**Introduction**

Reflective practice has been documented as a fundamental attribute for health care professionals (Eva and Regehr; 2005, Mann, Gordon et al. 2009; Ghaye and Lillyman, 2010) and is a key action research indicator (Marshall and Reason, 2007). It provides a means for practitioners to continuously develop and evolve their scope of practice in a way that meets current standards, evidence, and most importantly facilitates life-long learning (Jasper 2003; Eva and Regehr, 2005; Chartered Society of Physiotherapy (CSP), 2012).

Essential components of action research are theory and practice, together, grounded in everyday experiences and intimately interlinked (Reason and McKernan, 2006). Thus, this action research project included the participation of both students and their educators, a vital component of action research methodology, whereby the study was designed to determine the usefulness of students and their educators reflecting on the student’s practice in a clinical setting with the ultimate aim of improving practice (McNiff and Whitehead, 2010).

**Current Standards**

The Quality Assurance Standards for physiotherapy services (CSP, 2012), encourages members of the CSP to continuously update and review their continuous professional development (CPD) file as part of their own learning and development. In fact, it is considered a professional and regulatory requirement. The Health and Care Professions Council (HCPC) standards of proficiency for physiotherapists (HCPC, 2012) also emphasise the importance of practitioners to regularly reflect and critically evaluate their actions. They recognise reflective practice as one option to satisfy some of the CPD requirements of the physiotherapist. The concept of critical evaluation includes the ability of practitioners to monitor their own practice, reviewing the effect and outcome of their actions, and modifying them accordingly to provide a better service to the service users. It also includes the ability to audit their practice if necessary (HCPC, 2012).

**Assessment in Higher Education**

It is a widely held belief that assessment is what strongly drives student learning in higher education (Joughin, 2010; Kearney and Perkins 2011). The goals of higher education have evolved over recent decades and have progressed from an ability to store knowledge, to a more competency approach using independent thought in order to solve problems and making use of professional and social skills (Dochy, Segers et al., 1999). With regard to health professionals, the main goal of higher education has progressed to promoting reflective practitioners. Reflection is believed to enhance competence in higher education students (Mann, Gordon et al., 2009).

Current literature reasons that assessment must go further than simply calculating the reproduction of knowledge, such as in an exam (Yorke, 2003; Nicol and MacFarlane-Dick, 2006). Birenbaum and Dochy (1996) believe alternative assessment methods should be utilised to accurately evaluate new concepts and goals. Involving higher education students in the assessment process is widely debated in the literature, however it is now perceived as being valid, reliable, fair and contributes to a growth in competence (Dochy, Segers et al., 1999; Yorke, 2003).

If traditional forms of assessment are carried out (such as a written exam), without reform (such as principles around collaborative and reflective learning), students will be ill prepared when sent into a workforce (Kearney and Perkins, 2011). The authors believe that by ensuring that assessments are original and inspire skills such as critical thinking and independent learning, a student’s potential for success in the future is greatly increased.

**Self-Assessment**

Falchikov and Boud (1989) produced the first high quality meta-analysis regarding student self-assessment in higher education. The paper reviewed 57 different studies of various levels of evidence, and examined the self-assessment of a range of graduate and undergraduate students of different disciplines. All studies included an assessment from a member of staff with which to compare the student’s self-assessment mark in the clinical setting. They found that that the level of the course (introductory or advanced) and the area of study were important variables in achieving success, defined as the agreement between the student’s marks and those of the teacher.

Eva and Regehr (2005) conducted a more recent highly evidenced literature review, examining the use of self-assessment of health professions in the clinical setting. This study found that while the literature identifies self-assessment to be an essential trait to independent learning, the quality of current evidence to actually support this view is poor. The authors portray strong views regarding the current evidence. They believe it takes a skilled practitioner to accurately self-reflect. This view is shared by several authors (Falchikov and Boud, 1989; Mann, Gordon et al., 2009), emphasising that self-assessment is a skill that can be developed over time.

