design, data collection, research decisions, data analysis, interpretations, and conclusions are key to determining trustworthiness in any research study (Marshall & Rossman, 2011; Mutch, 2005). Credibility, to ensure that the findings and interpretations were credible to the participants and reader, was achieved through the sustained engagement in the field where teacher educator
observations and field notes described progressions and developments for PSTs’ enactment of AfL. Lincoln and Guba (1985) highlighted that sustained engagement provides scope in research but prolonged observation provides depth and richness. The teacher educator observed the PSTs in all school placements in data from multiple data sources.

The analysis of the data retrieved from different sources allowed for triangulation of the data by the teacher educator. Campbell and Fiske (1959), cited in Cohen, Mannion and Morrison (2007), discuss how triangulation “is a powerful way of demonstrating concurrent validity” as it can reduce the risk of bias but it can also increase the confidence of the researcher if common themes emerge from the multiple methods selected (p. 141). Credibility was achieved in this study through triangulation of the data retrieved from the focus groups, reflective journals, field notes and semi-structured interviews and to enhance the trustworthiness of the data analysis procedures adopted in this study (Patton, 2002). Triangulation within this study refers to the use of multiple sources of data as the teacher educator was the sole observer throughout the phases of this action research study (Cohen et al., 2007). The use of multiple sources of data was to provide the teacher educator with greater confidence in the research results and to ensure all data retrieved provided an accurate representation of the reality as experienced by the PSTs (Webb et al., 1966). Triangulation involved the use of the teacher educator’s field notes, interview transcripts and PST reflective journals. These elements were assessed through thematic analysis and detailed coding where the themes were examined and re-examined and revisited a number of times using all sources of data (Braun & Clarke, 2006). Summary charts were created from all the data sources that outlined all evidence of PST enactment of AfL in their teaching of physical education,
opportunities for the inclusion of key AfL strategies and factors that influenced the enactment of AfL by each PST (Figure 9).

![Table](image)

**Figure 9.** Triangulation of data

Dependability was achieved through the evidence provided across all phases, where the research questions were clear and in line with the frameworks used (Miles et al., 1994). Furthermore, the explicit outline of the structure of each individual phase, the provision of details of the participants, setting and action research cycles outlined previously in this chapter and the potential for researchers to adopt similar roles as practitioner researchers further ensures dependability.

Confirmability was achieved through the teacher educator’s field notes and the reflective narrative that were maintained throughout the study. The reflective narrative documented issues, big and small, that impacted on the collection of data, external factors that impacted on the PSTs and overall challenges and issues that the teacher educator was presented with throughout the study. The teacher educator
endeavours to remain reflexive in the triangulation of data and interpretations in data and the reflective narrative.

Transferability concerns the question of whether the results of the research can be generalised across other research contexts (Bryman, 2008). As this research explored the experiences of PSTs within one specific ITE provider, the results cannot be generalised. However the research approach could be expanded across other ITE providers and other contexts. Greene and Caracelli (1997) reference to particularity as opposed to generalisability where qualitative research is concerned, with Creswell (2018) describing it as ‘the hallmark of good qualitative research’ (p. 202).

4.8 Limitations

This study was conducted with five PSTs in one programme, in one ITE provider and therefore generalisations to the Bachelor of Education or PME programmes in other providers of ITE programmes for PST primary teachers cannot be made. The limitations included the time available for the delivery of the physical education module where time in the delivery of the physical education programme was one semester in year one of the PME programme. While an AfL philosophy is employed, the difficulties in teacher educator modelling with primary school students arise with the timetabling of the PME physical education lectures.

A second limitation is the number of PSTs that could be observed in this study. As the teacher educator was working full time, lectures were arranged around the data collection times to facilitate the teacher educator as a participant observer for this study. Additional PSTs could not be included as the potential for timetable clashes during PST school placement, where they may teach two lessons per week, was greater. Furthermore the distance to be travelled was both time consuming and
challenging when travelling to locations up to an hour from the teacher educators college-based lectures. With teaching commitments on other programmes, the teacher educator had to co-ordinate time slots that had no conflicting plans.

Thirdly, the PST taught in various socio-economic areas, with some encountering no behavioural issues across any of the school placement components and some having those challenges in all school placements. This resulted in some strategies not being observed in both senior and junior placement and does not identify if the PSTs could have enacted these practices successfully should these challenges not be present.

Finally as the teacher educator was the sole observer, member checking was not possible, however triangulation of the data occurred through the multiple sources of data used in this study. Furthermore, the challenges encountered in data collection where facilities were used for multiple purposes, and external providers taught physical education, could be considered as a limitation.

4.9 Summary

In summary, this chapter provides a rationale and justification for the use of a longitudinal action research approach. Multiple cycles of action research, that involved both the teacher educator and the PSTs, were employed in this study across seven phases. The methods described were selected in line with the theoretical framework of social constructivism and cognitive apprenticeship, where the social interactions and ongoing dialogue with the PST were facilitated through semi-structured individual and focus group interviews, post-lesson debriefs and PST reflective journals. The multiple data sources used allowed for triangulation of the research data and the findings will be discussed in line with data analysis methods described.
Chapter 5 - Results

This chapter presents the findings in line with the conceptual framework identified in chapter two, using the four inter-dependent components for assessment literacy proposed by Hay and Penney (2013). Key developments and factors impacting on the development of PST assessment literacy in the enactment of AfL in their teaching of primary physical education will be included for further discussion in chapter six. The PSTs came into their ITE programme with previous beliefs and perceptions of assessment based on their own experiences. Following the completion of a primary physical education module, across one semester, the PSTs engaged in their first school placement experience. The development in PST assessment literacy in the enactment of AfL will be presented with explicit reference to developments in assessment comprehension, application, interpretation and critical awareness of assessment (Hay & Penney, 2013).

Graphic summaries of the developments in PST assessment literacy, across the four school placement phases of the study, are included (Figure 11-15). The results present the developments for each individual PST using the four inter-dependent components for assessment literacy, in each phase (Figure 10).
Figure 10. Four inter-dependent components of assessment literacy

A summary of the triangulation of data for all PSTs and the developments in their assessment literacy across each of the individual four phases (Figure 16), and an overall visual that represents the PSTs’ levels of assessment literacy developments throughout the entire study, are included (Figure 17). This enables a more nuanced understanding of the experiences of the PSTs and the extent to which they enacted AfL in their teaching of primary physical education throughout this seven-phase study.
Figure 11. Jessica’s assessment literacy
Figure 12. Nicola’s Assessment Literacy

**Assessment Comprehension:**
- Track progress
- Associates formative assessment with PE, summative with Maths/Eng
- What children want to go over

**Assessment Application:**
- Limited to provision of broad learning objective and teacher delivery of success criteria
- Praise oriented feedback
- Observation

**Critical Engagement**
- Power retained by PST
- Broad observations did not enable critical engagement (l.obj broad also)
- Uncertainty around what to assess impacted upon by self

**Assessment Interpretation**
- Disconnect between curriculum, assessment and pedagogy
- Observation did not inform teaching

**Assessment Comprehension**
- Early stage of linkage between C/P/A
- Lacks confidence in content knowledge
- Assessment tasks appropriate
- Feedback began to link to specific criteria

**Assessment Application**
- Used questioning to develop SC for shapes in dance
- LO—start and end of lesson
- No self/peer assessment

**Assessment Interpretation**
- Showed awareness of achievements but PCK of where to go next was not present
- Linked to LO
- PCK CK impacting on critical engagement
- Influence of co-operating teacher

**Assessment Comprehension**
- Feedback = focus
- Student involvement is essential

**Assessment Application**
- LO and SC generated with children using physical rather than language based approach
- Praise/SC used as blended approach to feedback
- Used questioning to prompt...,

**Critical Engagement**
- Aware of what and how to assess
- Collaborative
- Link with interpretations

**Assessment Interpretation**
- Not in L1
- Observations informed planning
- Refinement of objectives within pencil roll based on obs

**P1**

**P3**

**P5**

**P7**

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**L1 – no evidence**
Confidence increase = AfL informed planning.
PCK – complex assessment tasks Greater interpretation of children’s progress
Assessment Literacy Alice

**Figure 13. Alice’s assessment literacy development**

**Assessment Comprehension:**
- Linked to objectives
- End point assessments
- How much children have learned
- Starting point and where to bring

**Assessment Application:**
- Initially needed link C/P/A
- Use of LO at beginning of lesson and end subsequently SC teacher generated
- Questioned on SC
- TE modelled peer assessment PST used but inconsistent

**Assessment Interpretation:**
- Identified inappropriate obj and impact on Afl
- Confusion complexity with enjoyment levels
- Identified those needing support through observations

**Critical Engagement:**
- Realised need to link C/P/A to facilitate Afl using clear LO
- Recognised use of data enhanced or hindered attainment

**Assessment Comprehension:**
- Greater awareness of alignment between c/p/a
- Impact on planning
- Beginning to involve students through questioning

**Assessment Application:**
- LO - early in lesson and throughout, consolidates at end
- consistent questioning on success criteria
- observation and feedback linked to SC
- needs involvement of students in success criteria

**Assessment Interpretation:**
- Highlights how to interpret during and from lesson to lesson
- Feedback based on observations.
- Specific areas highlighted for improvement

**Assessment Application:**
- Introduce and consolidates LO
- Co-generated SC and reinforced through questioning students
- Observation and feedback linked to SC
- Peer assessment enacted

**Assessment Comprehension:**
- Embedded, natural, could not teach without it
- Student ownership and inclusion vital
- Applies to all teaching

**Assessment Interpretation:**
- Actions taken in lesson based on achievement of objectives
- Awareness of when feedback required
- Impacted on planning
- Included students in interpreting

**Critical Engagement:**
- Focus on LO and criteria to guide learning
- Interpretations informed rate of progression in lesson
- Feedback used to generate confidence

**Critical Engagement:**
- Two way process – discussed ways to improved
- Identifies and uses interpretations to guide learning
- Values peer assessments where PST observation is difficult

**Assessment Comprehension:**
- Need for student involvement
- Guides students to learning targets
- Facilitates progress for learning
- Enhances teaching & learning

**Assessment Application:**
- Did not get to teach
- Used observation effectively to identify where lesson could be developed in future

**Assessment Interpretation:**
- Planned a subsequent lesson based on observations
- Identified key area for future learning objectives and
- Identified stages where Afl strategies could have been implemented by external

**Critical Engagement:**
- Planned lesson that included the student voice
- Understood greater need for two-way social interactions
Figure 14. Monica’s assessment literacy development

**Assessment Comprehension:**
- Assessment as extra
- See how they’re progressing
- Understanding of links between c/p/a poor
- Considers observation as must important

**Assessment Application:**
- Initial use of objectives
- Outlines success criteria
- No student voice
- Feedback linked to SC – only in one skill
- Observed and guided using SC
- No peer/self-assessment - relational

**Assessment Interpretation**
- informed future planning, uncertainty
- did not teach subsequent lessons

**Critical engagement**
- Saw as means to improve
- Teacher power
- No student voice
- Aim to achieve L.obj but too many objectives

**Assessment Comprehension**
- Alignment between task and objectives
- Understanding need to align c/p/a
- Awareness of how to plan progressively based on assessment data

**Assessment Application**
- Outlined SC – PST leading
- Observed and gave feedback
- LO used at start but time impacted on consolidation
- No self/peer assessment

**Assessment Interpretation**
- Observations informed lesson to lesson planning and during lessons
- Acting on levels of students through support and feedback

**Critical Engagement**
- Focus on LO and SC
- Greater need for two-way interactions
- PST power
- Uncertainty of what to assess

**Assessment Comprehension**
- See the enhancement to teaching and learning
- Student involvement as central and a natural part of teaching
- Provides structure
- Values peer assessment

**Assessment Application**
- Use of LO and SC
- Student involvement is generating SC and in peer assessment
- Use of questioning
- No self-assessment
- Feedback linked to SC

**Assessment Interpretation**
- identified where she wanted to advance lesson to
- Identified areas of achievement and challenged students to demo different ways of achieving the objectives
- Refined objectives

**Critical Engagement**
- Knew what and how to assess
- Identified impact on student knowledge
- Valued student involvement and
- Less reluctant to play it safe

**Assessment Comprehension**
- Did not teach or observe externals

**Assessment Application**
- Did not teach or observe

**Assessment Interpretation**
- Did not teach or observe externals

**Critical Engagement**
- Did not teach or observe
**Figure 15.** Dylan’s assessment literacy development

- **Assessment Comprehension**: 
  - Assessment as extra
  - Involves levels and teachers pushing to new levels
  - Observation as central

- **Assessment Application**: 
  - Initial use of objectives
  - PST provision of some SC
  - Observed but didn’t act on observations
  - Feedback did not allow practice
  - No student involvement

- **Assessment Interpretation**: 
  - Observed, noticed but did not act on interpretations
  - Observed but feedback did not facilitate immediate response

- **Critical engagement**: 
  - PST power, no student voice
  - Used for PST knowledge and not shared

- **Assessment Comprehension**: 
  - Alignment between task and objectives
  - Recognition of value of feedback and timing
  - No student involvement

- **Assessment Application**: 
  - Outlined SC – PST
  - Observed and questioned based on success criteria
  - Feedback allowed adaptations in performance - challenging
  - No self or peer assessment

- **Assessment Interpretation**: 
  - More alignment of c/p/a led to improved planning
  - Observations led to better feedback and timing
  - Improved assessment tasks

- **Critical engagement**: 
  - Focus on LO and SC
  - Not dispersed between PST and students – PST led
  - Awareness of what to assess

- **Assessment Comprehension**: 
  - Remains an added element
  - Limited recognition of student voice
  - Considers feedback as challenge
  - Low levels of AL in comprehension

- **Assessment Application**: 
  - Initial use of LO
  - Struggled in generation of SC for dance
  - Content knowledge impacted on feedback
  - Enacted peer assessment –

- **Assessment Interpretation**: 
  - Student ability outweighed PST knowledge
  - Uncertainty of how future planning would develop
  - Awareness of need to challenge students more

- **Critical Engagement**: 
  - Impacted on by other components of AL
  - Content knowledge and student ability resulted in frustration and feeling lost
Assessment Comprehension:
- Assessment as extra
- See how they’re progressing
- Understanding of links between c/p/a poor
- Considers observation as must important

Assessment Application:
- Initial use of objectives
- Provision of success criteria
- No student voice
- Observation & Feedback; linked to SC
- No peer/self-assessment – relational and knowledge

Assessment Interpretation:
- Evident but required more action
- Isolated lesson content
- Impacted by inadequate exposure to teaching

Assessment Comprehension:
- See the enhancement to teaching and learning
- Student involvement as central and a natural part of teaching
- Provides structure & focus for PSTs and students

Assessment Application:
- Use of LO and SC
- Student involvement is generating SC and in peer assessment
- Use of questioning
- No self-assessment
- Feedback linked to SC

Assessment Interpretation:
- Saw as means to improve
- Teacher power
- Aim to achieve LO
- Fun factor/difficulty often prioritised

Critical engagement:
- Observations informed lesson to lesson planning and during lessons
- Acting on levels of students through support and feedback

Critical Engagement:
- Focus on LO and SC
- Greater need for two-way interactions

Assessment Comprehension:
- Introduced and consolidated LO – more use during lesson would enhance
- SC generated with students using multiple methods
- SC guided feedback, observation, questioning and peer assessment
- Limited self-assessment

Assessment Application:
- PST leading SC generation
- Observed and gave feedback
- LO used at start but not consistently consolidated
- Limited self-assessment
- Questioning linked to SC – but

Assessment Interpretation:
- Sc guided PST interpretations
- Self-assessment and peer assessment gave students ownership
- PST acted using feedback and questioning

Critical Engagement:
- Interpretations led to greater awareness of what and how to assess
- Lack of exposure key to assessment literacy
- Dual role of students and PST in

Assessment Literacy summary for 5 PSTs

Figure 16: summary all PST’ assessment literacy PST each phase

P1

P3

P5

P7
Figure 17: Overall summary of PST Assessment literacy

**Assessment Comprehension**
- Four out of five perceive AfL as a natural and embedded dimension of their teaching
- Student involvement provides ownership and responsibility for their learning
- Teacher educator modelling, mentoring and scaffolding allowed them to see AfL in action – value of students over peer modelling
- Emphasis on benefits to planning
- Upskill and cognitive apprenticeship in SP enhanced PST comprehension
- Peer assessment promotes greater student engagement
- Importance of aligning curriculum, pedagogy and assessment
- Peer assessment takes time to enact

**Assessment Application**
- L. objectives highlighted throughout teaching
- Success criteria were co-generated with students through demonstrations and questioning
- From no student involvement to the consideration of its centrality
- Use of success criteria to help student attainment
- Observation, feedback, questioning and peer assessment were guided by success criteria
- Limited use of self-assessment could be due to upskill, module and inadequate exposure to teaching PE
- AfL gave PSTs and students greater focus and provided structure to delivery content

**Assessment Interpretation**
- Awareness of student achievements through explicit success criteria
- Implemented changes to future plans based on assessment data
- Need for time to get to know students in initial lessons
- Demonstrated how interpretations lead to immediate responses by students when feedback given
- Assessment tasks became less complex and showed greater alignment between curriculum and pedagogy

**Critical Engagement**
- Shared/dual responsibility for assessment between PST and student
- PST pride at student achievements facilitated by AfL
- Lack of exposure to teaching PE left development of student learning frustrating
- Impact of content knowledge on interpretations and critical engagement
- Significance of upskill and opportunities to employ cognitive apprenticeship on PST assessment literacy for critical engagement
Chapter 6 - PSTs’ assessment literacy in enacting AfL in primary physical education

The experiences of five PSTs will be discussed, within a social constructivist framework, using the four inter dependent components proposed by Hay and Penney (2013) previously discussed in the conceptual framework pertaining to this study. The extent to which the five PSTs demonstrated assessment literacy in their enactment of AfL is presented and discussed throughout this section, with reference to key literature. Overall PSTs demonstrated a low level of assessment literacy in phase one of this study. Advancements will be discussed through individual discussion of each of the four components (Hay and Penney, 2013), and key themes produced will be used to highlight specific developments and factors impacting on such developments.

