Student Perceptions of Satisfaction With and How Important Problem-Based Learning is in Facilitating Employability Skills

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Abstract

Given the current global economic climate there is a need to increase the emphasis on integrating employability skills into the higher education curriculum. One possible solution to this pedagogic challenge is by introducing problem based learning (PBL) into the learning and teaching programme. We argue that previous PBL research has focused mainly on student performance in comparison to more didactic teaching methods and not on the effect of PBL in facilitating employability skills. The aim of this paper is to investigate undergraduate sport and exercise psychology student perceptions of their satisfaction with, and how important they feel PBL is in developing their employability skills. Implications for changes in student perceptions of PBL in relationship to employability skills over time are discussed.

Key Words

PBL, Sport and Exercise Science, Sport Psychology, employability, student satisfaction.

Introduction

The challenge of curriculum design to enhance employability skills

For a number of years the preferred approach to delivering the sport science curriculum has predominantly been driven by a lecture based approach, as this method is seen by some academics to guarantee that a large amount of important subject knowledge is delivered. However, with the ever increasing demand on higher education to provide graduates who are adequately equipped for the employment market, it may be suggested that having an over emphasis on subject knowledge may actually be detrimental to the overall student experience in acquiring employability skills. In fact during a recent talk by Sir Bruce Keogh on,

'Focussing on Quality and Innovation in the NHS' he stated that by the time a student has graduated 50% of what they have learned [subject knowledge] in their first year is out of date (Keogh 2010).

In support of Keogh, the Association of Graduate Recruiters (AGR) ranks subject knowledge as low as seventh out of ten skills shortages among graduates (AGR 2010a). This may be due in part to the earlier comments that a large number of academics insist on subject knowledge being the main driver of the curriculum. In 2010 the AGR also stated that employer's estimate a 6.9% drop in graduate vacancies whilst at the same time there are now on average 69 gradates applying for every vacancy. This is alarming news for higher education institutions and any opportunity to develop student employability skills must surely be embraced (2010b).

Support for the inclusion of employability skills in the curriculum comes from Yorke (2004) who argues that employers generally see a graduate's knowledge of the subject discipline as obligatory but not enough for them to be recruited (2004). Also, an article on the jobs.ac.uk website which is often the first port of call for graduates looking for employment, states that achieving a university degree may well be not enough to secure employment, with Communication, Teamwork, Initiative, Project Management, Flexibility, Interpersonal and Organisational Skills, making up the essential extra curricula requirements (Davies 2009). In fact a widely accessible online job description template constructed by the University of Edinburgh, which potential employers can use when advertising a vacancy clearly indicates that non subject knowledge skills are essential when writing a job description (Humanresources 2010).

Based on the evidence above it seems reasonable to suggest that a reduction in subject knowledge would not be as detrimental to student learning as initially thought. This opens the way for a restructuring of how the curriculum is delivered so that the embedding of employability skills can be facilitated alongside subject knowledge. We suggest that one method to integrate employability skills into the curriculum at the same time as delivering subject content is problem-based learning.

Justification for using problem-based learning

According to Milvain (2008) the debate is over whether curriculum design is there to deliver content or to develop critical thinking. She argues that a 'thinking curriculum' is the best way forward and proposes setting cognitively demanding tasks that are within the capability of the student. One way of meeting Milvain's suggestions is by using a PBL approach to curriculum delivery.

In PBL students usually work in groups and independently to solve problem scenarios but are not expected to arrive at a pre-determined solution. They are expected to decide what information they need to acquire and learn, and what skills they need to use in order to manage the situation effectively (Macdonald & Savin-Baden 2004) and is designed to elicit self-directed, student-centred learning such that each student determines what they do and do not know, what they need to learn, how they will learn it, and what resources they will use (David and Irizarry 2009). We argue this is not dissimilar to skills required in employment when the employee is faced with everyday tasks within a chosen profession.

In the past PBL has been used in a number of subject areas including architecture, engineering, law, business and management and social work (Savin-Baden 2000) with anecdotal evidence from a number of reviews reporting mixed educational outcomes for the inclusion of PBL when compared to conventional teaching (Colliver 2000; Hartling et al 2010; Polyzois et al 2010; Roiter 2009; Vernon & Blake 1993). For example, Colliver (2000) who reviewed three articles published in 1993 and research published from 1992 through to 1998 in medical education and Hartling et al (2010) who carried out a systematic review of 22 years of PBL research in pre-clinical medical undergraduate education found no convincing evidence that PBL improves knowledge base and clinical performance when focusing on the relationship between PBL and educational outcomes. However, Vernon and Blake (1993) who reported on 22 studies within the period from 1970 to 1992 found that for clinical knowledge and performance outcomes results somewhat favoured PBL, while assessment outcomes of clinical performance significantly supported the use of PBL.