In the high quality literature review by Kearney and Perkins (2011) a new model of assessment is suggested to improve certain academic qualities of students. One of the key premises of this new model is authenticity, i.e. it must have direct correlation or relevance to the students’ world outside the classroom, thus encouraging sustainability. This concept of relevance is a fundamental principle of action research (Reason and McKernan, 2006). The same authors outline their model that includes the following stages: students and lecturers collectively develop the marking criteria, students learned how to mark against the set criteria, peers marked anonymous assignments, students then marked their own papers, the lecturer gave a mark, and finally, there was a de-briefing session (Kearney and Perkins, 2011). Some of the principles of this model have been included in this study and will be described in more detail below: the students had prior experience of the self-assessment tool and learned how to mark against the criteria, the students marked their performance against the set criteria, and this was compared with the educator’s mark and subsequently followed by a de-briefing and discussion session.

**The self-assessment tool: the SPR**

The content of the Student Progress Report (SPR) was developed by a working group of clinical educators and academics over 10 years ago, and has been in use in the University of Ulster ever since. It is thus very well established within the physiotherapy programme and the strict marking guidelines (described below) are an attempt to reduce subjectivity and encourage transparency and objectivity. The content of the SPR maps directly to the relevant requirements of the HCPC and the professional body: the CSP. Regular training is provided for educators in order to standardise the use of the SPR, and all educators should have participated in training prior to supervising a student.

In the University of Ulster, physiotherapy students are assessed on placement by educators using the SPR that is a comprehensive document with 4 sub-sections: Professional Ability (4 items), Interpersonal Skills (4 items), Assessment (6 items) and Treatment (5 items) making 19 items referred to as learning outcomes. Each of these 19 learning outcomes has four component parts that must be achieved in order to gain competency for that learning outcome. A student can only achieve a mark of 5 or higher (max = 10) if all four components of the learning outcome have been demonstrated. For example, a student who has achieved only three of the four components by the end of the placement, can only be given a maximum mark of 4. Thus, the mark awarded for the learning outcome is based on (i) whether or not the student demonstrated an ability to carry out the skills required for that item, as well as, (ii) the level of support and guidance needed to achieve this (the more independent the student, the higher the mark), and (iii) how quickly the student achieved this (for example a student who demonstrates a skill right from the start of placement and throughout placement will get a higher mark (between 8 – 10) than a student who is finally able to demonstrate the skill at the end of the 6 weeks of placement who can expect a 5, 6 or7). A calculation based on these 19 marks gives the total SPR mark for that student on that placement.

Prior to their first placement (end of year 1), all students are fully briefed regarding the content and marking guidelines for the SPR. All the students in this study were final year students on their fourth placement, so they were all familiar with the content and marking guidelines of the SPR. During each of the five placements that make up the clinical element of the BSc Hons programme, feedback is given continuously to the student, however half-way through each placement, all students meet formally with their educator/s for a mid-way report, where the student’s progress is discussed, and learning objectives and action points for the remainder of the placement are agreed. Both students and educators prepare for this formal mid-way report by reflecting on the student’s performance and using tools such as a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) as aids. The SPR is often used as a reference point in order to guide the student, but is usually only formally completed by the educator at the end of placement. Prior to this study, only educators completed/marked the SPR.

For this study, both students and educators were asked to evaluate the student’s performance at mid-way by each independently completing a SPR. The two SPRs were then compared at the mid-way report meeting. This is in keeping with action research principles of participants (both students and educators) understanding the consequences of their actions and also being more transparent by being able to articulate the reasoning behind their actions (Reason and McKernan, 2006).

**Aims**

The aim of this study is to determine the usefulness of completing a formal self-assessment tool (the SPR) in a group of final year undergraduate physiotherapy students in the clinical setting, and to compare the students’ marks and perceptions of the self-assessment exercise, with those of their educators.

**Methods**

**Study design**

The four principles of action research as outlined by McNiff and Whitehead (2010) are: to improve learning, the nature and processes of improvement, who improves what, and the nature of education. In keeping with these, this study was designed to improve learning by using the tool of self-reflection, and by including participation in this action research by both the student and his/her educator as they together discussed the SPR.