6.1 Assessment Comprehension

Through prolonged engagement with the PSTs, multiple observations and descriptions in the field notes, and data from the interviews and reflective journals a number of themes were identified in relation to developments in the PSTs’ assessment comprehension. These include (1) changes in PSTs’ perceptions of AfL, (2) the absence of an assessment module and the implications for PST assessment literacy, (3) the dis(connect) between content and practice, (4) greater alignment between curriculum, pedagogy and assessment, (5) AfL as an embedded practice, (6) acknowledgement of the role of students, and (7) the impact on PST planning.

All PSTs in this study demonstrated low levels of assessment literacy in their assessment comprehension during phase one. None of the PSTs could differentiate between the various forms of assessment or provide a comprehensive definition of
AfL (Lorente-Catalan & Kirk, 2016). Messick (1989) highlighted the consequences of not comprehending the purpose and outcome of assessment for student learning, that can impact on the validity and interpretation of learning when the learning outcome is not fully realised. Varying responses in relation to purpose and the contribution of AfL to teaching and learning were provided by the PSTs. While Alice alluded to the links between assessment and the lesson learning objectives, and Monica identified feedback, self and peer assessment, the focus was on ‘seeing how they’re [students] getting on’ (Jessica, Interview 1) and more summative oriented results (Stiggins, 2005), with little reference given to the impact on everyday teaching and learning. Alice made some reference to the benefits of AfL in informing teachers of areas of student learning that ‘need to be worked on’ and ‘linked to learning objectives’ (Alice, Interview, P1) but referred more to assessment that would occur at the end of a unit of work.

Nicola, while recognising formative and summative assessment, displayed some comprehension of assessment, but was unsure of the purpose of AfL, highlighting summative assessments were more appropriate for standardised testing. Dylan viewed assessment as an added dimension to teaching, but did not allude to the purpose and types of assessment. Hay and Penney (2013) stressed the need for knowledge and understanding of the purpose of assessment within assessment comprehension, which was not evident initially in PST assessment literacy. Overall, no consideration was given to the role of the student in the assessment process as envisioned by Earl (2013).

The PSTs’ assessment comprehension highlighted an awareness of a number of strategies for assessing children in physical education, and tools that can be useful for assessment. There was a strong emphasis on the use of observation and
summative-oriented assessment practices alluded to by Dinan-Thompson and Penney (2015) in relation to teachers’ assessment literacy. The PSTs considered AfL as an added dimension to teaching that informed the teachers of progression but served very little purpose outside of that. The PSTs’ comments did not display the multidirectional relational system as highlighted by Penney et al. (2009). An obvious gap in the PSTs’ assessment knowledge was in relation to the need for students to be involved in the development of their own learning (Annerstedt & Larsson, 2010).

### 6.1.1 Changes in PSTs’ perceptions of AfL

Throughout the study a shift in understanding occurred where the PSTs initially saw assessment as an added dimension in their teaching in phase one, to AfL being considered as an everyday practice and an embedded element of teaching (Klenowski, 2009, Penney et al., 2009; Stiggins, 2005; Stiggins & Chappuis, 2006) among four out of the five PSTs. This shift began to emerge following phase two where upskill sessions, delivered by the teacher educator, and informed by the observations, field notes, journal entries and interviews in phase one, included elements that sought to improve the PSTs’ knowledge and understanding of AfL. Shepard (2000) highlighted that assessment practices should be integrated, rather than separated, within methods and curriculum courses. During the ITE programme, the primary physical education module adopted an integrated approach but failed to adequately develop PST assessment comprehension across all forms of assessment, as the focus was solely on AfL, and did not facilitate PST understanding of other forms of assessment, such as summative assessment. The consequences resulted in PSTs being unable to differentiate between each form of assessment, similar to the findings of Dinan-Thompson and Penney (2013), whereby teachers were unable to provide concrete evidence of assessment comprehension overall, or in relation to the
purpose, and benefits of AfL. Through multiple cycles of action research, the teacher educator modified the approach used in the upskill sessions following the observations and data generated across all sources to further enhance the enactment and understanding of AfL in the PSTs’ teaching of primary physical education. Employing the cognitive apprenticeship components of modelling, mentoring, and scaffolding, the teacher educator sought to enhance the PSTs’ level of assessment literacy. The PSTs now consider AfL as important for determining how to develop students’ learning, and inform future teaching, indicating a change in belief about the value of AfL.

6.1.2 Absence of an assessment module and implications for PST assessment literacy

No explicit module in assessment was provided in the PME programme, with the PSTs alluding to more isolated one-off sessions on assessment in other modules of their programme (Appendix E), and an integrated approach adopted in the physical education module. Consequently, the PSTs still viewed assessment as an added element of their practice, highlighting that the integration of assessment may not have been explicit enough in the physical education module, and greater communication of the approaches adopted across all modules may be required. PSTs reflections included ‘I essentially forgot about assessment’ (Jessica, Interview P1), ‘I had planned to assess them’ (Nicola, Interview P1), and ‘I was observing them [the students] but there was just too many to assess and I just wanted my first lesson done’ (Dylan, Interview P1). While a lack of consensus remains regarding the impact of specific modules on assessment (Volante & Fazio, 2007), all of the PSTs alluded to the fact that insufficient reference was made to assessment across other modules taken in their programme, which could further emphasise the need for more explicit and transparent integration of assessment practices. It could further be deduced that a
disconnection between theory and assessment in practice may have blurred PST understanding and assessment comprehension (DeLuca & Bellara, 2013). Following reflection on PST assessment comprehension, the teacher educator planned for content in phase two that sought to provide a greater foundational knowledge that to develop greater PST comprehension.

6.1.3 Dis(connect) between content and practice

Initially Jessica alluded to the fact that she ‘essentially forgot about assessment’ (Interview, P1), despite the teacher educator observing evidence of enactment of AfL in her teaching (Field notes, P1), thus highlighting a lack of assessment comprehension where Jessica’s was unable to identify what AfL practices she had subconsciously enacted, lacking what Hay and Penney (2013) describe as knowledge of assessment in educational contexts. Similarly, Nicola discussed proposed plans to include AfL in her teaching but was overwhelmed by her knowledge of the content in her lesson (Interview, P1), again a perception that saw AfL as an additional element rather than an integrated element in their teaching of primary physical education (Klenowski, 2009; Lysaght & O’Leary, 2013; Stiggins, 2005; Stiggins & Chappuis, 2006; Penney, 2009).

However, a lack of alignment between curriculum, pedagogy and assessment by Alice, highlighted the consequences for assessment application in the lesson. Hay and Penney (2013) explain that improved assessment comprehension leads to greater coherence of how these three ‘message systems’ interact and integrate (p. 74). Alice explained the impact of not aligning these three systems, where her lesson objectives did not sufficiently facilitate the progression of the properties of dance, stating ‘I found it difficult to use assessment in this task as I did not include a specific move’ (Reflective Journal, L1, P1). This prompted the teacher educator to employ the
cognitive apprenticeship components of modelling and mentoring throughout Alice’s teaching in phase one, and subsequently show the PSTs primary school teachers enacting AfL as an integrated and embedded element of their teaching using the resources outlined in chapter three.

Nicola’s assessment comprehension displayed a lack of knowledge on how to effectively align curriculum, pedagogy and assessment, an alignment that is considered as central to teaching and learning. Anxieties over content knowledge and prior physical education beliefs and experiences, overshadowed Nicola’s ability to transfer knowledge gained in the physical education module to the school placement context (Hay & Penney, 2013; Stiggins, 2005). She reflected ‘like I never did athletics at school’ (RJ, P1). While research has highlighted the significant role of school placements, where PSTs apply both practical and theoretical elements of their ITE programme to the classroom context (Caires, Almeida, & Vieira, 2012; Korthagen & Brekelmans, 2008), disparity between the knowledge gained and how the reality of school placement experiences can impact on the transference of particular teaching methods was evident (Cochran-Smith, 2005; Korthagen, 2010). The teacher educator observed a focus on the delivery of content, and a lack of confidence in the pedagogical approaches employed that distracted from the inclusion of AfL in Nicola’s teaching of physical education (Field note, P1, L1,). The focus was predominantly on the students completing the content, rather than the achievements within their performance of the planned content (Hein, 1991). Such an approach did not optimise opportunities for student achievement that effectively enacting AfL can facilitate (Stiggins & Chappuis, 2005), and furthermore, excluded any recognition of the benefits of AfL for teaching and learning, and the centrality of AfL alluded to in the ten principles provided by the ARG (2002). These observations
provided information that was used to generate additional questions in the interview schedule relating to the PST’s understanding of AfL, and the level of understanding gained from the approach within the module. As a result, greater emphasis on providing a theoretical base on assessment and AfL was planned for inclusion in the upskilling in phase two.

6.1.4 Greater alignment between curriculum, pedagogy and assessment

The need to plan for the implementation of AfL is clear, with Hay and Penney (2015) arguing that assessment should not be ‘an afterthought’ (p. 75) but should be used in conjunction with pedagogy and curriculum. The omission of reference to the learning objectives in lesson conclusions resulted in students receiving little consolidation of the learning encountered in the lesson. The PSTs’ assessment comprehension did not demonstrate an awareness of the relationship required between curriculum, pedagogy and assessment. Reflecting on the observations and descriptions contained in the field noted the teacher educator planned for greater content on how to effectively align curriculum, pedagogy, and assessment while enacting AfL in the teaching of primary physical education. Following the upskill sessions in phase two, that focussed on improving PST comprehension of assessment, on the planning of AfL and the enactment of particular AfL strategies in PST lessons, small changes began to emerge. Observing the PSTs throughout phase three, it became clear that the PSTs began to make more meaningful links between the objectives, success criteria and the provision of feedback, through more effective planning of lesson content (Clarke, 2009; MacPhail & Halbert, 2010). Alice showed greater comprehension of how to link all the AfL strategies employed to the learning objectives throughout her teaching (Clarke, 2001). Dylan demonstrated greater assessment comprehension in phase three where
he recognised the impact of poorly aligned assessment activities on the provision of feedback, and subsequently altered his approach to enable greater observation and easier provision of feedback during the lessons taught. Dylan reflected during the interview where he explained ‘like when I had them [the students] all doing the same thing, it was easier because I could stop and give overall feedback to them all and then work with other kids then’ (Focus group, P3). This shift in Dylan’s assessment comprehension from phase one, where he felt he needed to assess all students, and did not allow students time to implement the feedback into their performances, resulted in improved awareness of the value of timing feedback that ‘triggers an optimistic response’ (Stiggins, 2005, p. 328) from the students and allowed immediate changes to implemented by the students. Similarly, Nicola displayed clearer alignment between the assessment tasks, learning objectives and success criteria, and used the success criteria to focus her observations, feedback, and questioning, as advised by Lounsebery and Coker (2008). Reflections by the teacher educator on the content and impact of the upskill sessions in phase two on PST enactment of AfL in phase three highlighted the need for modifications in the approach to upskilling for the PSTs in phase four. While the cognitive apprenticeship components of modelling and mentoring had been employed during the school placement phases in this study, the PSTs still demonstrated lower levels of assessment application as was anticipated. Consequently, the teacher educator modified the approach in the upskill sessions in phase four, and included the use of modelling that included a lesson with primary school students.

6.1.5 AfL as an embedded practice

While four of the five PSTs described the structure and focus that enacting AfL as a philosophy in their teaching provided, Dylan, who did not attend all of the
upskill sessions, still perceived assessment as an additional element to his teaching of physical at the end of phase seven. When questioned during the interview on whether he employed AfL in his teaching of other curricular areas, Dylan highlighted that he did employ AfL strategies in other curricular areas, but provided no definitive answer as to its’ omission in his teaching of physical education. Jessica, who previously considered it as an added element of her teaching, explained ‘yeah like it’s just embedded now’ (Focus Group, phase 7) and how involving the students resulted in greater focus for her and the students throughout the lesson. Alice alluded to the realisation that AfL facilitated greater knowledge for both her as the teacher and for the students, enabling her to identify content for subsequent lessons;

I was so nervous about teaching PE and didn’t know what I was doing initially and assessment just wasn’t a thing and now I don’t see how you could teach the PE lesson without the assessment for learning approach because it plans your lessons after that and it lets you know if you can move on, it lets you know what the children know, if they enjoy it etc. etc. whereas before I was so concerned with the skills of teaching PE that assessment was secondary I suppose (Focus Group, P7)

Similar beliefs were held by Monica who found AfL was normalised within her teaching;

yeah I would have felt the same as well and I found towards the end that you were assessing and you didn’t even realise that you were doing so just through all the adding in questions and getting the children to assess themselves just became quite natural (Focus Group, P7).

Monica felt that the structure provided through enacting AfL reduced the apprehension felt about teaching her lessons. Similarly, Nicola highlighted the structure that embedding AfL in her practice provided and the improved focus for her and the students’ engagement that resulted from that. Similar to the findings of Ní Chróinín and Cosgrave (2013), Nicola explained that the co-generation and discussion of success criteria provided a scaffold and source of reference throughout her lessons in phase five. Furthermore, the use of explicit success criteria facilitated
more effective questioning of the students, in line with the success criteria and she could direct them to the list they generated with her as the teacher. The students began to ‘understand the scaffolding’ they would be climbing, facilitated through greater student involvement in the assessment process, which promoted greater focus and understanding to the assessment tasks in phase five (Stiggins, 2005, p.328).

6.1.6 Acknowledgement of the role of students.

The teacher educator’s observations and field notes in phase one highlighted an approach where the enactment of AfL was predominantly teacher led and did not provide the student autonomy associated with AfL where the students are active agents in their own learning (Black & Wiliam, 1998; Lopez-Pastor et al., 2013; Stiggins & Chappuis, 2015). The students were not involved in the generation of success criteria, but were informed of the learning objectives prior to the lesson, an element considered essential in the literature (Clarke, 2001). In phase one, all PSTs shared the learning objectives with the students, but in a way that lacked explicitness in their articulation, thus providing little direction for the students of the learning throughout the lesson. The field notes informed the content planned by the teacher educator in the upskill sessions in phase two whereby foundational knowledge of assessment and AfL was included but also where examples of how to embed AfL in the teaching of primary physical education were provided to develop the PSTs’ assessment literacy.

In phase three, Alice continued to introduce the learning objectives prior to the lesson and adapted her approach in the provision of success criteria, to facilitate the children she was teaching in an Irish language primary school. Although student autonomy, through co-constructed success criteria remained an unobserved practice,
Alice used questioning to evoke responses from the students through a rhyme ‘tick, tock, step and throw [swing arm forward, swing arm backwards, step into pass and throw]’, that she used to reinforced the success criteria regularly throughout her lesson (Field notes, P3, L2). While advancements in the PSTs’ assessment literacy was evident, the teacher educator continued to modify and refine the approach used in phases four and six as alluded to earlier in this chapter. In phase six, the approach consisted of content that was specific to each individual PST, with a focus on the enactment of key components of AfL, such as self-assessment. By phase seven, following the use of the cognitive apprenticeship components of mentoring, modelling and scaffolding, Alice, Monica, Jessica and Nicola were very aware of the role of the students throughout the lesson, seeing their involvement as key in the enactment of AfL (Black & Wiliam, 1998). However, Dylan did not include the students in the enactment of AfL. Dylan alluded to the fact that his confidence in teaching dance may have impacted upon this (Dylan Interview, P7), and that his lesson objectives were pitched below the abilities of the students, with the majority of the students having vast experience in a range of dance genres. Not knowing the students and their backgrounds left Dylan feeling out of his depth and frustrated, where the students had greater content knowledge of skills than his own knowledge extended to;

Like they were asking me questions like ‘can we do a round off?’ and I was like ehhh yeah but I hadn’t a clue what that was. They all were in dance clubs and I was totally frustrated by it all. I didn’t involve them because they knew more than me (Dylan Interview, P7)

Dylan did not identify that student involvement is integral to the enactment of AfL, and his comprehension of the need for students as an integrated element in his teaching and of AfL was still at the lower level in his overall assessment literacy. In contrast, Monica explained that inclusion of students in the assessment process was
imperative, as the students ‘know what they did and that they can do it because we have talked about how to do it’ (Interview, P5). She further alluded to how including them in the process informs them of whether they have achieved the learning objectives. Nicola explained how ‘they owned it’ (Interview, P5), and this facilitated greater levels of student engagement. Alice discussed the impact of peer assessment on student autonomy:

    Coming up with the criteria and then assessing themselves what do I think I could do better and also with their partner. It’s making them feel like the teacher and they feel more involved in the PE lesson I suppose (Monica, Interview, P5)

Interestingly, those who demonstrated greater assessment comprehension, and need for the active involvement of students in the assessment process, participated fully in the upskill phases of this study where the teacher educator employed the cognitive apprenticeship components of mentoring, modelling, and scaffolding. This could imply that insufficient knowledge and understanding of AfL was gained through Dylan’s absence from the upskill sessions and further emphasising the need for PSTs to observe AfL enacted through teacher educator modelling, as other elements of the upskill sessions were not applied successfully.