In light of the mixed research findings Hartling and colleagues concluded that in an attempt to capture and quantify the effects of PBL, work is needed to determine the most appropriate outcome measures (2010). We strongly support these

comments and recommend that a new focus in the direction of employability skills be taken when assessing the effectiveness of PBL.

Student Perceptions of Satisfaction and Importance

Given the present focus on Higher Education league tables by media, parents and students when choosing a higher education institution for study, it is essential for academics to understand student perceptions of satisfaction with their learning and teaching experiences.

A number of studies have investigated student satisfaction of PBL against a traditional lecture based delivery. For example, a longitudinal study over 5 consecutive years where PBL was used throughout the entire course indicated students had gained more knowledge, were satisfied and accepted the PBL approach (Lucas et al 2006). First year Iranian medical students were more satisfied with PBL and believed that this method increased their problem solving abilities than traditional teaching in gross anatomy (Khaki et al 2007), while (Smits et al 2002) who reviewed continual medical education found PBL increased satisfaction in a number of studies.

However, few authors have documented how PBL has been integrated into undergraduate sports related courses. One such study introduced PBL in to a third year Physiology and Performance Enhancement module over a 10 week period and found that overall, students were satisfied with PBL with no negative comments about the module delivery or content (Duncan & Al-Nakeeb 2006). The authors concluded that PBL is useful in developing independent, creative thinking and practical skills that would be useful in other areas (e.g. employment).

Although the literature base pertaining to PBL implicitly indicates that students using this form of learning seem to be more satisfied with this mode compared to other, more didactic forms of teaching, few studies appear to have explicitly assessed student satisfaction with PBL in developing their employability skills. Furthermore, no study has investigated the possible relationship between student satisfaction and how important students perceive a form of delivery is. Students may well be satisfied with aspects of their academic life but do not feel they are important in developing their learning experience.

We propose investigation is vital because for PBL to be effective in enhancing student employability skills and longer term graduate employability steps must be taken to see if in particular, skills developed as part of the PBL process not only leave students satisfied with their experience, but are also perceived by students as important.

Method

Participants

The participants were 109 undergraduate Sport and Exercise Psychology students (37 level one, 44 level two and 28 level three) from the BSc Sport and Exercise degree course at Coventry University. Levels one and two are mandatory while level three is an optional area of study.

Measures

A moderated version of the National Student Satisfaction Survey (NSS) questionnaire which included seven recognised employability skills (self confidence, problem solving, critical ability, team-working, communication, practical skills and time-management) was used as the basis for data collection. The questionnaire asked students to rate on a Likert scale their satisfaction (1 = very dissatisfied 5 = very satisfied) and the perceived importance (1= not at all important, 5 = very important) of how the PBL experience had developed their seven employability skills.

Two additional YES/NO questions were asked;

1. Would you like to see more use made of this type of this learning?
2. Would you recommend this type of learning to others?

Students who answered yes to both questions were categorised as the 'Like' group. Students who answered no to both questions were categorised as the 'Dislike' group. Students who answered a yes and a no were categorised as the 'Unsure' group.

Procedure

PBL was implemented for the whole of the academic year in three levels of the Sport and Exercise Psychology strand of the 2009-10 undergraduate degree programme.

The 'PBL for Professional Action' model (Savin-Baden 2000) was used which focuses on real-life situations [in sport] that require an effective practical solution (p. 126).

Students worked independently and in groups of five or six and each problem lasted approximately four weeks, during which time students attended tutorial sessions facilitated by a tutor.

For each tutorial session students prepared subject information contrived from the group meetings. During tutorials each student provided a verbal defence of why they thought the information was relevant to the problem scenario.

At the end of the academic year students were asked to complete the moderated NSS questionnaire and were informed that any information provided would remain anonymous.

Results

Results revealed a number of differences across level of study and between those who Liked, Disliked and were Unsure.