An information sheet (outlining the study methodology, its aims and rationale, and contact details for the researchers), was sent to all final year physiotherapy students and their educators prior to the study to give all potential respondents an opportunity to ask questions and clarify any queries. An on-line survey was administered at two time-points using SurveyMonkeyTM software. The baseline survey was completed by both students and educators half-way through placement, just after the mid-way report, and the follow-up survey was completed by both groups three weeks later at the end of placement. Reminder emails were sent to each group before and after baseline and follow-up. The placement was a 6-week final year placement that took place between 5 Nov 2012 and 14 Dec 2012.

**Survey design**

There were two surveys developed, one for each group (student/educator) with some questions unique to each group, and others common to both groups (for comparison purposes). In the first section of the students’ survey they were asked to complete a table and identify whether their mark was higher, the same, or lower than the educator’s mark for each of the 19 learning outcomes. Section 1 of the educators’ survey asked for information regarding the number of students they were supervising, and other administrative details. Section 2 in both surveys used a Likert scale (strongly agree/agree/neither agree nor disagree/disagree/strongly disagree) and respondents were asked to state their agreement with a number of statements. Most of these statements were included on both surveys, but there were a few statements unique to each group such as: and ‘it *(the exercise)* helped me to better understand the role of the educator’ in the student survey, and: ‘it (*this exercise*) gave me confidence in my ability as an educator’ in the educator survey,.

The follow-up survey was considerably shorter and included the second section of the baseline survey (for comparison) and some questions regarding the placement experience between the mid-way report meeting and the end of placement.

There were opportunities in both surveys (at both timelines) to offer comments, ideas and suggestions and these qualitative data were considered as well.

**Sample**

All final year physiotherapy students (n = 55) and their respective educators were invited to participate. There were no exclusion criteria.

**Ethical considerations**

Advice was sought regarding the need for formal ethical approval, and as the study was considered as teaching development (not research), ethical approval was not deemed necessary. However, in keeping with best practice and the Data Protection Act (1999), all data were anonymised and only one person (IW) had access to the electronic data. Completion of the survey was considered as consent to participate.

**Data Analysis**

The data from each of the four surveys (student and educator at baseline and follow-up) were collated, inputted to ‘IBM Statistical Package for Social Sciences’ (SPSS 20) and anonymised by one researcher (IW). The data were cleaned and then analysed independently by the two researchers (CMcG, IW). Descriptive statistics were used in the preliminary analysis and for variables unique to each group and/or one time point. Difference in opinion between baseline (the mid-way report) and follow-up (at the end of placement) was tested by the paired-samples t-test, and the independent samples t-test was used to determine whether or not students’ and educators’ responses were statistically significantly different from each other. Statistical significance was set at a value of p ≤ 0.05.

For inclusion in data analysis, 50% of either section 1 or section 2 had to be completed.

**Results**

Fifty students completed the survey at one or both time points (90.9%) and 39 educators. Some questions were not answered by respondents, but in each case more than 50% of the survey was completed, so no surveys were excluded. For this reason, the findings are presented as valid percentages i.e. the percentage of those who answered the specific question.

‘The exercise’ refers to the student’s self-evaluation of their progress to date by completing the SPR prior to the mid-way report.

The overall finding was that both students and educators found that the exercise was beneficial. The students agreed that they gained a better understanding of the assessment criteria (91.3%, n = 42) and what was required in order to develop their learning for the rest of placement (84.5%, n = 38). Some students (14.4%, n = 13) did not compare their self-assessed SPR with the SPR completed by the educator and the reasons given were that the educator had not completed their SPR (n = 8), that the educator did not wish to compare the two SPRs (n = 2), and lack of opportunity to compare the SPRs (n = 2). The positive finding is reflected by a student who wrote:

‘the whole idea is good for students who are unsure of how they are getting on, e.g. if an educator gives very vague comment. So generally yes, it is good and should be continued (with a few small changes).’

**Self-assessment compared to educator assessment**

When students completed their own SPR, they were then asked to compare theirs with that completed by the educator and to identify whether each of their marks was higher, the same, or lower than the educator’s.