6.1.7 Impact on PST planning

The PSTs, while initially teaching stand-alone content that lacked progression from one lesson to the next, saw the use of AfL as a means to ensure students progressed in their performance of the skills at a suitable pace. Monica outlined the amendments made from one lesson to the next where initially she was unaware of the students’ abilities. AfL and the use of observation allowed her to amend her focus by refining her planned learning objectives. Commenting how she ‘hadn’t originally planned on focussing on the arm position in the pencil roll skill’ (Interview, P5), Monica acknowledged that observation resulted in immediate
refinement of her observations, that aligned with the levels of the student performances, and subsequently altered her lesson objectives for the next lesson. The teacher educator mentored and scaffolded Monica’s enactment of AfL throughout the lesson and post lesson debrief discussions highlighted greater assessment comprehension for Monica.

They found it hard to focus on the arms and legs at first, so I knew from watching them to focus my assessment on just the arms and then the second week I was like ok now we’re going to focus on the legs. It allowed me to plan and see what my learning objectives would be for the next lesson (Monica, Interview, P5)

The improvements in planning, facilitated by AfL, enabled Monica to see the progression of each child and brought a sense of achievement and inspired confidence in Monica. She explained ‘I think when you have such clear objectives and you split them up so arms one week, then legs, you can really see what each child is achieving and it gives you such a sense of accomplishment’ (interview, P5).

Similarly Alice’s reflections not only emphasise greater assessment comprehension highlight the importance of interpreting the assessment data retrieved;

even observing two are three children you can see they’re not ready for that let’s put that on to your next week. And you’re actually looking at the kids to understand if are they ready for the next part and let’s focus on this so like is it massive. It also keeps it structured for you so I feel more relaxed because I know when they can reach these steps let’s move on to the next thing rather than just me racing through the lesson and trying to get stuff done that there is no point moving on if they hadn’t got it like the same as in any other subject there’s no point moving on to something else when they haven’t got it yet. (Interview, P7).

Referring back to the emphasis on AfL as an everyday practice (Klenowski, 2009), Alice’s reflections not only show greater assessment comprehension of impact of AfL for future lessons, but also highlight an acute awareness of the need to amend and make adaptations to the content throughout the teaching of individual lessons, that lead to optimum levels of student achievement. Dylan, while acknowledging the
benefits of observation in phase three for gaining knowledge of student progress, felt that his content knowledge impacted on planning for the dance strand but overall understood that AfL was beneficial and he had to amend all plans in phase seven based on higher levels of ability than anticipated.

Overall, greater assessment comprehension was evident in this study; however Dylan’s absence on the upskill sessions resulted in less developments of his assessment comprehension, still perceiving it as an added rather than embedded practice. While cognitive apprenticeship was employed by the teacher educator during the school placement phases, it could be concluded that additional participation in the upskill phases could have enhanced Dylan’s assessment literacy to a greater extent. The PSTs used phrases such as ‘embedded in my teaching’ (Jessica) and ‘natural part of my teaching’ (Monica) when discussing their experiences (Focus group, P7), that aligns with the view that assessment approaches should promote the integration of assessment and instruction (Pilcher, 2001).

Improved PST assessment comprehension resulted in improved PST awareness of the benefits of enacting AfL, where AfL was seen as an approach that provides greater focus and structure in lessons for both the PSTs and the students, and the PSTs saw merits in the role of the student in the assessment process.

### 6.2 Assessment application

In relation to the PSTs’ assessment application, overall development will be discussed and two themes will be highlighted regarding (1) greater student autonomy and (2) the facilitation of peer and self-assessment in the PSTs’ assessment application. The teacher educator employs an approach in the physical education module where AfL is modelled and discussed throughout the delivery of practical content knowledge (Loughran, 2006). PSTs practice enacting AfL strategies, such as
peer assessment, throughout the activities they actively participate in across a ten-week period. Phase one of this study reported limited application of AfL strategies, where broad objectives were shared with the children at the lesson introduction with no consolidation or further reference made throughout the lesson, a component Hay & Penney (2013) consider as essential. Leahy et al. (2005) explained that provision of the learning objectives in the early stages of a lesson do not lead to effective teaching and learning unless regular reference is made to them throughout the lesson. Alice reported a lack of connection and alignment between her lesson learning objectives and what she actually wished to observe. Shavelson et al. (2008) explain that some assessment must be planned for, and as AfL has a focus on embedding assessment within practice, alignment of curriculum, pedagogy and assessment is integral (Stiggins, 2005; Penney et al., 2009). None of the PSTs had included specific questioning or reference to plans to enact AfL in their lesson planning, outside of the sharing of learning objectives. As a result of these observations, the teacher educator planned for the inclusion of content in phase two that mentored the PSTs in their planning for the enactment of questioning. The need to align learning objectives with assessment activities (Georgakis & Wilson, 2012) is key to ensuring that AfL is enacted in line with curriculum and pedagogy with specific goals shared with the students (Black & Wiliam, 1998; Clarke, 2009). The provision of learning activities, aligned with clear learning objectives that allow both the PST and students identify if the outlined goals have been achieved is paramount (Borghouts, Slingerland & Haerems, 2017), however this was not evident in the PSTs’ taught lessons where no consolidation of the learning objectives was observed by the teacher educator.
Despite the PSTs observing the teacher educator model a collaborative approach to the generation of success criteria throughout the physical education module, as advised in the literature (Black & Wiliam, 1998; Clarke, 2009; Lopez-Pastor et al., 2013), the provision of success criteria, while used in the delivery of the lesson content, were generated solely by the PSTs and lacked student involvement. The approach adopted by the teacher educator was one where explicit questioning on how to perform particular skills, and refine specific areas of focus through identifying areas of achievement with the PSTs across all elements of their physical education module. Although at times the elements of the success criteria were used to highlight areas to improve upon, little regard was given in the delivery of feedback to identifying areas of success for the students, as modelled by the teacher educator (NCCA, 2007; Shepard, 2000; Clarke, 2005). The inability of the PSTs to transfer the enactment of AfL experienced in the module, resulted in the students lacking the knowledge of how their performances were being judged (Black and Wiliam, 1998), ‘operating in the dark’ (Clarke, 2009) and ‘flying blind’ (Moss and Brookhart, 2009, p. 29) and the PSTs being unable to identify the achievements of the students (Moss and Brookhart, 2009).

Phase two was informed by the observations and field notes made in phase one, and focused on developing the PSTs’ assessment application through providing a theoretical base knowledge, exploration of AfL resources and live teaching performances using the CEPEC (2016) video resource. Small improvements were observed in phase three where more explicit learning objectives, aligned to curriculum and pedagogy, were implemented and feedback focussing on areas of achievement was provided to the students; ‘Well done great tick tock movement, now show me your step as you throw’ (Field notes, Alice P3, L2), ‘ok you have the
hand position but let’s try it this way [PST demo] with both feet together’ (Field notes, Dylan, P3, L1). Challenges associated with the provision of feedback were highlighted during the focus group interview (P3). Dylan, who implemented effective feedback focussing on key elements for improvement, described that while the provision of feedback impacted positively on student learning, there were negative consequences on behaviour management commenting how ‘they all went nuts’ (Field notes, post lesson debrief, phase 3, L1).

The PSTs reported that observation was central to engaging in assessment in their teaching of primary physical education with Monica explaining ‘I just kind of visually watched like when they were doing their chest passes’ (Monica, Interview, P1) and how her ‘favourite form of assessment is just by observing’ (Monica, Interview, P1). Monica was the only PST who focussed on, and linked her observation in phase one, to her specific learning objectives initially. Observation, considered as being at the heart of good assessment practice (Pickup & Price, 2010) and a key strategy recommended in the curriculum (DES, 1999; NCCA, 2007), was used to varying degrees. It was only when the PSTs gained further exposure to teaching physical education on school placement, and following the upskill sessions in phase two, that they began to demonstrate the enactment of observation that had a clear focus, linked to explicit success criteria, and to the provision of feedback (Lounsebery & Coker, 2008).

The disconnect between the learning objectives and the AfL strategies enacted to achieve the learning objectives was apparent in phase one (Hay & Penney, 2013), where delivery of the lesson plan content was ritualistic and unevenly paced (Swaffield, 2011), but this could be attributed to ‘the whole getting used to placement’ alluded to by Alice (Interview, P1). The impact of explicit content
relating to the enactment of AfL, and planning for such enactment of AfL in phase two, could also be considered as a key contributor to the advancements observed in phase three. By phases three, greater alignment was evident, but it was in phases five and seven following a greater emphasis on the cognitive apprenticeship components of modelling, mentoring and scaffolding, that more evidence of alignment was observed, where the PSTs applied AfL strategies that aligned across all the strategies enacted i.e. learning objectives aligned with success criteria and observation, questioning, feedback, and self and peer assessments aligned with the objectives and success criteria (Sadler, 1989). The teacher educator field notes recorded;

Alice used questioning with the students in line with her lesson objectives to generate the success criteria, she guided them using prompt questions and then also a demonstration….throughout the lesson Alice kept referring back to the success criteria and used them to focus her observations and also for the children to engage in peer assessment’ (Field notes, P7, L2).

6.2.1 Greater student autonomy

A power shift from teacher driven AfL to a more collaborative approach, that encouraged students to become more autonomous and independent learners, emerged across the phases of this study (Moss & Brookhart, 2009; Stiggins, 2005). When asked who held the power in the lesson in relation to learning Monica, Alice and Nicola all identified that as their AfL application improved, the students had greater ownership;

They love it because they’re like ‘oh well I know what the first step is’ and they really want to get involved as well. I feel they are more involved and it isn’t just them standing there and watching the teacher do it and even watching another child doing it they get enjoyment out of doing it as it’s their friend and they’re looking to maybe have a go next so you could give each child a chance over the weekend to demonstrate something (Monica, Interview, P5).

Nicola had previously delivered content and demonstrated no student involvement in the delivery and generation of success criteria despite this strategy being encountered
early on in the physical education module. By employing teacher educator modelling with primary school students in phase four, significant improvements in her assessment application were observed in phase five and seven where Nicola used effective questioning to generate the success criteria with the students;

Using the WILF (What I’m Looking For) and WALT (We Are Learning To) charts like that has just made such a difference because I was like now this is what we’re doing and they were like looking at me and like..we don’t care what you’re doing but like when they were looking at the piece of paper and I’m asking them questions, they knew exactly what they’re meant to be at and like if they’re not doing it I’m like…what does it say…so like you know it’s nice to be able to refer back to what…..and like they had given me the answers as well so they kinda feel like it’s their own work, they owned it so they were more focussed (Nicola, interview, P5).

On reflection, Nicola alluded to the improvements to more focussed observations, use of questioning and student autonomy (Black et al, 2006; Sadler, 1989);

So just as I was questioning them walking around assessing [observing], I was watching them and if I noticed that somebody….like in whatever feedback I was giving them …if I noticed like that someone hadn’t got part of the chest pass in the right position. Like if they were starting off over their head I would like be ‘well hang on what did we say…what height should it be at?’ and they’d be like ‘oh yeah chest’ and they fix themselves (Nicola, interview, P5).

Although Jessica did not get to teach physical education in phase five, and taught one lesson in phase seven, she also acknowledged that providing students with autonomy over their learning was central in enhancing the students’ knowledge and understanding in the lesson (Clarke, 1998; Sadler, 1989). The students in phase seven enjoyed generating the success criteria, facilitated by Jessica’s questioning. Jessica reflected ‘they loved discussing the success criteria using the WALT chart and they were really good at coming up with criteria for their sequence, with cannoning in it’ (Jessica, RJ, P7).

From the beginning, the PSTs found that having clearly defined objectives and a collaborative approach to the generation of success criteria, enabled the
students to a greater extent. Teacher educator field notes highlighted; ‘the children are eager and keen to contribute, some are even trying to articulate their thoughts by getting up and showing Nicola what they want to say’ (Field notes, P5, L1), leading to Nicola recognising the need to amend her approach to the generation of success criteria when teaching younger students. Azarnoosh (2013) explained that language levels can contribute to student engagement in peer assessment, but within this study, the generation of success criteria also highlighted the need for a variety of approaches in generating success criteria with students, which will be explored further later in this chapter. Both Monica and Nicola used student and teacher demonstrations in the generation of success criteria as alternative approaches to oral language.

Phases five and seven highlighted the most significant improvements to PSTs beliefs on the impact on AfL, that could be attributed to the teacher educator modelling during the upskill sessions in phase four. Alice who did not get an opportunity to teach physical education during phase five due to outsourcing to an external provider, explained how observing an external provider enabled her to see how the absence of AfL and the absence of student involvement in teaching, impacted on student learning and engagement. Her awareness of the need for greater connections between the activities and tasks they children engaged in was discussed during the lesson de-brief and the frustrations of not being able to intervene were evident. Alice described how the inclusion of so many skills in the lesson, resulted in no specific learning objective being highlighted for inclusion in the game situation. These reflections and observations show greater comprehension and awareness of where AfL could have been applied but was not during the lesson. When Alice
finally got to teach in phase seven, she reflected on the benefits of involving the students;

I think it makes them aware that we are down here to learn just like doing fractions we’re going to learn exactly how to throw correctly. I think it focuses them and make them aware that this is actually a lesson and they really realise that next week we are building on this. I think it kind of gives them more ownership… no that’s not the right word… but with their learning because they know this is what we are learning now and this is what we are learning next week. I know I’m going to be learning this……… I think it passes the responsibility on to them before I’ve seen it always look quite disconnected going to the hall just playing games whereas now they know where their learning is going and they loved it. Coming up with the criteria and then assessing themselves… what do I think I could do better? and also with their partner. It’s making them feel like the teacher and they feel more involved in the PE lesson I suppose (Alice, Interview, P7).

This acknowledgement of the importance of placing the responsibility for learning with the students, and its’ implementation supports the view that the level of PST assessment literacy can be compromised in the absence of ineffective proficiency in one of the four interdependent components alluded to by Hay and Penney (2013). Progression in the level of PST comprehension complimented their assessment application throughout the study. However, the use of a social constructivist paradigm, through dialogue and interactions with the PSTs, allowed for greater understanding of individual experiences and how individual contexts can impact on the enactment of AfL.

6.2.2 Facilitation of self- and peer assessment

The use of self-assessment was not employed by any of the PSTs in phase one. Peer assessment was used by Alice during phase one, but on a superficial level, that lacked consistency in its’ enactment and the reinforcement required to enhance all student learning. However, Dylan and Monica alluded to proposed plans for facilitating self and peer assessment but did not teach physical education subsequent to their first lesson, so had no opportunities to enact such AfL strategies. All PSTs
discussed the reluctance they felt in using peer assessment. While all alluded to peer assessment as an AfL strategy within their interviews in phase one, Jessica commented how she had reservations about using such AfL strategies and feared that the children would not respond appropriately;

Yeah I don’t know…well not with these boys…they were a bit…rowdy at times so I don’t know how they would….they’d probably say mean things to their friends you know in peer assessment….I would want to know them a bit better to make sure that I would pair them up with the right person I suppose’ (Jessica, Interview, P1).

Although Hay and Penney (2013) emphasise that students require support to take on such new responsibilities for their learning, the dynamics between the pupils in Jessica’s instance impacted her reluctance to engage in peer assessment. Despite teacher educator mentoring in phase one, Jessica did not enact peer assessment in her teaching of primary physical education. The teacher educator is also conscious that a three week block may not provide sufficient time for PSTs to effectively introduce this strategy when they, nor the students, have any previous experience with peer assessment.

Throughout the physical education module, the PSTs were provided with opportunities to practice enacting peer assessment with their peers, and were encouraged to highlight areas of achievement before providing explicit peer feedback on how the performance of their peers could be improved. Hay and Penney (2013) explain that assessment application must include the provision of information that informs students of their learning and progress made within their learning, and that facilitates future learning, by drawing student attention to key areas for improvement. However, it could be concluded that practicing the enactment of peer assessment with one’s peers did not prepare the PSTs adequately for the contextual factors that can prove challenging when working with students in the primary school
(Pryor & Lubisi, 2002; Frankland, 2007; Crououard, 2012). Furthermore, it is advised that in order for peer assessment to be implemented in a way that enhances student learning, students must be given optimum time to develop these skills with students (Bailey, 2001; Ni Chráinin & Cosgrave, 2013; Topping, 2009; Wiliam, 2011). Similarly, time for PSTs to practice enacting peer assessment, through scaffolded experiences, in line with Vygotsky’s ZPD (Topping, 2009), in contexts outside of working with their peers, may be more effective in the preparation of PST enactment of peer assessment.