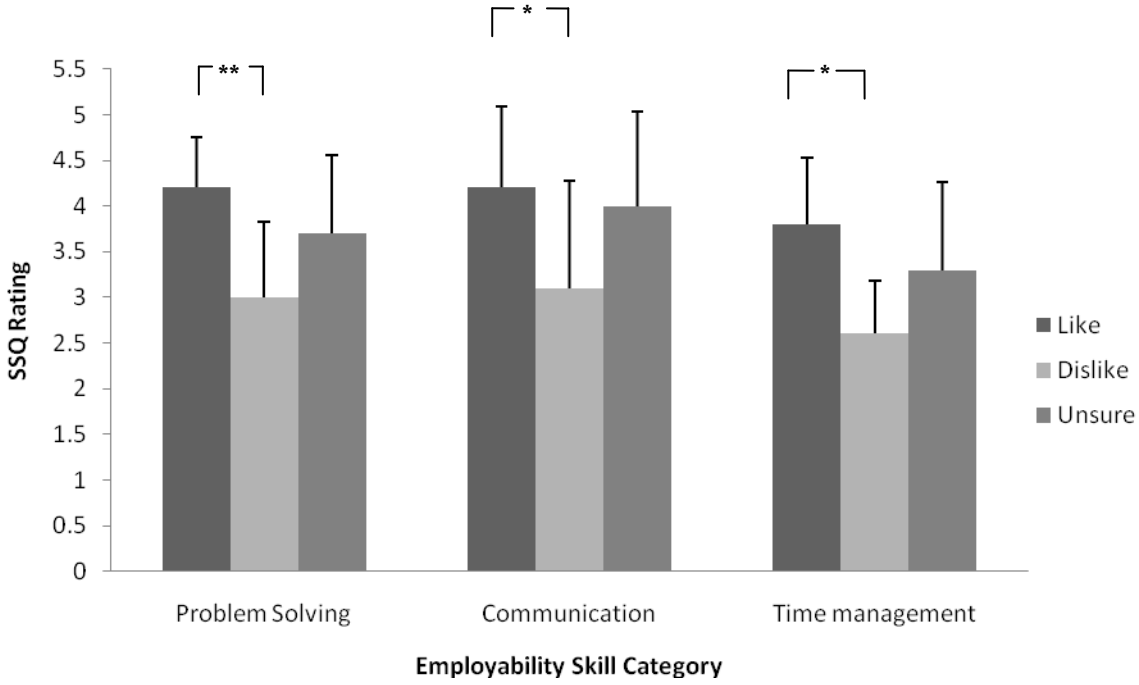

Fig. 1: Level 1 SSQ Satisfaction Scores for Employability Skills

Data shown as mean ±SD (n=37 for each group, * $P<0.05$, ** $P<0.01$). A one-way ANOVA revealed significant differences in Satisfaction ratings between level one students who liked and those who disliked PBL in problem solving ($F(2, 34) = 7.61$,

p<0.01), communication (F(2, 34) = 4.21, p<0.05) and time management (F(2, 34) = 3.92, p<0.05, See Fig 1). Post-hoc Tukey's HSD tests found that students who liked PBL were significantly more satisfied that PBL improved their problem solving (p<0.01), communication (p<0.05) and time management (p<0.05) skills than those who disliked PBL. All other comparisons were not significant.