The four figures below demonstrate the findings for each mark (one mark for each of the 19 learning outcomes) within each of the four sections of the SPR: Professional Ability (PA), Interpersonal Skills (IS), Assessment (Ax), and Treatment (Tr).

[Insert Figures 1a,b,c,d here]

The mean scores for all categories showed that the students mainly marked themselves the same or lower than their educators (student mark higher: 23%; the same: 46%; lower: 31%). When the student’s self-assessed mark was compared with the mark the educator awarded, students were most likely to score themselves higher for communication (38.2%, figure 1b) and evaluation and modification of treatment (32.4%, figure 1d), and lower for Inter-professional collaboration (41.2%, figure 1b). One student commented about scoring oneself:

‘I feel that this was a useful task to complete. However, I felt that I was underscoring myself as I didn't want to come across too confident with my marks, or feel embarrassed if I was completely out of line with my educator.’

There were no statistically significant differences between students and educators for the majority of the statements (see Table 1). Both students and educators agreed that the exercise clarified perceptions of ability, helped develop relevant action points, encouraged communication and discussion, should be encouraged for all students on all placements, and was a useful exercise. They also agreed that the exercise was not a waste of time and did not adversely affect communication after the mid-way report.

[Insert Table 1 here]

The differences between students and educators were consistent from baseline to follow-up for two statements. Whilst both groups agreed that students should complete the exercise on each placement, and that this exercise was useful, there was a difference in strength of opinion at both time points between the students and educators, with the educators more strongly convinced of the benefits than the students (every student should complete the exercise every time: baseline: p = .020; follow-up: p = 0.19; the exercise was useful: baseline: p = .022; follow-up: p = .050). This was supported by the educators disagreeing with the statement that the exercise was more important for weaker students (D/SD: baseline: 58.6%, n = 17; follow-up: 62.9%, n = 17), and there was no difference in the strength of feeling over time (p = .790).

There were two statements where the students and educators were statistically different from each other at one time point, but not the other, indicating a change in strength of opinion (see Table 1). One of the aims of this exercise (the completion of the SPR by the student prior to mid-way) was to see whether the student and educator had the same perceptions of the student’s ability. At baseline, there was no difference (p = .896) with both parties agreeing that the exercise did clarify perceptions. This changed, however, at follow-up (p = 0.019) when a greater percentage of educators was more undecided and negative than the students. The other point that changed from baseline to follow-up related to the exercise facilitating the development of action points for the student. At baseline, the students were less convinced than the educators (p = .042), but by follow-up, there was no statistically significant difference (p = .898).

When changes in each group (student/educator) at the two time points were analysed using the paired samples t-test, there was only one difference between the time points, and this was regarding how the exercise encouraged two-way discussion between the student and the educator. The students agreed that the exercise did help two-way discussion at baseline and at follow-up, but the strength of their agreement dropped over time (p = 0.002). The exercise also helped them better understand the role of the educator (baseline: 57.8%, n = 26; follow-up: 58.3%, n = 21) with no difference in opinion between the two time points (p = .245).

The students found that completing the SPR was more difficult and time consuming than they had expected (Figure 2), but that the process made them more confident in their ability to assess themselves (baseline: SA/A: 44%,n = 11; NA/D: 16%, n = 4 ; D/SD: 32%, n = 8). However, the strength of agreement changed (follow-up: SA/A: 48.6%, n = 18; NA/D: 35.1%, n = 13; D/SD: 10.8%, n = 4) with more students being undecided at follow-up (p = .061).

[Insert Figure 2 here]

Likewise, the exercise also made the educators feel more confidence at both baseline (SA/A: 55.2%, n = 16; NA/D: 37.9% , n = 11; D/SD: 6.9% , n = 2) and follow-up, and there was no difference between the two time points (p = .236).

The findings can be summarised by this student’s statement:

‘I think it is a good idea to do this as it allows you to see what the educator expects of you from the rest of your placement and what areas you need to improve on.’

**Discussion**

The overall finding from this student self-assessment study was that both students and educators found it a useful and valuable part of placement.