The developments within phase three, despite the mentoring on the need to plan and enact AfL to a greater extent, conveyed an increased use of self and peer assessment, but was limited to one PST. Monica, who had only taught one lesson during phase one, showed improved confidence in using self-assessment. She engaged the children in post lesson drawings regarding the shapes performed within the physical education lesson and used questioning to ascertain children’s enjoyment levels. Monica began to display greater assessment application and interpretation during phase three, when prompted by the teacher educator during the mentoring process, where she used the feedback from the children, and the evidence from the children’s drawings, to inform her planning for subsequent lessons.

Monica used questioning as a source to facilitate and scaffold the infant students in engaging peer assessment in phase five. Alice implemented peer assessment superficially in phase one, however in phase seven Alice’s objectives and success criteria were used to facilitate peer assessment, where students had to identify areas of success and one area to improve on for their peers, showing advancements in her assessment application (Black et al., 2003; Bloxham & West, 2004). As alluded to in chapter 7, Nicola employed self-assessment in her teaching
in phase seven, finding it enhanced her knowledge of student learning. Furthermore, she acknowledged how it also impacted on peer learning for other students, demonstrating how when AfL is enacted correctly students can be both givers and receivers of feedback (Black & Wiliam, 1998; Falchikov, 1995), and act as resources for one another (Slavin, Hurley, & Chamberlain, 2003). Nicola indicated that students began correcting their self-assessment drawings of their performance of skills subsequent to discussions on the drawings. She further reflected how ‘they started asking for a new page as they were learning from listening to each other, going oh eh I think I did mine wrong’ (Nicola RJ, P7).

Noteworthy in relation to the overall lack of enactment of self-assessment, was the lack of opportunities to complete a college based upskill session with the PSTs in phase six. All upskilling in phase six took place in the PST school placement context, which proved difficult as the PSTs had other school placement requirement to fulfil. The teacher educator reflected that greater emphasis on self-assessment during phase four and six, using cognitive apprenticeship, and overall in the delivery of the physical education module, may have led to more effective implementation by the PSTs. Acknowledging that knowledge develops over time (Hein, 1991), the teacher educator felt that insufficient access to the PSTs in phase six, and insufficient exposure to teaching physical education in phase five, impacted on the time required to model self-assessment. However, within the module delivery, the teacher educator notes, insufficient levels of teacher educator modelling of self-assessment were delivered. While all other behaviours relating to AfL were demonstrated and modelled in the teacher educator’s practice (Korthagen, Loughran, & Lunenberg, 2005), an evident gap has emerged through engagement in this
research. The PSTs in this study demonstrated higher levels of assessment application by the end of phase seven.

6.3 Assessment Interpretation

Making sense of the information generated through enacting assessment strategies has been reported as problematic for teachers and PSTs (Dinan-Thompson, 2013; Hay & Penney, 2012; Wyatt-Smith et al., 2010). Advancements in the PSTs’ assessment interpretations will be discussed with reference to (1) a shift from isolated content to progressive planning, (2) the provision of feedback, and (3) advancements in PST planning. Phase one of this study reported similar findings, where the PSTs struggled to interpret children’s responses and failed to use assessment data to enhance teaching and learning.

6.3.1 Isolated content to progressive planning

Nicola, who was overly focussed on delivering the lesson plan content, did not demonstrate an ability to make effective decisions regarding student progress, and advanced through her lesson content without any regard to the levels of progression in student learning, arbitrary to that emphasised in the literature that highlights the need for effective feedback that enhances student learning and acknowledges achievement (Hattie & Timperley, 2007; Bloxham, 2007), and giving more attention to content over pedagogy (Capel et al., 2011; Capel, 2106). The teacher educator observed Nicola ‘moving on with the lesson content without the children having adequate practice or ability of the javelin-throw’ (Field notes, phase 1). Further observations recorded, identify that Nicola’s observations were based on completion of the planned task rather than focussing on the quality of the performance; ‘the children are just throwing and Nicola’s responses are “right that’s it done, now the next bit is…”.’ (Field notes, phase 1). No feedback was provided to
the children, which could indicate an inability to identify key elements of quality performance within this skill and a focus on content over pedagogy (Capel et al., 2011). Nicola did not display an ability to make judgements on the students’ readiness to progress, but focussed on delivering the content (Randall et al., 2016). This prompted the teacher educator to employ cognitive apprenticeship, using modelling, to demonstrate for Nicola how to effectively provide feedback to students, and subsequently mentor Nicola’s enactment of feedback during her lesson. In addition, content relating to engaging in observation and how refine the learning objectives in lesson plans was included in the upskill sessions in phase two.

Similarly, a disconnect from one lesson to the next was evident in Jessica’s lessons in phase one, where content was taught in isolation within each lesson and not revisited subsequently in future lessons. Hay and Penney (2013) highlight the relevance of providing connected experiences for students through valid interpretations. Despite evidence that the students had significant gaps in their understanding of key skills, Jessica did not revisit this skill and optimise opportunities to enhance their overall achievement levels. The field notes recorded that ‘the children are still unsure of how to exchange the baton and are not using the downward sweep technique despite feedback being given’ (Field notes, phase 1, L1). Similar to Nicola, Jessica attempted to deliver too much content in a single lesson and her observations and feedback identified what needed to be consolidated for student learning but lack of effective assessment interpretation (Hay & Penney, 2013) and alignment between curriculum, pedagogy and assessment (MacPhail & Halbert, 2010), resulted in no further teaching occurring. In contrast, Dylan showed an awareness of the success criteria and content knowledge, but did not implement feedback that allowed for amended student performance, and also at times did not
share his observations with the students in phase one. He reflected how he ‘didn’t want to stop them [the students] as they were having fun’ (Dylan RJ, P1). This impacted on the transfer of the skills taught to a game situation, as outlined in the lesson learning objectives. In order to enhance the PSTs’ assessment interpretation, the teacher educator planned and enacted content that mentored the PSTs in phase two on how to deliver feedback effectively, and use the observations made to plan for subsequent lessons.

6.3.2 Provision of feedback

Feedback is considered most effective when it is instantaneous (Crooks, 2008) and should provide students with adequate guidance and opportunities to modify their performances (Ashford, Blatt, & Vande Walle, 2003; Black & Wiliam, 1998; Shute, 2003). Hay and Penney (2013) explain that assessment interpretation involves making sense of the information generated and observed and the actions and steps taken as a consequence of the interactions and activities observed. Although Dylan did not teach any further physical education lessons, Dylan reported being able to identify issues in relation to student performance in the tasks included but was reluctant to intervene and disrupt the game element of his lesson, impacting on the achievement of the learning objectives. Recording in the field notes, the teacher educator described;

The aim of the game is for the children to apply the skill of the chest pass to a game situation. Dylan had explained to the children that they could only take 2 steps and they must pass, however the children’s focus became that of 2 steps over the skills developed early on in lesson. A range of passes used in the game with some being ineffective. I could have stopped lesson, given feedback or instruction on when some passes are effective and continued with the game. Withdrawing the step elements in the game would enhance the lesson and provide opportunity for the children to focus on key skills outlined in the learning objectives for the lesson. The children were enjoying lesson but started taking giant steps to work the ball over using the passing skills practiced and no reference was made to the overall objective for this element of the lesson. There was no intervention to fix this but Dylan did
highlight that he noticed it but seemed at ends as to how to intervene (Field notes, P1, L1)

Dylan explained how he was reluctant to stop game-context learning experiences when students were not applying the taught skills to the game (a planned learning objective), despite ‘noticing it’ (Dylan, Interview, P1). Hay and Penney (2013) discuss assessment application as not only the ability to implement assessment within one’s teaching but the ability to interpret what is happening, inform students of progress and to intervene to provide clarity surrounding misconceptions held by students.

Interestingly, Alice demonstrated higher levels of assessment interpretation, but struggled to differentiate between enjoyment levels and perceived difficulty of the assessment tasks. Alice misinterpreted student responses to a particular task and neglected to interpret that her lesson content was attempted to achieve too much. However, Alice’s interpretation overall resulted in more concise learning objectives that progressed student learning across all the lessons taught in phase one.

6.3.3 Advancements in PST planning

Phase three, where the PSTs all had increased exposure to teaching physical education, resulted in improvements in PST assessment interpretation being observed. Dylan provided effective feedback that facilitated immediate responses by the students (Crooks, 1988), and amended his lessons based on observations. Jessica’s planning was more developmentally progressive, building on the content from one lesson to another, based on the students’ achievement levels and her interpretations of their progress. Following the upskilling session content alluded to previously, attention to more progressive planning, using the assessment data generated, resulted in greater assessment interpretation, whereby feedback built on the students’ achievements from the previous lesson (Kilnger & De Nisi, 1996). This
was facilitated through greater focus on feedback on the success criteria in phase two, and accentuating specific elements in student performance that required development through teacher educator mentoring, to help increase student knowledge and understanding (Black & Wiliam, 1998; Hattie and Timperley, 2007).

Jessica, Nicola, Monica and Alice planned more progressively and reinforced previous learning, introduced new content at a more appropriate pace, using their observations to inform future planning, indicating improved assessment interpretation. Despite this, Nicola and Monica needed further scaffolding and mentoring in deciding on where to develop their lessons and often contacted the teacher educator for clarification on their future lesson content, further aligning to the literature on PST confidence to teach physical education (Carney & Armstrong 1996; Faulkner et al., 2004; Caldecott et al., 2006; Garrett & Wrench, 2007; Harris et al. 2012; Elliot et al., 2013). Following the use of teacher educator modelling in phase four, that was informed by the data generated in phase three and during the interactions between the teacher educator and the PSTs, significant advancements in the PSTs’ assessment literacy was observed in phases five and seven. While two (Jessica, Alice) out of five of the PSTs did not teach physical education during phase five, both were able to observe the lesson and interpret where the students’ learning needed to be enhanced. Alice explained;

They had the language but they didn’t have the skills behind them or the success criteria. Like they knew the rules but like you could go what’s that and they could tell you it was a double dribble but that was it. They also couldn’t put them in place in a game so at first I thought oh great they know all this stuff but in practice the majority of them didn’t. I would have just done one or two skills per week. (Alice, Interview, P5)

Jessica was also able to identify key areas that she would develop further, should she be teaching the subsequent lesson. Although Dylan was able to identify elements of his lesson that were not pitched appropriately, and what changes he would make in
future lessons, Dylan demonstrated a lower level of assessment interpretation in phase five than previously observed in phase three. Acknowledging the recurring presence in the ZPD (Vygotsky, 1978) as PSTs develop, the teacher educator observed a reduction in Dylan’s assessment interpretation levels in phases five and seven, as Dylan taught new strands of the curriculum. Despite the teacher educator employing the cognitive apprenticeship components of mentoring and scaffolding, and discussions in the post lesson debrief where Dylan identified the issues in his lesson that did not optimise learning for the students, this did not result in more effective planning by Dylan as similar activities were included in his second lesson (phase five). Interestingly Dylan tended to adopt a more coach like role when teaching the games strand and a teacher approach that aligned curriculum, pedagogy and assessment when teaching athletics and dance. The field notes recorded:

the content is too difficult and the children are not able to engage in a game situation without more explicit explanations and content or task organisation that develops their spatial awareness, creating zones would have helped but Dylan is just letting the chaos continue. He is trying to intervene but the approach and organisation of the activity is the issue as the children simply are not ready for this’ (Field notes. P5, L1)
The children are still not ready for a game and they are clustered together, they cannot transfer the skill to the game yet and an activity like the clock would suit better to develop the skill. They are not gaining anything here only a bang to the face because of their proximity to each other’ (Field notes, P5, L2)

The four PSTs who engaged in the upskill sessions in phase four, using teacher educator modelling, mentoring, and scaffolding, made the most significant advancements in their assessment literacy and interpretations, further supporting the use of a cognitive apprenticeship framework. Nicola, Alice and Monica all refined their learning objectives to isolate areas that would enhance student learning (Clarke, 2005; Crooks; Klinger & De Nisi, 1996). Monica explained that her observations informed her that the students had mastered some elements of the skills included in
her gymnastics lessons, and as a result she refined her objectives to focus on lower body positioning for her next lesson. Alice demonstrated progressive planning in her lesson content through the equipment she used, and furthermore through a three-stride approach that advanced the development of the skills from the standing javelin-throw. Alluding to the need to reinforce the standing javelin throw, Alice included this at the beginning of her next lesson and only advanced the students when she felt they were ready, further demonstrating how Alice’s interpretations were implemented in the planning of her subsequent lessons by phase seven and the need to build on responses from previous lessons (Klinger & De Nisi, 1996).

Reflecting on her development Alice said;

I kind of seen a disconnect with it last year just because I hadn’t practiced it and hadn’t embedded it in my planning as well, when I’m planning and writing down right what do they need to learn here and the teaching steps. You know whereas before it might just have been questioning about your heart rate and all that stuff but I think this year I have definitely come on (interview, phase 7).

Hay and Penney (2013) explain that it is what teachers do with the information, the actions taken to ascertain the attainments and progress in learning of individual students that lead to enhanced teaching where curricular and pedagogical adjustments can be made.

6.4 Critical engagement with assessment

Hay and Penney (2013) emphasise that critical engagement with assessment involves the distribution of power through the enactment of assessment processes. Initially the PSTs felt that the value of using AfL was ‘to inform the teacher of how the children were getting on’ (Monica, Interview, P1). Throughout this study, the PSTs struggled to critically engage with assessment, and in their knowledge of how to interpret the consequences of their enactment of AfL. Their awareness of how enacting AfL in a manner that retained power over student learning as the teacher,
and the implications on social dynamics and student perceptions, was relatively low in the early phases.

Limited student involvement, and a reluctance to engage students in peer and self-assessment, were factors contributing to student performances and engagement in the PSTs’ teaching in phases one and three. Linked with low levels of assessment interpretation (Hay & Penney, 2013), Alice demonstrated an inability to identify that the lesson content has simply been too intense, and lack of student engagement was due to the complexity level of, rather than the overload, of the lesson content. The students’ enjoyment levels had diminished through an over emphasis on getting the content taught, without considering the engagement levels. The post lesson debrief with Alice facilitated the cognitive apprenticeship of mentoring to be employed by the teacher educator to further assist Alice’s understanding of planning content that suitably assessed the learning objectives planned for.

While Dylan showed developments in his critical engagement with assessment in phase three, through planning more effectively, where assessment tasks and the learning objectives displayed greater comprehension of the need for alignment, the distribution of power remained dominated by the PST with little evidence of the student as an active voice or the acknowledgement of how beneficial his inclusion of AfL was for the students. Observations and descriptions in the field notes in phases five and seven provided the teacher educator with a greater awareness of the developments in the PSTs’ ability to critically engage with assessment. The teacher educator explored this further in the individual interviews, and probed the PSTs further to gain a greater understanding of each PST’s view on the use of AfL in their teaching of primary physical education. The PSTs saw it as a means to plan future lessons, where observation informed them of student
achievement guided by explicit success criteria. Monica could identify areas that needed greater focus in her teaching of gymnastics and through peer-assessment and teacher feedback and the students were informed of key areas to focus on in their next practice phases;

Yeah like I could see that their hands were in the right position but not their feet so I had that as an objective for the next lesson. Then when the kids were giving each other feedback in their peer assessments, I got them to watch their friend’s feet and legs to see if they were together and I watched the overall roll. Then they knew what to do and they all learned from each other’ (Monica Interview, P5)

The teacher educator field notes reported the positive responses by the students, who had greater knowledge of their achievements and areas for improvement. Comments by the PST, such as ‘Oh look, she has her arms stretched by her ears’, and ‘Where should her feet be? Is she doing that?’ (Monica Field notes, P5, L2), were recorded to highlight the integration of success criteria, questioning, feedback and peer-assessment that was evident in Monica’s teaching. Monica’s critical awareness had increased, where a collaborative approach that enhanced teaching and learning was evident. Furthermore, Monica showed value in the dual responsibility in the provision of feedback, but explained how this was facilitated by her questioning. Explicit criteria and standards for achievement are essential to progress student’s learning.

Similarly Nicola took pride in the achievements of the students, acknowledging her role in student attainment levels.

Yeah like I see them [students] doing something and I’m like I taught them that and even with those who play basketball, I was still able to teach them something…when I knew the most agro [student displaying negative behaviour] child in the class is a basketball player, like I was like ok he is going to rip me to shreds if this is incorrect but then it wasn’t because……He was like yeah yeah yeah and you could kind of see him.. he was kind of going [makes contemplation facial expression]…like there were certain things that he was doing and like for shooting I could see that he was holding the ball differently so then I showed him how to hold the ball and he could
even tell himself as he was going yeah like it makes sense to hold it like that rather than just his own way’ (Nicola Interview, P5).