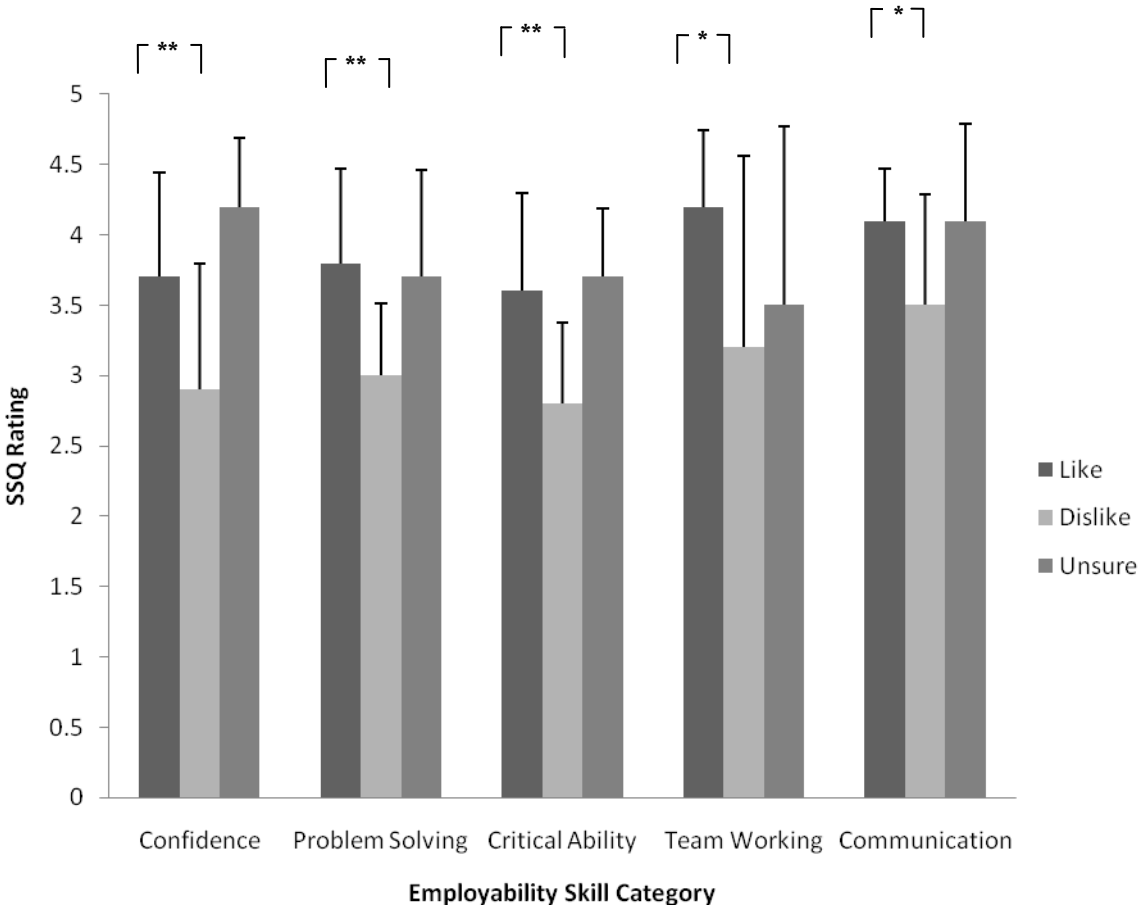

Fig. 2: Level 2 SSQ Satisfaction Scores for Employability Skills

Data shown as mean ±SD (n=44 for each group, * *P*<0.05, ** *P*<0.01). A one-way ANOVA revealed significant differences in Satisfaction ratings between level two students who liked and those who disliked PBL in confidence (F(2, 41) = 8.11, p<0.01), problem solving (F(2, 41) = 6.27, p<0.01), critical ability (F(2, 41) = 7.23, p<0.01), team working (F(2, 41) = 5.22, p<0.05) and communication (F(2, 41) = 4.47, p<0.05, see Fig 2). Post-hoc Tukey's HSD tests found that students who liked PBL were significantly more satisfied that PBL improved their confidence, (p<0.01), problem solving (p<0.01), critical ability (p<0.01), team working (p<0.05) and communication (p<0.05) skills than those who disliked PBL. All other comparisons were not significant.