The reflection that is necessary for self-assessment should be structured, and also involve an element of debriefing or face-to-face discussion (Jankowska, 2010; Marais and Perkins, 2012), and both these elements were included in the exercise. Self-assessment should occur on a routine basis in order that improvement is ongoing, and for best results, should be used in conjunction with other professional development activities and in conjunction with experts who can confirm, comment upon and feedback about the self-assessment (Dornan, 2008; Trujillo, 2009). By incorporating the self-assessment into an already well-recognised structure (6-week placement with a formal mid-way report), this exercise, if practised on each of the students’ five placements, should become a routine feature of placement, and may possibly be included as a CPD in their professional lives, a requirement for most (if not all) clinical professions such as physiotherapy and medicine (CSP, 2012; Musolino, 2006; Silver et al, 2008). There are many different methods that can be used, however we have interpreted self-assessment to be a form of self-evaluation where the clinician (in this case, the student) judges his or her expertise and compares it to performance measures (the SPR with the marking criteria that take account of the student’s ability and need for guidance, as described above) as per Silver et al (2008).

Self-assessment plays a central role in making more informed decisions, identifying learning needs, developing learning and improving performance (Trujillo, 2009; Dornan, 2008; Parboosingh, 1998). This study found that completing the SPR brought clarification and focus to placement in terms of the student better understanding what was expected, the differences of opinion between themselves and their educator, and also helped in developing relevant learning objectives for the rest of placement. The students also found that completing the SPR was more difficult and took longer than they thought, and this was linked to the students’ better understanding of the role of the educator.

Although both students and educators broadly agreed on the benefits of this exercise, there were some differences from baseline to follow-up, and between the two groups. This is likely to be because of the novice/expert relationship and the difference in clinical experience between the student and educator.

Students tended to give themselves similar or lower scores, and these findings are similar to those of the meta-analysis by Falchikov and Boud (1989) as the authors found that during self-assessment tasks, students tended to under-mark themselves with respect to their assessors. Several high quality reviews have documented that accurate self-assessment is a skill that is developed over time (Eva and Regehr, 2005; Mann, Gordon et al. 2009), so it is important to start the process as early as possible, i.e. in the undergraduate programme. This study suggests that even if the marks of students and educators differ, students can still benefit from the experience.

**Conclusion**

Health professionals are expected to critically reflect on and evaluate their actions as a means to develop and evolve their practice and understand the consequences of the choices they made (Reason and McKernan, 2006, HCPC, 2007; McNiff and Whitehead, 2010; CSP, 2012). In higher education, the literature has widely documented the benefits of involving students in the assessment process (Dochy, Segers et al., 1999; Eva and Regehr, 2005; Kearney and Perkins, 2011). It is now seen to contribute to a growth in competence and encourages lifelong learning (Mann, Gordon et al., 2009). Involving students in self-assessment before the mid-way report provides students with a better understanding of the assessment criteria and how to develop their learning on clinical placement. It can be beneficial even if disagreement should occur between student and educator when comparisons of marks are considered. Mid-way self-assessment of students with the appropriate structures in place can help students and educators develop action points and encourage discussion.

Whilst self-assessment is good practice and a crucial skill (Musolino, 2006), learning should not pause or end after a self-assessment exercise, but should be further developed into an ongoing practice of continuous learning by addressing problems in practice as they arise, as well as reflecting on the event/s afterwards (Regehr and Mylopoulos, 2008). Our aim is that this skill of self-assessment will then develop and contribute to the greater goal of life-long learning which is the cornerstone of good clinical and professional practice (Regehr and Mylopoulos, 2008).

Word count: 4091**References**

Chartered Society of Physiotherapy 2012, "   
Quality assurance standards for physiotherapy service delivery*.* " in CSP, London.

Dochy, F., Segers, M. & Sluijsmans, D. 1999, "The use of self-, peer and co-assessment in higher education: A review. ", *Studies in Higher Education,* vol. 24, no. 3, pp. 331-350.