In phase seven, on return to the classroom, a student began to perform a skill taught in Nicola’s lesson. While Nicola acknowledged the danger of this in the outdoor area, she commented ‘well I least I know he learnt something’ (Field notes, P7, L3).

The PSTs began to acknowledge the enjoyment that students gained through active involvement in the assessment process. Alice and Monica described the increased levels of participation that peer-assessment facilitated, where a collaborative and blended approach to the delivery of feedback was employed. Alice provided feedback that was informed by overall observations of student performances on a whole class level, and yet students received individual feedback from their peers, that provided greater focus to levels of individual achievement. Aligning with the teacher educator’s field notes, Alice commented ‘like they didn’t want the lesson to end and they were so good at giving each other feedback. They kept asking for one more throw to get it right’ (Alice Interview, P7, L2).

Both Alice and Jessica expressed sadness and disappointment at not being able to continue teaching physical education to the same group of students when school placement ended, as they felt they could advance student achievement to a greater level, and knew the content they would deliver should additional teaching options have been available (Haydn-Davies, et al., 2010). Jessica explained that while she was apprehensive about teaching an isolated physical education lesson in phase seven, she realised that she had learned a lot from teacher modelling in phase four and six. In phase three, Jessica had generated the success criteria. However, in phase seven, a collaborative approach where students were involved was evident, but opportunities to implement the interpretations was hampered through no further exposure to teaching physical education and so limited observation by the teacher.
educator occurred. It could be assumed that one lesson does not provide significant
evidence of the advancements in Jessica’s critical engagement with the data
generated. However the field notes acknowledge the post lesson discussion where
Jessica reflects on the student responses and the need to acknowledge these in her
planning should subsequent lessons been possible. The teacher educator recorded
Jessica’s reflections quoting her in the field notes;

when I went in and did it [teach PE] I was like yeah yeah and I wanted to
teach that next lesson then because I could see where they were at and
wanted to see them pull it into a performance. They also had ideas and
wanted to share them. Like I could have included them into the next lesson
and they then would have seen that I took their ideas on board. They’d get
more involved then (Field notes, P7, L1.)

The PSTs began to see the value in enacting AfL to include the students, inform
them of their achievements and guide them towards the next stages of learning. For
Nicola, while initially believing she had nothing to advance in the skill performance
of one student experienced in basketball, she began to see that her role was important
for further development of his target skill, acknowledging the positive response also
received from the student. Despite the evidence of critical engagement with the
assessment data, greater opportunities presented themselves for PSTs to engage
students in reflection on enjoyment levels and the benefits of the practices used. It
could be deemed that insufficient time was available to engage the PSTs in
development of this across the phases, considering the difficulties in accessing them
in phase six.

In conclusion, the impact of engaging in action research cycles informed the
content for the upskill sessions, and sought to enhance the extent to which the PSTs
demonstrated assessment literacy in their teaching of primary physical education.
Although providing the PSTs with a foundational theoretical knowledge on
assessment was important, the employment of the cognitive apprenticeship
components of modelling, mentoring, and scaffolding, proved to be the most effective during the upskill phases and school placement phases. The PSTs advanced their overall assessment literacy throughout the study, demonstrating the impact of greater assessment comprehension on assessment application. This resulted in greater student involvement in the assessment process, and saw AfL as a natural and embedded part of their teaching. Further exposure to teaching physical education on school placement facilitated improvements in PST assessment interpretation and critical engagement. However, time is a factor that is required, and may not be sufficient on three-week school placement blocks to enact some AfL strategies. The findings highlight the need for further inclusion and acknowledgement of this in the physical education module.
Chapter 7 - The impact of mentoring and continuous opportunities to upskill on PSTs’ enactment of AfL

A number of approaches, in line with a cognitive apprenticeship framework, were implemented across all phases of this study. The role of the teacher educator is deemed central to ensuring that PSTs are provided with knowledge, skills and process that are transferable to the reality of the school setting (MacPhail, 2009; Widden et al., 1998).

7.1 Assessment comprehension and application

Themes included in this chapter include (1) the impact of teacher educator modelling on assessment comprehension and application, (2) the value of mentoring and scaffolding for PSTs, (3) the improved confidence levels in enacting AfL attributed by the PSTs to mentoring.

7.1.1 Impact of teacher educator modelling

The PSTs reported that teacher modelling, coupled with scaffolding and mentoring, were the most effective components within this framework (Collins et al., 1989). Despite the inclusion of teacher modelling throughout the delivery of the physical education module, using the ‘talk out loud’ approach, as recommended by Tharpe and Gallimore (1988), the PSTs were unable to enact the practices modelled within the module in their school placement experience. While MacPhail (2009) cautioned that teacher educators cannot take the responsibility for all PST experience provision, Ni Chróinín, Fletcher, and O’Sullivan (2015) stressed the role of the teacher educator in providing PSTs with meaningful experiences. The teacher educator used the recommended components within a cognitive apprenticeship
framework (Collins et al. 1989) across all phases of the study, in the PST school placement phases and the upskill session phases.

Highlighting the impact of teacher modelling, responses from the semi-structured and focus group interviews in phases five and seven, alluded to the value of seeing ‘real life’ enactment of AfL strategies, ‘seeing the target in action (Dennen, 2003). Furthermore, observing the teacher educator enact AfL strategies in context. (Hennessey, 1993) that facilitated greater PST understanding of how to embed AfL within their teaching of primary physical education. Furthermore, Monica explained that her improved assessment application and comprehension arose from teacher educator modelling a lesson using AfL as an embedded element with primary school students, and mentoring the PSTs enacting AfL as they taught additional lesson content;

Like I would have been ‘hey this is how you do the bunny hop’ whereas you would have questioned them and given them an example of one and then asked them ‘does anyone know what the first thing you have to do to do a bunny hop?’ ‘where should our hands be?’ and they actually knew it but I probably would have just done. Just questioning them on each step was better than doing it myself [telling them]. Like you did the questioning of their prior knowledge to it and knowledge of each step because they knew it and I saw that they knew it. I would have just demonstrated it but now I know to question them more (Monica, Interview, P5).

However, despite the acknowledgement of the value of the approaches and inclusion of assessment in the PST physical education module, and the use of the video resource (CEPEC, 2016) in phase two, Monica explained that neither replicated the situations encountered while on school placement, where insufficient knowledge of the students is a reality, and engagement levels, relational dynamics and prior knowledge are difficult to anticipate (Azarnoosh, 2013; Pryor & Lubisi, 2002; Frankland, 2007; Crousouard, 2012). She further explained how the teachers on the video resource (CEPEC, 2016) were working with students they have for a full
academic year, and so issues, such as classroom dynamics and knowledge of AfL
strategies developed over time, were unknown.

Although Dylan did not attend the upskill sessions in phase four, Nicola,
Alice and Jessica acknowledged how teacher modelling during school placement and
in the upskill session as being effective for their assessment application. The teacher
educator had replicated the reality of school placement for the PSTs by teaching a
group of primary school students unknown to her in phase four, and continuously
modelled as necessary during the PSTs’ physical education lessons in phases one,
three, five, and seven. Alice explained that ‘oh even modelling stuff on the stage so
they could all see’ (Alice Interview, P7), highlighted the need for the teacher to be
visible, and generated an awareness of further factors that impact on the desired
student responses to the AfL strategies enacted. Furthermore, four out of five PSTs
reflected on the knowledge gained from the teacher educator modelled lessons in
phase four that facilitated their inclusion in the lesson delivery and provided a
scaffolded experience during this time, adding further weight to the argument for
improvements to the physical education module.

While Bjork, Richardson, and Klavehn (1989) caution on the implications of
modelling practice within a single context, the teacher educator employed modelling
during the school placement components, where knowledge was constructed based
on the social interactions within each school context. The impact of the upskill
sessions in phase four was also deemed central to developing PST knowledge and
understanding of AfL in the teaching of physical education

I think the session where you had the kids in was massive and watching you
and how easy it was to embed the strategies and how interested the kids were
and that they did know the stuff and it was massive and that was my structure
that I planned to use and then having you there to ask questions… because
that’s live action (Alice Interview, P7).
Referring back to the literature on teacher modelling, it could be viewed that a lack of opportunities in the physical education module to observe the teacher educator working with students, where contextual factors could be explored and reflected upon, may have impacted on the PSTs’ readiness to enact AfL effectively. Teacher modelling with primary students, may allow PSTs to access to the thoughts and actions that impact upon and shape practice (Loughran, 2006), leaving them transparent for the PSTs. Further PST reflection could allow PSTs both see and hear ‘the pedagogical reasoning that underpins the teaching they are experiencing (p. 5).

7.1.2 Value of teacher educator mentoring and scaffolding

The benefits of having the teacher educator present was further acknowledged by the PSTs, where the varying levels of scaffolding enabled the PSTS to clarify a particular approach, and also to seek reassurance from the teacher educator. Dylan who did not attend that session, and was reliant on video clips from the modelled lesson, did not display the same level of assessment literacy in his assessment application as the other PSTs. However, all PSTs valued the mentoring that was provided as they taught physical education on school placement. Mentoring and scaffolding by the teacher educator through use of prompts such as ‘why don’t you try this’ (Monica, Interview, P5) and ‘question the children on how they make a wide shape’ (Nicola, P3) aimed to inspire the PSTs and provided guidance for them in their enactment of AfL within the ZPD alluded to by Vygotsky (1978).

Alice reflected;

I know for a fact that if I hadn’t had you for those 2 years....I got inspected in PE and she arrived and I was like ‘oh Suzy’s here too’. It was my first lesson in the second block of placement because I didn’t get to teach it in the first block of advanced school placement. Oh and it went class (brilliant) but imagine me teaching that without having Suzy with me for all placements (Focus group, P7).
Modelling was used in tandem with mentoring, to activate responses from the PSTs, where strategies modelled could be implemented throughout the remainder of the lesson. Applying modelling as a strategy in isolation would not have resulted in immediate action being taken by the PSTs, where similar to the views on feedback in the literature, action must be instantaneous (Crooks, 1988). Monica highlighted that her approach would have been considerably different in the absence of the teacher educator modelling and mentoring, where prompts by the teacher educator assisted Monica and spurred a response on possible approaches to enacting AfL. Prompts such as ‘well get the children to show you’ (Monica, P5) and ‘think about where the children are for peer assessing’ (Alice, P7), ‘ask them questions about how to make a wide shape, how to move their bodies’ (Nicola, P3) were all considered as central to advancing PST application of AfL.

Dylan valued the presence of the teacher educator as a scaffold or additional support in his lessons in phase three. He explained how the presence of an additional adult impacted on the enactment of AfL:

I was thinking that if I assess this person like just 1 to 1 there is someone else there to step in if the rest of them start getting hyper whereas I don’t know how you would really do that without having that (Focus group, P3).

It could be assumed from Dylan’s reflections, that the presence of the teacher educator provided space for Dylan to practice enacting AfL strategies; with the reassurance that additional support to monitor the students during his articulation and approximation of AfL was present should other contextual factors arise. The provision of scaffolding by the teacher educator enabled Dylan to focus on the learning objectives rather than the management of the lesson, further motivating his efforts to enact effective AfL strategies (Dennen, 2003). However, the teacher educator continued to challenge Dylan to assume greater responsibility for the
management of the lesson while enacting AfL, fading the level of scaffolding to represent a greater reality for Dylan in enacting AfL in his teaching.

Field notes on the same lesson reported how greater alignment between curriculum, pedagogy and assessment may have assisted Dylan in delivering feedback more effectively (MacPhail & Halbert, 2010). The students were all performing different skills which left providing feedback to the students more complex than Dylan anticipated. However, Dylan’s provision of feedback was effective, and enhanced the student’s learning at that time (Crooks, 1988). The post-lesson debrief allowed for mentoring in relation to reducing the complexity of the assessment tasks, but in particular, feedback on how to align the assessment activities more appropriately. Such interactive and situated feedback allowed Dylan to implement the recommendations in his next lesson, where he demonstrated greater alignment between the assessment tasks and the intended learning objectives (Collins et al., 1989).

7.1.3 Improved PST confidence in enacting AfL

Monica attributes the presence of the teacher educator to her improved levels of confidence following negative experiences in teaching physical education in phase one, further identifying with the views of Dennen (2003). She explained;

If I didn’t have you I would have had a mental breakdown. Like genuinely after my first PE lesson and how wrong it went, if I didn’t have you to pick me up and guide me for my next placement and be there I probably would have had the shakes (Focus Group, P7).

The teacher educator had to challenge Monica to avoid ‘playing it safe’ when teaching her initial lessons in phase five (Field Notes, P5, L1).

In lesson one I really played it safe in lesson one. …Yes …and I did because in my very first lesson from before I know just how bad it can go. Yeah it was something that I suppose you can’t really take for granted with your class in the classroom setting they might be really calm and a delight but in PE they can run wild (Monica Interview, P5)
While acknowledging the apprehension that remained with Monica following phase one, the teacher educator mentored and provided scaffolding during Monica’s teaching to promote greater confidence for her in her teaching through the enactment of AfL. By providing prompts that reminded Monica to align her observations with the success criteria generated with the students, the teacher educator faded the level of scaffolding required as Monica demonstrated greater assessment application. The impact of negative experiences for Monica resulted in her progress through the ZPD being shaped by those experiences where her needs required a different level of support to the other PSTs (Rochler & Conthen, 1997). Observations noted in the field notes describe

> Monica played it safe today by keeping the content simple. Challenging her to include some content that also challenges the children and develops their learning as a more appropriate pace was discussed in post lesson debrief. She explained that she is still reeling from phase one experiences and just wants everything to go well (Field notes, P5, L1)

The need to support, and yet challenge Monica, through mentoring during phase five, aimed to increase Monica’s self-efficacy and confidence in her own ability to enact AfL.

> Although modelling, mentoring and scaffolding proved effective, the varying exposure to teaching physical education, and variance in the classroom realities for each PST, impacted on the levels of development observed in the PSTs’ assessment application. Using the observations recorded in the teacher educator field notes, and reflecting on the impact of the upskill content in phase two, the teacher educator modified the content for phase four. The upskill session in phase four, where the teacher educator modelled as lesson with students, enhanced the PST assessment application, and mentoring and scaffolding further assisted their development. However, for Dylan, who did not attend phase four, and did not teach consecutive
lessons in phase seven, opportunities to mentor and scaffold his practice were not available. The benefits of such cognitive apprenticeship components in developing PST knowledge and understanding were observed in phase three, and to a limited extent in phase five, but with lower levels of assessment application observed, it can be deduced that a lack of application to all phases of the study, and insufficient opportunities to implement the mentor feedback, resulted in lower levels of assessment literacy for Dylan.

7.2 Assessment interpretation.

This section highlights the developments that arose as a result of employing cognitive apprenticeship with the PSTs in scaffolding them in enhancing their ability to interpret the assessment data during their teaching.

7.2.1 From teacher educator scaffolding to PST independence

Throughout the study, the teacher educator used mentoring, in response to the observations made, to encourage greater PST assessment interpretation, using prompt questions to activate PST reflection and thinking around student progression and planning. As alluded to earlier in this chapter, stand-alone content, with little acknowledgement of progressive planning, was evident. The post-lesson debrief facilitated discussions around where the PSTs felt the students’ learning was at by the end of the lesson and where they felt the learning should be developed in the next lesson. Phase two involved upskill sessions that developed PST knowledge on how to plan content that demonstrated progression, and the post-lesson debrief facilitated discussions that then allowed for amendments to be made to future plans in a collaborative manner (Yelland & Masters, 2007). All PSTs displayed improved assessment interpretation in phase three, where clarification could be sought from the teacher educator regarding the interpretations made.
During phase five, although Jessica and Alice did not teach any physical education lessons, discussions during the lesson regarding the achievement levels of the students, when external providers delivered the lesson, allowed the teacher educator to identify the level of PST assessment interpretation and give further guidance that enhanced overall assessment interpretation. Key to a social constructivist paradigm is the need for discussion and social interactions. Despite two PSTs not teaching physical education, the teacher educator was able to scaffold the PSTs assessment interpretations and guide them in any misconceptions displayed. Alexander (2004) emphasises the importance of dialogue in scaffolding that works towards achieving ‘common understanding through structured, cumulative questioning and discussion which guide and prompt, reduce choices, minimise risk and errors, and expedite “handover” of concepts and principle’ (p. 23).