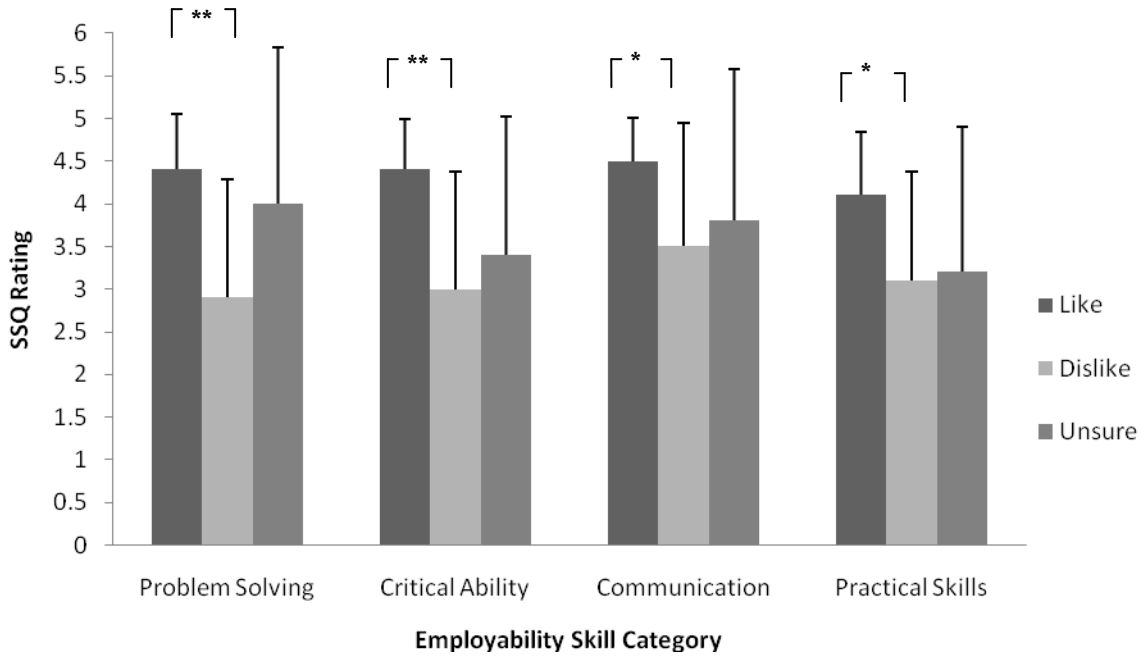

Fig. 3: Level 2 SSQ Importance Scores for Employability Skills

Data shown as mean ±SD (n=44 for each group, * *P*<0.05, ** *P*<0.01). A one-way ANOVA revealed significant differences in SSQ importance ratings between level two students who liked and those who disliked PBL in problem solving ($F(2, 41) = 7.56$, $p<0.01$), critical ability ($F(2, 41) = 8.19$, $p<0.01$), communication ($F(2, 41) = 4.21$, $p<0.05$) and practical skills ($F(2, 41) = 4.14$, $p<0.05$, see Fig 3). Post hoc Tukey's HSD tests found that students who liked PBL perceived it as significantly more important to their problem solving ($p<0.01$), critical ability ($p<0.01$), communication ($p<0.05$) and practical ($p<0.05$) skills than those who disliked PBL. All other comparisons were not significant.

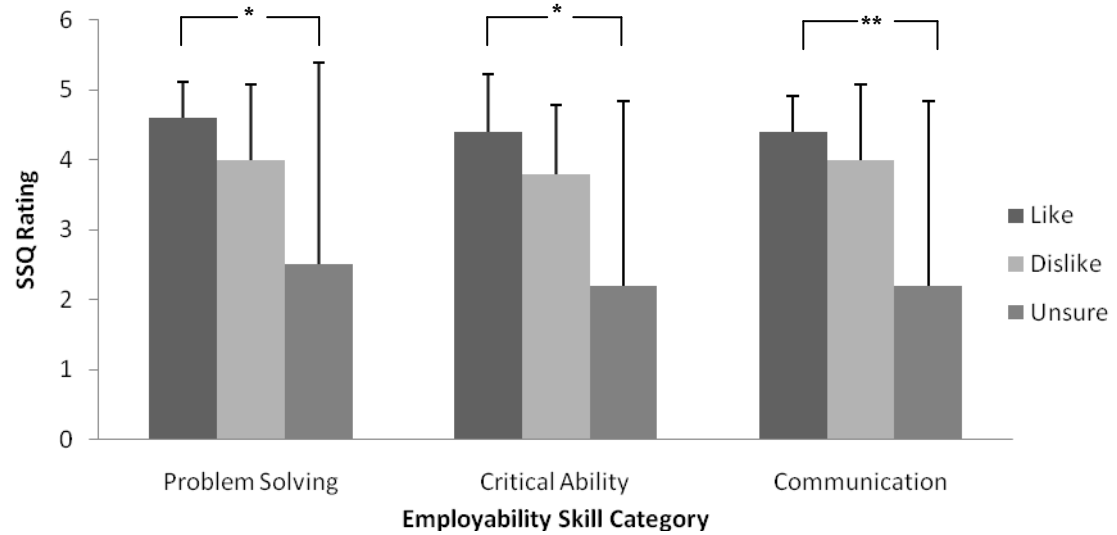

Fig. 4: Level 3 SSQ Importance Scores for Employability Skills

Data shown as mean ±SD (n=28 for each group, * $P<0.05$, ** $P<0.01$). A one-way ANOVA revealed significant differences in SSQ importance ratings between level three students who liked and those who disliked PBL in problem solving ($F(2, 24) = 4.61$, $p<0.05$), critical ability ($F(2, 24) = 5.01$, $p<0.05$), communication ($F(2, 24) = 5.73$, $p<0.01$, see Fig 4). Tukey's HSD tests found that level three students who liked PBL perceived it as significantly more important to their problem solving ($p<0.05$), critical ability ($p<0.05$) and communication ($p<0.01$) skills than those who disliked PBL. All other comparisons were not significant.