Dornan, T. 2008, "Self-assessment in CPD: Lessons from the UK undergraduate and postgraduate education domains.", *Journal of Continuing Education in the Health Professions,* vol. 28, no. 1, pp. 32-37.

Eva, K.W. & Regehr, G. 2005, "Self-assessment in the health professions: a reformulation and research agenda. ", *Academic Medicine,* vol. 80, no. 10, pp. S46-S54.

Falchikov, N. & Boud, D. 1989, "Student self-assessment in higher education: A meta-analysis. ", *Review of Educational Research,* vol. 59, no. 4, pp. 395-430.

Ghaye, T. & Lillyman, S. 2010, *Reflection: Principles and practice for healthcare professionals. ,* 2nd edn, Quay Books, London.

Health and Care Professions Council (HCPC) 2007, *Standards of proficiency, physiotherapists. ,* HCPC, London.

Jankowska, M. 2010, "   
Concept mapping - a reflective tool in Personal Development Planning.   
 ", *Assessment, Teaching and Learning Journal, Leeds Metropolitan University Repostitory,* vol. 10, pp. 14-17.

Jasper, M. 2003, *Beginning reflective practice. ,* Nelson Thornes.

Joughin, G. 2010, "The hidden curriculum revisited: a critical review of research into the influence of summative assessment on learning.", *Assessment & Evaluation in Higher Education,* vol. 35, no. 3, pp. 335-345.

Kearney, S.P. & Perkins, T. 2012, "  
Improving engagement: The use of ‘Authentic Self and Peer Assessment for Learning’ to enhance the student learning experience.", *Assessment and Evaluation in Higher Education,* [Online], . Available from: DOI:10.1080/02602938.2012.751963.

Mann, K., Gordon, J. & MacLeod, A. 2009, "Reflection and reflective practice in health professions education: a systematic review.", *Advances in Health Sciences Education,* vol. 14, no. 4, pp. 595-621.

Marais, D. & Perkins, J. 2012, "Enhancing employability through self-assessment.", *Procedia - Social and Behavioural Sciences,* vol. 46, pp. 4356-4362.

Marshall, J. & Reason, P. 2007, "Quality in research as "taking an attitude of inquiry"", *Management Research News,* vol. 30, no. 5, pp. 368-380.

McNiff, J. & Whitehead, J. 2010,  *You and your action research project.* 3rd edition edn, Routledge, New York, USA.

Musolino, G.M. 2006, "Fostering reflective practice: self-assessment abilities of physical therapy students and entry-level graduates", *Journal of Allied Health,* vol. 35, no. 1, pp. 30-42.

Nicol, D.J. & MacFarlane-Dick, D. 2006, "Formative assessment and self‐regulated learning: A model and seven principles of good feedback practice. ", *Studies in Higher Education,* vol. 31, no. 2, pp. 199-218.

Parboosingh, J. 1998, "Role of self-assessment in identification of learning needs.", *Journal of Continuing Education in the Health Professions,* vol. 18, pp. 213-219.

Reason, P. & McKernan, J.A. 2006, "Choice and Quality in Action Research Practice/Choice and Quality in Action Research: A Response to Peter Reason/A Response to J.A. McKernan", *Journal of Management Inquiry,* vol. 15, no. 2, pp. 187-208.

Regehr, G. & Mylopoulos, M. 2008, "Maintaining competence in the field: learning about practice, through practice, in practice.", *Journal of Continuing Education in the Health Professions,* vol. 28, no. S1, pp. S19-S23.

Silver, I., Campbell, C., Marlow, B. & Sargeant, J. 2008, "Self-assessment and continuing professional development: The Canadian perspective", *Journal of Continuing Education in the Health Professions,* vol. 28, no. 1, pp. 25-31.

Trujillo, J.M. 2009, "Understanding who you are and how you work: the role of self-assessment.", *Currents in Pharmacy Teaching and Learning,* vol. 1, no. 1, pp. 10-16.

Yorke, M. 2003, "Formative assessment in higher education: Moves towards theory and the enhancement of pedagogic practice.", *Higher Education,* vol. 45, no. 4, pp. 477-501.