Nicola, Dylan and Monica, used the post lesson debrief to discuss their next lesson. The teacher educator field notes recorded how ‘Monica is very aware of how to progress students’ learning, she is now more aware of how to refine the objectives’ (Field notes, P5, L2). When sufficient time was not available after one particular lesson, Nicola maintained contact with the teacher educator via email, sending on her planning to enable further mentoring to occur. It was evident that Nicola had advanced in her assessment interpretation. However, as Nicola gained more confidence in her own ability, this scaffolding reduced in phase five (Collins et al, 1989), as she progressed through the ZPD (Vygotsky, 1978). The observations allowed the teacher educator to include a specific emphasis on reinforcing the need to align, curriculum, pedagogy, and assessment in phase six with Nicola.
Nicola and Alice required greater scaffolding provided by the teacher educator in phase seven, but only in regard to their assessment interpretation. Seeking clarification and reassurance that they were demonstrating the skills correctly, Alice attributes her apprehension to a lack of exposure to teaching physical education in phase five and not having encountered the specific content since her physical education module in her first semester in year one of the programme, leaving it difficult to practice content encountered in the ITE programme in the authentic classroom setting (Darling-Hammond, 2006). Nicola used phrases like ‘is that right?’ and also sought reassurance that her lesson content was appropriate which she felt stemmed back to ‘never doing any of these sports before at school’ (Field notes, P7, L2), aligned with social constructivist perspective that knowledge is developed in the individual contexts and through experiences that are shaped by the interactions with those within the environment (Au, 2012; Schreiber & Elise Valle, 2013).

Despite this, the level of scaffolding provided by the teacher educator faded as each PST acquired greater knowledge about the ability levels within each class grouping taught on each individual school placement. This could suggest that time is required for PSTs to observe classroom teachers teaching physical education prior to engaging in formal assessed school placements. Furthermore, time to gain confidence when teaching new strands and with new students, where the learning environment is more complex and PSTs are scaffolded by the classroom teacher.

7.3 Critical engagement with assessment

Initially the PSTs demonstrated a low level of assessment literacy within the critical engagement with assessment component of the framework. An approach that saw the PSTs failing to use the learning objectives and success criteria
collaboratively, to guide their observations of what to assess, was evident in phase one. Hay and Penney (2013) discuss the disproportionate distribution of power that is unavoidable where assessment is concerned, however, the PSTs held all power in phases one and three in this study. The teacher educator used modelling to demonstrate how to co-generate success criteria with students in phase four following the observations of the PSTs’ assessment application in phase three where the PSTs generated the success criteria in a way that lacked student involvement. The PSTs felt this developed greater understanding for them of how to ensure power is dispersed between teachers and students. Furthermore phase six included discussions surrounding the selection of assessment tasks that aligned with the learning objectives to a greater extent. Monica reflected on the benefits of modelling with students over her peers

    Well having the children and it’s not just all you… like when we talked about it with a group of adults you could give a tip for this ..like this .is the way you could try this form of assessment but with the children you actually got to physically practices and you got to see it in action and use it (Monica, Interview, P5).

However, Monica explained that teacher modelling alone did not facilitate her construction of knowledge but coupled with mentoring and scaffolding she felt she advanced greater;

    I think a bit of both to be honest yeah like it’s those sort of things that you don’t notice because I would be going ahead with my lesson but I wouldn’t be noticing that I wasn’t asking them as many questions as I could have so than having you there to give me feedback or you could ask them well what’s the first step, just kind of a reminder. (Interview, phase 5)

7.3.1 Impact of the post lesson debrief

The post-lesson debrief enabled the teacher educator to engage in dialogue with each PST to encourage them to reflect on their lessons, and scaffold the PSTs in relation to the modifications required in their lesson planning for subsequent lessons.
Using questioning to ascertain their assessment interpretations and to facilitate greater critical engagement with assessment, the teacher educator challenged the PSTs to acknowledge their role in the assessment process and how that may have impacted on the consequences of the assessment practices. Encouraging greater reflection in phase one allowed the PSTs to examine what to assess and how a lack of explicit learning objectives can impact on AfL enactment (Alice, P1). During the post lesson debrief, the teacher educator discussed the achievement of learning objectives with Nicola and on her knowledge of whether they were achieved. Such conversations proved significant for PST awareness of their own role and also in facilitating further scaffolding or fading of scaffolding by the teacher educator. Consequently the teacher educator reduced the amount of scaffolding that Nicola required in phase seven, as Nicola advanced through the ZPD (Vygotsky, 1978). Similarly Alice felt scaffolding eased insecurities she had regarding assessment tasks, where she could double check’ (Interview, phase seven) that her tasks were appropriate following a school placement block where she had not taught physical education.

The teacher educator field notes record evidence that the PSTs became more aware of the dual role in assessment as they gained greater exposure to teaching, combined with teacher educator modelling and mentoring, that scaffolding assisted their practice. The field notes evidenced post lesson debrief comments such as ‘Alice has given the students responsibility for assessing through peer assessment, while she walks around observing and managing the lesson’ (Field notes, P7, L2). Previously no such evidence was observed in Alice’s teaching as is evidence in the field notes for phases one and three, showing a shift in the dispersal of power within her teaching. However, Alice had not been provided with opportunities to teach in
phase five and as a result was very apprehensive about the assessment tasks and overall critical engagement with the assessment data.

like I haven’t taught PE in ages…like nearly a year so I feel unsure about it and even the content knowledge I haven’t taught or done since the PE module. And it’s not that I didn’t want to teach, like I tried so many times but the external took them. (Interview, P5)

The teacher educator recorded discussions with the PSTs in her field notes that highlighted the need for scaffolding for the PSTs surrounding the planning of subsequent lessons;

Alice and I discussed how she would develop her content and progress student learning in the next lesson. While she is anxious, she is actually capable and knowledgeable about how to progress the lesson and student attainment but reassurance and scaffolding was required as she hasn’t taught PE in so long. Rather than telling Alice, I have questioned her and then helped her to improve the students peer assessment enactment also through better student positioning and task organisation (Field notes, P7)

Overall, the use of teacher educator modelling, mentoring and scaffolding enhanced the enactment of AfL in their teaching of primary physical education, with higher levels of assessment literacy being demonstrated when such cognitive apprenticeship occurred in college based and school-based contexts.
Chapter 8 - The impact of the realities of school placement on PSTs’ enactment of AfL

Each PST completed the school placement components of their programme in three different schools over a two-year period. Each school being unique, with students from a variety of socio-economic backgrounds, and schools with varying facilities, brought new experiences for the PSTs in enacting AfL in their teaching of primary physical education. Referring to the social constructivism framework, where the environment and social interactions in the environment, affect how PSTs construct knowledge, the impact of the realities of school placement on PST enactment of AfL will now be discussed.

8.1 Assessment comprehension.

Themes that were identified and will be discussed in relation to PSTs’ assessment comprehension include (1) the impact of consistent exposure to teaching primary physical education, and (2) the impact of outsourcing physical education.

The PSTs explained that as phase one was their first school placement, the complexities of a new learning environment and general pedagogical knowledge resulted in them placing a greater emphasis on delivering the content (what) without considering the pedagogical skills (how) they were introduced to during their programme physical education module. Alice commented;

I think to be honest overall just getting the hang of placement and learning objectives and curriculum objectives as just even as a first year getting into placement. I don’t think it had anything to do with the module because all of the lecturers have mentioned learning objectives to us but actually getting the hang of them is something very different. (Interview Alice, P1).

The disconnect between theory and practice reinforces previous observations (Collie, 2006). Gaps in Nicola’s pedagogical content knowledge in relation to how to deliver content were evident through the teacher educator’s observations recorded in the
field notes, and in the reflections Nicola engaged in on her teaching throughout the interview. Nicola’s assessment comprehension was limited given her focus predominantly on teaching the content;

The focus was on just getting through the content, like I didn’t….I did have assessment methods that I was going to do in my head like before I did it…I’m gonna get them to break it down and like five of them do it and show and have the others go right, did anyone not do it, or do a step there as a peer assessment and I had all these plans like and then I was like right now we’re done in ten minutes. I just blanked out when I realised I had gone through the content too fast, I forgot all the other plans I had (Interview Nicola, P1).

Similarly, Alice explained that ‘getting used to [school] placement’ distracts from pedagogy when an exploration of suitable and sufficient content was a challenge.

She further explained;

I tended to…I found myself..like not forgetting about assessment but like I was so worried about other stuff that it was kind of like… organise them…structure and then like does everyone know what they’re doing and then like ok assessment (Interview Alice, P1).

Despite the complexities Alice associated with adjusting to teaching in a new environment, i.e. the physical education facility, her assessment comprehension still is at a level that considers assessment as an added element.

**8.1.1 Impact of consistent exposure to teaching primary physical education**

As Alice gained more exposure to teaching physical education, she began to explore ways of introducing and informing the children of the learning objectives prior to leaving the classroom (Field notes, P1). Previously it has been noted that as PSTs’ confidence increases, the concern over content knowledge subsides and PSTs begin to explore what they consider as more complex elements of teaching (Karp & Woods, 2008). Four of the PSTs showed greater levels of assessment comprehension in phases five and seven, despite some not teaching physical education in either phase five or seven. The PSTs viewed AfL as part of effective practice rather than an
additional requirement. Jessica and Alice did not teach physical education in phase five due to contextual factors such as external providers and multi-use of the physical education facilities.

8.1.2 Outsourcing of primary physical education and PST assessment comprehension

Providing PSTs with optimum exposure to teaching physical education is essential for the development of knowledge within a social constructivist and cognitive framework, however despite the best efforts of the PSTs, this could not always be facilitated. Despite the recommendations regarding the employment of external providers for teaching primary physical education (DES, 1999; IPPEA, 2010), and the collaborative role of the external provider with the classroom teacher in the implementation of the physical education programme as advised in the curriculum, the PSTs’ exposure to teaching physical education on school placement was impacted upon greatly. Where external providers taught physical education, the PSTs were not actively involved leaving them to ‘simply be waiting and watching on the side-lines’ (Dennen, 2003), thus disabling opportunities for them to implement instructional plans.

Consequently, under guidance from, and mentoring by teacher educator, the PSTs used this as an opportunity to observe any evidence of AfL enactment in the lesson and plan a subsequent lesson based on their observations. This allowed the teacher educator gauge the developments in their assessment interpretations despite the PSTs not actively teaching or being involved in the lesson. In the post lesson debrief, Alice highlighted that although elements of success criteria were discussed with the students, limited if any feedback was provided that linked to the discussed criteria (Clarke, 2005; Crooks 1988). She commented how ‘there would need to be like 10 learning objectives as they did so much, I would so teach that lesson
differently….like I’d do less’ (Interview, P5). Such significant observations and reflections highlighted Alice’s assessment comprehension of the need to have clear learning objectives that are achievable and attainable for students (Stiggins & Chappuis, 2005). She reflected;

Like if I asked them when we get back to class what they learned, I’m not sure they could tell me. I know he works with them every year but I think it all needs to be slowed down as they just weren’t ready and they didn’t get enough feedback or even use peer assessment (Alice Interview, P5).

Alice was ‘frustrated by the lack of AfL enactment and really wants to teach PE more than ever’, noting that she would place a greater emphasis on the inclusion of the students through a collaborative approach to generating feedback and in employment peer assessment as an AfL strategy (Field notes, P5). Having acknowledged that having no experience of assessment within her own school experiences, Alice highlighted that she ‘couldn’t imagine teaching without using AfL’ (Alice, Interview, P7) and further alluded to its’ inclusion in her teaching of other curricular areas.

Similarly Jessica demonstrated improved assessment comprehension when the external provider was teaching. She explained that the learning objectives were not shared with the children and limited provision of success criteria was observed when one external provider was teaching. However, the second external provider observed, who was a qualified primary teacher, enacted AfL across her teaching of fundamental movement skills, which facilitated Jessica’s assessment comprehension where she observed AfL embedded in the teaching of physical education over the alternative approach used by the first external provider. Jessica’s observations enabled her to see that the external provider used observation that informed their feedback to the students and had explicit links to the success criteria (Clarke, 2005), facilitating greater comprehension for Jessica of the need for alignment between
their learning objectives and the tasks included in the lesson content (Stiggins, 1999). This highlights that the impact of the interactions within a social constructivist framework, that facilitated greater understanding and learning for Jessica in the context of the primary classroom (Vygotsky, 1978). Additionally, linking back to the cognitive apprenticeship framework, observing expert performance, one qualified teacher and an external provider with no teaching qualification, provided opportunities for Jessica to compare the performance of teacher modelled practices (Collins et al., 1989) further enhancing Jessica’s assessment comprehension regarding the need to make the learning transparent for the students. Brown, Collins, and Duguid (1989) outline how de-contextualised knowledge does not adequately prepare PSTs to effectively employ authentic tasks such as AfL. This opportunity to observe AfL and the lack of AfL in external providers’ practice, resulted in knowledge being constructed in a real-life context of the primary school, where AfL was embedded in authentic instruction (Andrews, 2002). Monica explained how her ‘assessment mind-set’ had altered across the phases of the study, and now she ‘doesn’t really think about it as much, it just comes more natural, way more natural than before’ (Monica Interview, P5). The changes in the PSTs’ assessment comprehension were important for the PSTs’ assessment application within their overall assessment literacy.

8.2 Assessment application.

A number of themes were generated based on the realities of school placement and the impact on PSTs’ experiences in enacting AfL. The key themes produced include (1) school placement as a new experience, (2) the relational dynamics and the impact on enacting AfL, and more specifically (3) relational dynamics and the enactment peer assessment.
8.2.1 School placement as a new experience

Phase one and phase three provided the PSTs with varying levels of exposure to teaching physical education during school placement. Alice emphasised the benefit of a full complement of teaching when discussing her overall use of the learning objectives;

I got better at it as the weeks went on, as the PE sessions went on...at telling them because I was kind of discovering what I wanted them to do so like by the final week I was like ...Ok so this week we are really going to focus in on the narrow and wide shapes but before that I was kind of a bit lost I think. (Alice, Interview P1).

Alice began to show significant improvements in her application of AfL in her teaching when she introduced the WALT (We Are Learning To) and WILF (What I’m Looking For) charts, modelled in the teacher educator lesson in phase four, to increase children’s focus on the learning objectives and success criteria (Clarke, 2009). Jessica demonstrated consistency in her use of success criteria and, in addition to this, began to appreciate the value of informing the children in advance of the learning objective and success criteria.

The focus on delivering and remembering the lesson plan content was considered a distraction by the PSTs who described it as ‘trying to get through your lesson content’ (Nicola, Interview 1) and ‘getting the handle of placement’ (Alice, Interview 1). Furthermore, all pre-school placement observations (n=6) took place on the same day of the week, where PSTs may not have been provided with opportunities to see physical education taught by the class teacher. Alice alluded to the benefits of observing the class teacher teaching physical education in phase three, and how this generated greater awareness of routines that were in place for the students and the behavioural changes, if any, in the new learning environment.
8.2.2 Relational dynamics and AfL enactment

Monica felt that issues regarding knowledge of the students and relational dynamics within the group of students impacted on her assessment application of AfL.

They didn’t get on either, so then I didn’t know how outside of school would affect learning inside school, and the as well the one thing you’re not taught in college is if you’re in a disadvantaged area…like in area like [place name], a big thing in that area was like gangs. A lot of them in the classroom that I had seen, like teaching gaeilge [Irish language] they would be like “I’m not sitting next to her because her dad did this to my Dad” so then in PE because it isn’t a seated arrangement they could go “right I’m going to stand beside this person because I can push that person” and it’s just seen as a game. That’s one thing I struggled with, like not knowing them well enough. Like how do I keep them….I said right I’ll separate them into A and B, I said like that’s the fairest way…ABABAB ad they kicked up such a fuss about that..I was like My GOD!! (Monica, Interview, P1).

The use of a social constructivist framework enabled greater understanding for the teacher educator of the impact of specific contexts in individual experiences on the construction of knowledge for Monica, where knowledge cannot be separated from the social environment in which it occurs (Adams, 2007). This resulted in greater mentoring for Monica by the teacher educator initially in phase one and three.

Similarly, Alice commented on the changes she observed in student behaviour when in a different space for physical education; ‘like they all just run around screaming, like they’re nothing like they are in the classroom’ (Field notes, P1, L1). Through ongoing mentoring and scaffolding the teacher educator encouraged Alice to provide a focus for the students prior to leaving the classroom. Through the sharing of the learning objectives and the generation of success criteria, Alice alluded to the enhancements for student engagement and for her overall experience of teaching primary physical education in her interview.
8.2.3  Relational dynamics and peer assessment

In phase one Jessica and Monica found that the classroom relational dynamics between the students included too much conflict and negativity to attempt to enact peer assessment. Jessica commented how she had reservations about using such AfL strategies and feared that the children would not respond appropriately;

Yeah I don’t know…well not with these boys…they were a bit…rowdy at times so I don’t know how they would….they’d probably say mean things to their friends you know in peer assessment….I would want to know them a bit better to make sure that I would pair them up with the right person I suppose’ (Jessica, Interview P1).

Although Hay and Penney (2013) emphasise that students require support to take on such new responsibilities for their learning, the dynamics between the pupils in Jessica’s instance impacted her reluctance to engage in peer assessment. The teacher educator is also conscious that a three week block may not provide sufficient time for PSTs to effectively introduce this strategy when they, nor the students, have any previous experience with peer assessment (Bailey, 2001; Black & Wiliam, 1998; Morgan & Bourke, 2007).