Discussion

In 2010 on average there will be 69 graduate applications for every vacancy and a reduction of nearly 7% of available graduate designations (AGR 2010b). This suggests a large number of students will not enter the profession that the subject content of their degree is based on. Given this information and the current economic climate, it is essential that higher education provides opportunities for students to acquire additional employability skills to help them integrate more efficiently into the employment market.

Using PBL to facilitate employability skills

Given Keogh's statement that 50% of what student's have learned in their first year of study is out of date after graduation (2010); we suggest that a reduction in subject knowledge would not be as detrimental as first thought to the overall student learning experience, and that facilitation of employability skills through a PBL approach would be a positive move.

In the past PBL has been used as a vehicle to deliver what has been termed by Milvain (2008) as a 'thinking curriculum'. PBL is a student-centred approach which encourages the learner to take ownership of their learning by deciding what information is required and which resources they need to acquire it (David 2009). Previously support for the use of PBL has been mixed, with Colliver (2000) reporting that PBL is ineffective in improving student knowledge while Vernon and Blake (1993) results supported the use of PBL. The present investigators suggest that it is now time to change the focus of PBL research so that future studies concentrate on the relationship between PBL and employability. The findings from the present study demonstrate that student engagement with the PBL process

results in development of employability skills over time which has been proposed by Davies (2009) as essential when applying for a graduate vacancy.

Satisfaction and importance of PBL in developing employability skills

Satisfaction

At level 1 there were significant differences between the Like and Dislike groups for problem solving, communication and time-management. Difficulties with problem solving are expected in the first year. For some students the PBL process will be new to them so initially some may not fully understand it (Savin-Baden 2000).

Communication is also an area in which students' may need time to develop. When students first come to university initially it may be difficult to make friends. Interestingly, the Dislike group still rated communication 3 out 5 which suggests that they were communicating with other students on the module. When students first arrive at university they are faced with an overwhelming number of things to do and although some level 1 students found PBL helped to develop their time-management there were significant differences between the Like and Dislike groups. At levels 2 and 3 there are no significant differences for time-management which supports the claim that PBL does help to enhance student time-management. Significant differences were found at level 2 between the Like and Dislike groups although the Dislike group still provided high ratings for confidence, problem-solving, critical ability, team working and communication. At level 3 no significant differences were found for the satisfaction categories.

Importance

There were no significant differences for any categories at level 1. At level 2 there were significant differences between the Like and Dislike groups. However, the Dislike group still provided high ratings for problem solving, critical ability, communication and practical skills which do provide positive support for PBL in developing these skills. In addition although the Dislike group ratings suggest they do not like PBL the students still recognise the benefits in developing their employability skills. At level 3 there were significant differences between the Like and Unsure groups which may be caused by the extremely high ratings which the Like group gave to problem solving critical ability and communication. A very important point here is that although in all levels some students disliked or were

unsure they still recognised the importance of PBL in developing their employability skills.

Changes in Satisfaction and Importance over time

The present study supports Savin-Baden's (2000) proposal that for students to fully understand the PBL process it must be implemented into the curriculum from level 1. This is clearly seen by the differences in student perceptions across all the three levels. In level 1 student's are new to PBL and possibly not thinking about employment. During level 2 student perceptions change and for the first time they start to understand the importance of employability skills in addition to subject knowledge.

Level 3 ratings indicate that all groups are satisfied with PBL developing their employability skills although there are some differences for importance. Interestingly, at level 3 it is the Unsure group, not the Dislike group, that are providing the significant differences in importance, which suggests for some students, three years on an undergraduate programme may still not be long enough for them to completely accept PBL.

Conclusion

The AGR propose that from 2010 there will be a large reduction in graduate destinations which will result in many graduates taking up employment in non-subject specific posts. This emphasises the need for higher education institutions to look seriously at ways of enhancing student employability.

If a broader understanding is to be achieved further investigation should take place across all subject areas of sport science, which in the past has been guilty of focusing too much on the relationship between subject content and academic achievement as performance outcome measures.

Finally, a limitation of the present study is that data is completely from the student perspective. Future research would benefit considerably if employer's opinions on whether students who have been taught via PBL are better equipped for the work place than their traditionally taught cohort.

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