Nicola encountered similar challenges in phases five and seven where student responses were feared to have negative implications for student motivation and involvement in the lesson, issues previously identified as problematic for PSTs in the literature (Darling-Hammond, 2006). Overall Alice and Monica demonstrated the greatest confidence in their application of peer assessment by phase seven. However, it was difficult to ascertain the effectiveness of Jessica’s assessment application in peer assessment due to her teaching just one lesson in this phase. Furthermore, Nicola’s reluctance to enact peer assessment provides no indication of her level of assessment literacy in that specific AfL strategy.
While improved assessment application of peer assessment was evident for some PSTs, there were no behavioural or relational conflict among the students in the groups taught by Alice and Monica, factors that were identified as influential on the effective enactment of peer assessment in the literature (Pryor & Lubisi, 2002; Frankland, 2007; Croussouord, 2012). The impact of peer assessment on improved student engagement and motivation was alluded to by Monica and Alice, which will be discussed later in this chapter. Although opportunities to practice enacting peer assessment in the physical education module were alluded to already, the need to engage the PSTs in reflection and discussion on the possible challenges in enacting AfL could have been explored to greater depth in the module as reflected upon by the teacher educator. Interestingly, this could indicate that social dynamics have a greater impact on the enactment of peer assessment, than the duration available to practice its’ implementation while on school placement, as alluded to in the literature (Bailey, 2001; Black & Wiliam, 1998; Morgan & Bourke, 2007), time and knowledge of how to enact peer assessment could have contributed to the lack of peer assessment evident in the PSTs’ teaching. Linking to the social constructivism framework, where knowledge cannot be separated from the social environment and the people in it (Adams, 2007; Kirk and MacDonald, 1998), it could be deduced that PSTs cannot apply key principles encountered in their ITE programme due to insufficient knowledge of the students rather than insufficient knowledge of how to apply AfL in teaching physical education.

8.3 Assessment interpretation.

Interestingly all of the PSTs required time to adjust to the new class grouping and had greater scaffolding and mentoring earlier in each placement. From the perspective of an active participant observer across each school placement, the
teacher educator reflected that it appeared to relate more to self-belief and confidence levels when teaching new students and physical education strands that determined their ability to demonstrate effective assessment interpretation as a component on her assessment literacy (Carney & Armstrong, 1996; Faulkner et al. 2004; Caldecott et al., 2006; Garrett & Wrench 2007; Harris et al. 2012; Elliot et al. 2013). The outsourcing of physical education, resulted in less opportunities for the teacher educator to observe the PSTs’ assessment interpretation over a longer period, and when actively teaching physical education.

8.3.1 PST exposure to teaching physical education

For Alice, who demonstrated high levels of assessment interpretation, phase seven saw a lack of exposure to teaching physical education, result in higher levels of scaffolding being required. Alice explained that the time from when the content was encountered in the PME physical education module and not getting exposure to teaching physical education in phase five impacted on her confidence in teaching her lessons (Haydn-Davies, Kaitell, et al. 2010);

it was not even that I didn’t know it but for confidence in teaching strands that I’m not as familiar with as it has been so long ago since we did them and I haven’t experienced some of them or gotten to even teach PE in like a year (Alice, interview, P7).

Randall et al. (2016) stress that practical experiences are essential for teacher understanding and confidence, and the lack of sufficient practical experience impacted on Alice, who had no exhibited a lack of confidence in earlier phases.

Observing Nicola, the teacher educator saw significant improvements that may not have been achieved if consistent exposure to teaching physical education had not been possible. Nicola became less reliant on the teacher educator scaffolding her teaching as she gained more experience with each class, and demonstrated improved assessment interpretation that led to more effective planning where new
skills were introduced and previous skills consolidated and merged. The teacher educator commented ‘Nicola has built on previous content and is using assessment tasks that continue to provide opportunities for students to practice while also practicing new content (Field notes, P5, L3). While some of the assessment tasks could have been considered too complex, the ambition to challenge the students to understand how two skills are used in tandem was admirable, if a little premature. Although Nicola had longed to engage the students in game-like activities, the classroom teacher advised against this due to the relational dynamics and difficulties surrounding this, further highlighting the need for time to get to know relational dynamics (Pryor & Lubisi, 2002; Frankland, 2007; Croussouord, 2012) and protected Nicola from potential challenges that may have impacted on her confidence.

For Dylan, while the cognitive apprenticeship components of scaffolding and mentoring were used, the impact of not attending the phase upskill session, left that the teacher educator was unable to fade out scaffolding for the enactment of AfL. Also insufficient opportunities were available to engage in these cognitive apprenticeship practices in phase seven with Dylan, similar to Jessica, teaching just one lesson in a four week school placement. Dylan displayed lower assessment interpretation levels due to the challenges presented with the level of student knowledge in phase seven, however demonstrated higher levels in other strands taught. Furthermore, the multi-use of facilities for a national celebration, conferring events and a half day for school holiday, Dylan had little exposure to teaching physical education. Dylan demonstrated greater assessment interpretation in athletics and games but the level of assessment literacy in teaching dance was inconclusive based on the factors cited. He struggled to detach himself from his role as a coach.
outside of teaching primary physical education at times. The consequences were inconsistent enactment of AfL in his teaching of primary physical education.

8.4 Critical engagement with assessment.

As discussed earlier in this chapter, the outsourcing of primary physical education to external providers, classroom relational dynamics and reduced exposure to teaching physical education during school placement all had a significant impact on PSTs’ experiences in enacting AfL.

8.4.1 Outsourcing of physical education

Although evidence of PST assessment interpretation could be discussed during the delivery of physical education by external examiners, there were less opportunities to observe PSTs’ critical engagement when insufficient exposure to teaching physical education was present. However, the presence of external providers did highlight the PSTs’ awareness of the need for greater student autonomy and involvement in the assessment process. Describing it as ‘feeling redundant’ (Interview, phase 5), Alice showed evidence of her ability to critically engage when she alluded to the need to ‘refine the skills being developed by the external provider’. Further explaining how she would have ‘loved to see how their attitude would have changed because they do basketball for the last 4 years and to see what they would say’ (Alice, interview, phase 7), further highlights Alice’s awareness of possible challenges for her as a PST implementing AfL, but also on her awareness of the role of the students.

Jessica, who only got to teach one lesson in phase seven and none in phase five, was not provided with opportunities to teach subsequent lessons. She reflected on the sadness she felt at not being able to teach another physical education lesson, and see the students progression in the strand of dance. While her assessment
interpretations highlighted an awareness of how to use the assessment data to plan subsequent lesson content appropriate for the students, it is difficult to ascertain the level of critical engagement present for Jessica due to only one lesson being taught across two phases. However, the observation of assessment interpretation at a higher level of assessment literacy that is closely linked to the critical engagement with assessment could indicate an improved level of critical engagement.
Chapter 9 - Conclusions and Implications

To conclude this doctoral dissertation, this chapter provides an overview of the findings in line with the research aims and research questions. The overall aim of the study was to explore to what extent PSTs are enacting AfL in their teaching of primary physical education during school placement and was guided by three research questions. Based on this, a summary of findings that guide the conclusions and recommendations made, that include areas for further research consideration, are provided in this chapter to assist teacher educators in developing PST assessment literacy improve in enacting AfL in their teaching of primary physical education.

9.1 Summary of findings

The findings detail the developments in PST assessment literacy across the four components proposed by Hay and Penney (2013). Evident from the findings is (1) the need for competency to be displayed across all four components in order for PSTs to be considered as assessment literate; (2) the use of cognitive apprenticeship components within a social constructivist framework, acted as a platform upon which PST could observe AfL in action, and furthermore be supported in their enactment within various contexts; (3) the impact of cognitive apprenticeship was at times reduced due to insufficient exposure to teaching physical education by PSTs during school placement; (4) teacher educator modelling was deemed the most beneficial in enhancing PST knowledge and understanding of how to embed AfL in their teaching, where greater comprehension of how learning objectives and success criteria lead to greater focus for observation, questioning, and feedback. Furthermore, (5) the reassurance felt when mentoring and scaffolding was provided, resulted in the PSTs increasing their level of assessment literacy across all four inter-related component; (6) an awareness of the need for greater student involvement in
the assessment process was evident, facilitated through teacher educator modelling with primary school students and served as the most effective practice used in this study; (7) greater PST assessment comprehension, lead to more effective assessment application, where planning was more progressive and aligned with the planned objectives; and (8) relational dynamics and a lack of experience of peer and self-assessment by students were considered as the greatest challenge in enacting peer and self-assessment (Pryor & Lubisi, 2002; Frankland, 2007; Croussouord, 2012).

9.2 Conclusions

The findings of this study report limited transference of AfL encountered in the primary physical education module by PSTs in the teaching of physical education on their first school placement experience in phase one. The extent of PSTs’ assessment literacy in their enactment of AfL may have been higher should opportunities to practice AfL with primary school students been available during the physical education module and through teacher educator teacher educator mentoring and scaffolded experiences.

The challenges encountered by the PSTs in the enactment of AfL could indicate that teacher education programmes need to include greater opportunities to reflect on the challenges rather than solely focussing on the benefits of employing such AfL strategies (Bailey, 2001; Cheng & Warren, 1997; Boud & Falchikov, 2007). In addition, the potential of cognitive apprenticeship, and in particular modelling, mentoring, and scaffolding with primary school students, could be considered as an approach that can lead to enhancements in PSTs’ understanding of how to enact AfL in the teaching of primary physical education. Furthermore it could be concluded that PSTs require time to adjust to teaching in a range of learning environments when on school placement. The complexities associated with student
behaviour and relational dynamics in a physical education setting, impacted significantly on PST assessment application when enacting AfL, where PSTs were distracted from their teaching by management issues, and selected not to enact some AfL strategies, such as peer assessment due to the potential negative feedback between students.

In addition, PSTs are often asked to engage students in practices such as peer assessment that the students have never encountered before, and insufficient knowledge of the students leaves PSTs introducing AfL strategies that experienced teachers have not implemented. It could be suggested that when faced with contextual challenges, that such practices cannot be developed appropriately in a three-week school placement. This could imply that the time required to practice enacting peer assessment for both teachers and students, as recommended in the literature, was a factor that resulted in its’ omission from PST practice (Bailey, 2001; Cheng & Warren, 1997; Boud & Falchikov, 2007). The need to develop relationships with the children, and identify context specific social dynamics among the students, was considered as key for PSTs to effectively enact peer assessment during school placement (Pryor & Lubisi, 2002; Frankland, 2007; Croussouord, 2012).

Additionally, insufficient inclusion of self-assessment during the teacher educator modelled lesson in phase four could potentially be a factor as to why it was not enacted in phase five. While this was included in the upskill sessions in phase six, the teacher educator acknowledges that insufficient emphasis, through the use of cognitive apprenticeship, may have been placed on self-assessment across all of the upskill sessions. This highlights that further opportunities may be required for PSTs to see all AfL strategies enacted or possibly could indicate that the PSTs required
time to explore self-assessment that was not facilitated by the duration of the school placement blocks or the physical education module.

Finally, the reconfiguration of the PME programme, where no specialist module is provided, and programmes are generally delivered across one semester, could be considered as too short to advance PST knowledge across curriculum, pedagogy and assessment where time for approximating the practice of AfL through meaningful experiences has implications for the overall module design.

To summarise the conclusions drawn from this research;

- Assessment literacy across all four components proposed by Hay and Penney (2013) is important for enhancements to teaching and learning, where the omission of one component can have significant consequences for the impact of AfL on teaching and learning.

- A lack of sufficient self-assessment content in the primary physical education module may have resulted in its’ absence in PST teaching.

- Teacher educator modelling, that includes opportunities for PSTs to observe teacher educators enacting AfL with primary school students, facilitates greater PST understanding of how to effectively the enact of AfL within practice during school placement.

- The duration of the school placement component may not facilitate sufficient time for PST to prepare students for engaging in peer-assessment and may not be sufficient for PST to practice peer assessment as a result.

- PST exposure to teaching primary physical education while on school placement can have implications for PST assessment application.
where inadequate time to practice enacting AfL in their teaching is available.

- An integrated approach to assessment where AfL was practiced with peers was ineffective in adequately preparing PSTs for the realities encountered with students on school placement.

9.3 Implications and Recommendations.

- The exploration of opportunities for PSTs to observe expert practices in contexts that most resemble those they experience on school placement during ITE programmes is important. PSTs remain ill-prepared in their understanding of how to use AfL in ways that promote optimum learner responses that inform teaching and learning. While it would be naïve to assume that all content could be modelled with primary school students, the inclusion of this alternative form of modelling to that solely enacted with PSTs and their peers is recommended.

- A gap analysis that identifies elements that may impact on PST knowledge and understanding of specific practices while on school placement would allow teacher educators to focus their energies on providing PSTs with practical and realistic opportunities in striving to be effective teachers. Informed by previous school placement experiences, PSTs should be encouraged to contribute to such discussions on the authenticity of learning experiences embedded in the teacher education programme. Longitudinal work that follows PST on becoming beginning teachers would allow for a more robust exploration of the extent to which the enactment of practices encouraged during the teacher education programme are pursued and
feasible. This in turn would allow teacher education programmes to arrange
learning experiences authentic to the day-to-day reality of teaching in school.

- In the absence of specific assessment courses, greater communication and
collaboration should occur between teacher educators to identify which
modules will place particular and explicit emphasis on assessment while still
integrating the other assessment forms into the delivery of curriculum and
methods courses. This would entail all contributors to teacher education
programmes meeting to map where and how assessment is being delivered
on, and across, the complement of teacher education programmes and to
determine how such provision can be enhanced. Related to this is the need to
consider best practice in the delivery of assessment as an integrated
component of instructional alignment. This then raises the consideration of
assessment being explored as a separate construct in an assessment-focused
module or being infused across all modules.

- Relationships with teacher education providers and primary schools while
acknowledged as positive, must strive to facilitate adequate exposure to
teaching physical education and subjects across the entire primary school
curriculum is possible during school placement. This can be enhanced by
encouraging the teacher educator and teacher to invest collectively in
researching specific aspects of the school placement process.

- This study calls for the inclusion of specific experiences of observing experts
demonstrating pedagogical approaches to enacting AfL with primary school
students that better align with and resemble the experiences encountered on
school placement. In addition, opportunities for PSTs to practice enacting
AfL in primary physical education, prior to commencing the school
placement of their programmes is important, allowing teacher educators and peers to provide mentoring and scaffolding as they practice teaching in authentic contexts. The components of exploration and approximating warrant further exploration during school placement should opportunities be provided to employ mentoring, modelling, scaffolding, articulation and reflection during the physical education module.

- Recommendations for further research could explore the extent of PST assessment literacy in the enactment of AfL by those PSTs who engage in additional specialism modules in their teacher education programmes delivered by other teacher education providers. Research that explores whether undergraduate PSTs exhibit the same challenges following a longer primary physical education module would inform teacher educators on the impact of additional time for the delivery of physical education for PSTs. Furthermore, research relating to the extent that primary PSTs display assessment literacy across other curricular areas would provide insights for teacher educators on whether PSTs display assessment literacy in varying levels in the teaching of other areas.

9.4 **Concluding comments**

This study contributes to the body of research on PSTs’ assessment literacy and AfL in primary physical education. It focussed on the extent that PSTs’ are enacting AfL in the teaching of primary physical education during school placement, where no evidence of research on PST assessment literacy in teaching primary physical education or PSTs’ enactment of AfL in the teaching of primary physical education was evident. The impact of modelling, mentoring, and scaffolding in the construction of knowledge and understanding of enacting AfL for PSTs and the improvements to
their level of PSTs’ assessment literacy in this study could indicate highlights the potential of cognitive apprenticeship for teacher education programmes. Employing cognitive apprenticeship components could potentially lead to greater opportunities for PSTs to practice enacting AfL in authentic settings prior to school placement. Further highlighted in this study, is the benefits for PSTs’ knowledge and understanding of observing students being placed at the centre of teaching and learning. Engaging PSTs in reflection on the complexities associated with some AfL strategies is integral to the development of knowledge on the value of AfL, how to apply AfL strategies and interpret and critically engage with the data retrieved through those assessment strategies enacted.
References


196


## Appendix A Triangulation of data sample

### Phase 1 field note/Reflective journal summary/interview

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Nicola</th>
<th>Alice</th>
<th>Dylan</th>
<th>Monica</th>
<th>Jessica</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Use of learning Objectives:</strong></td>
<td><strong>Use of learning Objectives:</strong></td>
<td><strong>Use of learning Objectives:</strong></td>
<td><strong>Use of learning Objectives:</strong></td>
<td><strong>Use of learning Objectives:</strong></td>
</tr>
<tr>
<td></td>
<td>- Limited ‘we’re gonna do the javelin throw’</td>
<td>- Engaged children in pre-lesson discussion around lesson content and objectives (FN)</td>
<td>- No outline of objectives but did talk about passing</td>
<td>- Refers to learning chest pass</td>
<td>- Not used only in broadest sense (FN)</td>
</tr>
<tr>
<td></td>
<td>- Some use of success criteria for javelin throw but omissions within how to articulate these effectively (FN)</td>
<td>- I found it difficult to use assessment in this task as I did not include a specific ‘move’ the children had to perform correctly (RJ/L1 &amp; interview)</td>
<td>- Use of success criteria (some omissions). Needed to focus children on what elements he wanted them working on. (FN)</td>
<td>- Provides success criteria</td>
<td>- Tried to do too much</td>
</tr>
<tr>
<td></td>
<td>- ‘too much too soon’ (RJ)</td>
<td>- ‘I just flew through the content, like I had planned to use assessment (Interview)</td>
<td>- My objective was to get them to use the pass in the game but like they were having fun and I was noticing.... (Interview)</td>
<td>- I introduced the objective and then told them the exact pass we would be doing (RJ)</td>
<td>- Use of success criteria for skills taught (FN)</td>
</tr>
<tr>
<td></td>
<td>- ‘I just flew through the content, like I had planned to use assessment (Interview)</td>
<td></td>
<td>- Some but none related to the learning objectives (FN)</td>
<td></td>
<td>- Did not revisit at end of lesson</td>
</tr>
<tr>
<td></td>
<td><strong>Questioning:</strong></td>
<td><strong>Questioning:</strong></td>
<td><strong>Questioning:</strong></td>
<td><strong>Questioning:</strong></td>
<td><strong>Questioning:</strong></td>
</tr>
<tr>
<td></td>
<td>- Purpose of warm-up</td>
<td>- Used questioning effectively to check children’s understanding of tasks (FN)</td>
<td>- Could have questioned for understanding on numerous occasions</td>
<td>- Could have questioned on success criteria</td>
<td>- Could have questioned on why we use particular movements/positioning within running and javelin throw.</td>
</tr>
<tr>
<td></td>
<td>- Question within</td>
<td>- Observed children and commented on</td>
<td>- Missed opportunity</td>
<td>- Q’d on bases in</td>
<td>- Lack of awareness of how much she used questioning</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>Observation:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer assessment:</td>
<td>Feedback:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>----------------</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prompted this and modelled it</td>
<td>Circulated and supported children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No use overall despite multiple opportunities during group practice phases of stride approach and standing javelin</td>
<td>Lacked focus due to lack of dance specific objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'I would in future use peer evaluation during the mirroring activity so they could help one another develop new moves'</td>
<td>'Used throughout and as a means to providing feedback to children during practice stages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities available but not used</td>
<td>Observed problems in application of skills to a game but did not use such assessments to have a positive impact on teaching and learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PCK:**
- Needed to plan for more movement relating to the properties of dance |
- Final performance was objective as opposed to assess understanding of tasks and success criteria (FN) |
- Could have questioned about when to use particular passes, improve game |
- Used feedback after observations |
- Need to allow children to implement changes before progressing to next activity(different) |

**Game**
- Observation: 1 to 1 passing |
- Observation: 1 to 1 passing with teacher |
- Peer assessment: Opportunity when partner completing pass with teacher |
- Opportunity in group passing activity |
- None used |
- Opportunity after 1 to 1 passing |
- Given during 1 to 1 pass with teacher |
- W grip commented on but wasn’t a specific learning objective |
- Planned content unsuitable for space with game |
- Overall lesson was |

**Feedback:**
- Based on success criteria |
- Allowed children implement feedback |
- Unsure at times as to where to go next |
- No evidence |
- Could have used in standing start, javelin throw |
- No evidence |
- Could have used in javelin throw and incorporating some use of ict as a means to engaging children in self
<table>
<thead>
<tr>
<th>PCK:</th>
<th>Planned content more suited to 4 lessons</th>
<th>Delivery of content to fast to see progression</th>
<th>Raced through lesson plan and over reliance on actual paper plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching PE:</td>
<td>Lacked confidence</td>
<td>Knew teaching points but didn’t use effectively</td>
<td>Look of apprehension and nervous body language and glances.</td>
</tr>
<tr>
<td>'I’m done, like what do I do now; there’s still 30 minutes' (chat during lesson)</td>
<td>Modelled and to movements that could be developed through preparation of the dance</td>
<td>Needed to plan for pair work as content was progressed too quickly without sufficient foundations/fundamentals of dance being taught</td>
<td>Knowledge of plan — some elements missed due to lack of knowledge of lesson plan</td>
</tr>
<tr>
<td>'Reluctant to interrupt game to instruct children on use of passing within game.</td>
<td>'I felt the children lost their focus on practicing the skills they’d learned in the lesson in bench ball’ RJ/L1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'There wasn’t a lot of control on my part and I felt I let the games run too long without explaining they should be practicing the new skills’ RJ/L1</td>
<td>'It impacted my assessment too because I couldn’t assess the children practicing the skills’ RJ/L1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer-assessment:</td>
<td>No evidence</td>
<td>Lost opportunities within practice phases of passing</td>
<td></td>
</tr>
<tr>
<td>Self-assessment:</td>
<td>No evidence</td>
<td>Opportunities lost within game and</td>
<td></td>
</tr>
<tr>
<td>General PK:</td>
<td>Classroom management in relation to resources</td>
<td>Behaviour management issues</td>
<td>Organisation of children needs to be structured</td>
</tr>
<tr>
<td>Teaching PE</td>
<td>Confident</td>
<td>Looked for support from me for behaviour issues</td>
<td>Teacher halted lesson</td>
</tr>
<tr>
<td>Peer-assessment:</td>
<td>No evidence</td>
<td>Lost opportunities within practice phases of passing</td>
<td></td>
</tr>
<tr>
<td>Self-assessment:</td>
<td>No evidence</td>
<td>Opportunities lost within game and</td>
<td></td>
</tr>
<tr>
<td>CK:</td>
<td>Very good</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPK:</td>
<td>Behaviour management issues but overall dealt well with them with support</td>
<td>Impact on confidence</td>
<td></td>
</tr>
<tr>
<td>'the behaviour of the class was not great and as a result I became less confident of what I was doing’ (RJ/L1)</td>
<td>'They told me multiple times over the past 3 days that they wanted to play football so I was worried about how they would react to athletics’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCK:</td>
<td>Too much too soon</td>
<td>Needs to plan for less within strand unit and progress over a few lessons with focus on key elements rather than trying to teach all</td>
<td></td>
</tr>
<tr>
<td>got NOH then teaching.</td>
<td>knowledge of effective passing or how to improve pass to partner.</td>
<td>Felt she was not allowed time to fix the problem in post lesson chat</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>PCK</strong></td>
<td>• Good lesson structure and activities suited to age group</td>
<td>• Determined to get it right</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Coaching style at times so not sufficient practice time given</td>
<td>• Frustrated by experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teaching PE:</td>
<td>• Impact of SP tutor assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Confident</td>
<td>RJ very negative about behaviour management and how addressed in module</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Organisational improvements in relation to laying out cones to guide children required</td>
<td>***** frustration and upset subsequent to lesson evident here….</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Listen to the children</td>
<td>Teaching PE:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stressful</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anxiety and mental drain from lesson evident</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lacks self confidence in how to deal with behaviour issues</td>
<td></td>
</tr>
</tbody>
</table>
|                       |                                                               | ‘left me unable to implement any assessment strategies’
Appendix B Letters of informed consent School principals

Dear Principal,

My name is Suzy Macken and I am currently engaged in my doctoral studies in the University of Limerick. I am conducting a study examining the experiences of pre-service teachers teaching physical education while on school placement. As you are facilitating Marino Institute of Education, where I deliver the physical education module, by taking our pre-service teachers for school placement I wish to conduct some observations of their teaching of physical education during this school placement.

I am requesting permission from you to conduct my observations while the pre-service teachers are completing their school placement in your school. The potential benefits of this research study include the impact on the professional experience for the pre-service teachers involved, and an increased awareness of the use of methodologies from theory into practice regarding pre-service teachers. It is expected that this study will inform Initial teacher educators and in particular physical education teacher educators of current approaches to teaching physical education and inform them of the ability, challenges and barriers facing pre-service teachers in their teaching of physical education.

Strict confidentiality is central to this research and, in order to protect participant anonymity no identifying details will be revealed in the write up of the study findings. The name of the institute, school or any geographical details relating to the aforementioned will not be disclosed at any stage and pseudonyms will be applied throughout. No reference to the children in the class will be made in the write up of this study.

I would be grateful if could consent to observation being conducted by me as the researcher and should you require any additional information do not hesitate to contact me on suzy.macken@mie.ie

Yours sincerely

Suzanne Macken

__________________________________________________________

I __________________________ have fully read and understood the information above and agree that observations outlined research study can take place in this school.

Signed: ___________________________ Date:

Letter to Principal form B
Dear Principal,

My name is Suzy Macken and I am a lecturer in Marino Institute of Education, currently engaged in my doctoral studies in the University of Limerick. I am conducting a study examining the experiences of pre-service teachers teaching physical education while on school placement. As you are facilitating Marino Institute of Education, where I deliver the physical education module, by taking our pre-service teachers for school placement I wish to conduct some observations of their teaching of physical education during this school placement.

I have been shadowing and observing 5 pre-service teaching, including [PST NAME] throughout all PE lessons taught over their entire PME course observations while the pre-service teachers are completing their school placement in your school. The potential benefits of this research study include the impact on the professional experience for the pre-service teachers involved, and an increased awareness of the use of embedded assessment for learning strategies in particular within their teaching. It is expected that this study will inform Initial teacher educators and in particular physical education teacher educators of current approaches to teaching physical education and inform them of the ability, challenges and barriers facing pre-service teachers in their teaching of physical education.

Strict confidentiality is central to this research and, in order to protect participant anonymity no identifying details will be revealed in the write up of the study findings. The name of the institute, school or any geographical details relating to the aforementioned will not be disclosed at any stage and pseudonyms will be applied throughout. No reference to the children in the class will be made in the write up of this study.

I would be grateful if could consent to observation being conducted by me as the researcher and should you require any additional information do not hesitate to contact me on suzy.macken@mie.ie or 0874132065

Yours sincerely

Suzy Macken
Appendix C Volunteer Information Sheet

Volunteer Information sheet

Dear Participant,

This study aims to explore pre-service teachers teaching of Physical Education in the Primary school in order to identify key methodologies that are being implemented by pre-service teachers in their teaching of Physical Education. There are several phases to this study which are outline below with a blend of observations by the researcher, semi-structured interviews and some upskilling/continual professional development(CPD) sessions.

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>November 28th to 16th December, 2016</th>
<th>Researcher observes 1-2 lessons per week with subsequent focus group interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 2</td>
<td>January and February 2017</td>
<td>Upskill/CPD – 3 x 1 hour sessions</td>
</tr>
<tr>
<td>Phase 3</td>
<td>March 20th – April 7th 2017</td>
<td>Researcher observes 1-2 lessons per week with subsequent focus group interview</td>
</tr>
<tr>
<td>Phase 4</td>
<td>November 6th – December 8th 2017</td>
<td>Upskill/CPD – 3 x 1 hour sessions/half day</td>
</tr>
<tr>
<td>Phase 5</td>
<td>8th – 26th January 2018</td>
<td>Researcher observes 1-2 lessons per week with subsequent focus group interview</td>
</tr>
<tr>
<td>Phase 6</td>
<td>5th -23rd February 2018</td>
<td>Upskill/CPD – 1 hour session</td>
</tr>
<tr>
<td>Phase 7</td>
<td>26th February – 16th March 2018</td>
<td>Researcher observes 1-2 lessons per week with subsequent focus group interview</td>
</tr>
</tbody>
</table>

The potential benefits of this study are to provide an insight for teachers and pre-service teachers into their practice, including the contribution and enhancement to professional learning, teaching and methodologies within Physical Education that could be applied across many curricular areas.

Should you have any additional questions surrounding the study, please contact the researcher Suzy on suzy.macken@mie.ie

Yours sincerely

Suzy Macken
**Appendix D: Upskill sessions**

**Phase 2:**

<table>
<thead>
<tr>
<th>Defining assessment</th>
<th>Session details:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration of forms of assessment</td>
<td>- Discuss assessment as a whole and their experiences of assessment during phase one</td>
</tr>
<tr>
<td></td>
<td>- Use a PowerPoint presentation to examine and differentiate between the various forms of assessment</td>
</tr>
<tr>
<td></td>
<td>- Summative vs formative</td>
</tr>
<tr>
<td></td>
<td>- Formative – AoL AfL AaL compare and contrast using phrases associated with each. PSTs will position statements under relevant headings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AfL and theory</th>
<th>AfL – explore in-depth using Powerpoint that looks at literature base, components and research articles relating to AfL</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>AfL strategies</th>
<th>Session details:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Discuss and examine each of the 6 components – learning objectives, success criteria, observation and questioning, feedback, self and peer assessment.</td>
</tr>
<tr>
<td></td>
<td>- Lesson outline and planning for use of AfL as an embedded component</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of CEPEC Resources</th>
<th>Session details:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- PSTs will watch the assessment videos as each of the AfL components are discussed and see how a teacher implements each in their teaching of PE</td>
</tr>
<tr>
<td></td>
<td>- Discuss the impact of using AfL on teaching and learning</td>
</tr>
</tbody>
</table>

| Implementation of AfL in lesson delivery | Each PST will plan a lesson that includes the use of AfL and where explicit outline is included. TE circulates and supports, probing the PST on decisions made. |
### Phase Four

#### Afl implementation
- Discuss their inclusion of AfL and what went well for them and why.
- PSTs will highlight the problems they mentioned in the interviews and collectively look at potential ways to overcome these problems.
- Reinforce the need for student involvement in enacting AfL based on Phase 1 and 3 observations.
- I will challenge the PSTs to consider how they could implement peer assessment and then we will look at ways that they could record peer assessments.
- Look at the potential of ICT for self and peer assessment.

#### Teacher educator modelling
- I will teach a group of primary school children demonstrating the use of AfL as an embedded element of my teaching in the strand of gymnastics and games.
  - Use of WALT and WILF charts to introduce learning objectives and success criteria.
  - Students will generate criteria in collaboration with me. I will use questioning to prompt students as required.
  - Talk out loud approach where I highlight to PSTs what I’m going to do next e.g. I’m going to give feedback linked to success criteria.
  - Lesson to include modelling of feedback, peer assessment and questioning. Use of self-assessment using video.

#### PST teach and mentoring and scaffolding occurs
- The PSTs will work with small groups and replicate the approach used, amending it as desired to teach a new skill.
- The TE will circulate, mentor and scaffold their enactment of AfL.
- PSTs can question me as required.

#### Video debrief
WE will watch the video of the lesson taught and discuss the effectiveness of it, the
experience for PSTs and discuss this as an approach for them. PSTs can highlight any points they wished to discuss further

### WALT and WILF

Explore a range of approaches to doing this so the PSTs have a range to choose from.

### Phase Six

| Nicola | Discuss lesson planning. Look at Nicola’s planned lessons and discuss the alignment of assessment tasks with the learning objectives  
Inclusion of self-assessment  
Exploration of peer-assessment and how to overcome relational dynamic issues  
Looking at use of questioning to assist younger children in peer assessment |
|---|---|
| Alice | Assessment interpretation – how do these inform our teaching  
Reinforce the need for student involvement as Alice did not teach in Phase five.  
Alignment of curriculum, assessment and pedagogy – reinforce |
| Jessica | Discuss progressive planning and where Jessica is intending on developing student learning  
Discuss what she interpreted from the external teaching and how she would alter her approach  
Look at peer assessment and how she plans to enact it. |
| Dylan | As Dylan missed phase four, show him the video content of me modelling AfL with primary school students  
Discuss how he can use this approach in teaching dance.  
Examine the planned content and how success criteria will guide his observations and apprehension about dance  
Plan for use of peer assessment |
| Monica | Look at how to enact self-assessment (Monica did not get to teach in the next phase) |
Appendix E Outline of PME Programme

<table>
<thead>
<tr>
<th>Modules</th>
<th>Year 1</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>Irish language methods and content knowledge</td>
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<tr>
<td>Semester 1</td>
<td>Early Childhood Education</td>
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<td></td>
<td>Teaching and Learning</td>
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<td>Visual Arts</td>
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<td>Maths Methods and subject knowledge</td>
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<td>Physical education</td>
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<td>Social, Environmental and Scientific Education</td>
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<td>Professional Studies</td>
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<td>English methods and subject knowledge</td>
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<td></td>
<td>Religious Education</td>
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<td></td>
<td>School placement</td>
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<tr>
<td>Semester 2</td>
<td>Early Childhood Education</td>
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<td>Social, Environmental and Scientific Education</td>
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<td>Drama</td>
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<td>Music</td>
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<td>Psychology/Early childhood Education</td>
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<td>Social Personal and Health Education</td>
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<td>Year 2</td>
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<td>Semester 1</td>
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<td>Research methods</td>
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<td>Children’s literature</td>
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<td>Irish</td>
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<td>Advanced professional studies</td>
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<tr>
<th>Year 2</th>
<th>10 week advanced School placement</th>
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<tr>
<td>Semester 2</td>
<td>- 3 week teaching block</td>
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<td></td>
<td>- 2 weeks data collection and activity based project in school</td>
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<td>- 1 week mid term</td>
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<td>- 4 week teaching block</td>
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<td>Complete of Research dissertation</td>
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<td>Post school placement Interview</td>
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