

Enquiry-based Learning: the impact on postgraduate trainees

Authors: Debbie Reel & Helen Davies

Contact Details:

Debbie Reel

Newman University College

Genners Lane, Bartley Green, Birmingham, B32 3NT

D.Reel@newman.ac.uk

Helen Davies

Newman University College

Genners Lane, Bartley Green, Birmingham, B32 3NT

H.davies@newman.ac.uk

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

Enquiry-based Learning: the impact on postgraduate trainees

Authors: Debbie Reel & Helen Davies

Abstract

This paper discusses approaches to teaching and learning at postgraduate level. Innovative curriculum design and the desire to involve trainees in their own learning has seen an increasing number of those in Higher Education (HE) adopt an enquiry-based learning (EBL) approach. This paper will discuss how twenty five postgraduate trainees specialising in initial teacher training in the Early Years undertook a module which involved investigating a chosen area of early years practice and presenting this in the form of a documentary that would inform qualified teachers new to the Early Years Foundation Stage (EYFS). The promotion of the EBL approach was strategic and encouraged trainees to engage more deeply with the issues around a specific chosen topic as well encouraging autonomy and independence. Furthermore, it facilitated a set of additional knowledge and attributes that would be recognised as valuable in an early years 'professional context' (MacDonald, 2005). A self-efficacy questionnaire, based on Lane *et al.* (2003) was completed by the trainees at the beginning of the module and on completion in order to gauge individual levels of motivation, planning, ability to seek support, understanding of theory, time management and management of overall production and writing in relation to their chosen topic area. Initial findings show that whilst the trainees gained from the EBL approach to learning, it also raised far greater issues for PGCE trainees undertaking a one year intensive initial teacher training course.

Keywords: Enquiry-based learning (EBL); self-efficacy; documentary; engagement; assessment process; postgraduate.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

Introduction

Teaching and learning in Higher Education (HE) has traditionally involved a series of tutor directed, taught sessions or lectures followed by an assessed element. The Postgraduate National Survey in September 2009 revealed that overall levels of satisfaction were high with 84% of trainees rating their experience of HE as having 'met or exceeding their expectations' (Park, 2008). One of the factors that participants (80.7%) stated that they were most satisfied with, were the opportunities to undertake independent study. These findings support earlier research (Kahn and O'Rourke, 2005); (Hutchings and O'Rourke, 2006) and (Clancy, 2005) that suggests that the benefits of independent research allows trainees the flexibility to meet and engage in challenges which 'develop a wide range of abilities, whilst still engaging them in the process of learning' (Kahn and O'Rourke, 2007: 8). However, there is a growing concern amongst those working in HE that trainees 'will not do any work unless it is being assessed by which they often mean that it is awarded a mark' (Macdonald, 2005). It could be argued that the more traditional model of learning perpetuates the role of the tutor to deliver information and trainees are simply expected 'to accept and learn ... [in] an essentially passive mode' (Hutchings, 2006:2). This concern has led to a growing enthusiasm for fundamentally different approaches to learning whereby trainees are encouraged to formulate their own areas of research, or interest and are guided by a tutor taking the role of facilitator to help them make the decisions how and where to take the research (Centre for Excellence in Enquiry-Based Learning (CEEBL), 2008). The Enquiry-based Learning (EBL) approach perpetuates engagement with the subject matter on a deeper level as well as promoting a more active and creative approach to learning aiming also to impact upon the assessment process. In fact, the process of enquiry encourages trainees to be engaged throughout as it is their commitment to the whole process that influences the assessment. The open ended structure

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

of the enquiry process inevitably suggests an open ended approach to the assessment.

If we consider that assessment should be an open ended and ongoing process (Savin-Baden & Howell Major, 2004) rather than an outcome and that its aim is to improve student learning, then it would at first appear that EBL breaks from the traditional assumptions of assessment as something that sums up the knowledge and understanding of trainees. Knowledge, as summarised by Savin–Baden & Howell Major (2004) is not inhaled in the same way that it is exhaled. The process of exhalation is a complex one. Knowledge goes through a series of personalised reconstructions, ideas are processed and reshaped by subjective thoughts, this coupled with discussion and collaboration forms the knowledge that is then exhaled. The opportunity for a learner to engage in such a process is that which Savin–Baden & Howell Major (2004) refer to as ‘authentic assessment.’ It is this that allows and indeed encourages the student to analyse, synthesise and evaluate as opposed to simply knowing, comprehending and applying (Atherton, 2005). Savin-Baden and Howell Major (2004) warn that there are often many concerns regarding the emphasis on the process through which the trainees progress. Gough (2008) refers to a division between those trainees who commend EBL and rise to the challenge of full engagement in the process and those who vacillate over the benefits of this process. With this in mind, the research reported here was initiated based on two aims:

- to determine the impact that EBL has on the self-efficacy of postgraduate trainees;
- to evaluate whether the EBL process encouraged sufficient development of knowledge and skills suitable for the work place.

Context and methodology

Prior to the introduction of the EBL process, trainees on the early years PGCE course carried out an individual written assignment on an aspect of early years practice. The trainees enrolled on the PGCE early year’s course arrived

Citation: Reel, D. and Davies, H. (2011) ‘Enquiry-based Learning: the impact on postgraduate trainees’ *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

with substantial variation in knowledge, understanding and practical experience of the Early Years Foundation Stage (EYFS). The trainees fell into three distinct groups. The first group had recently completed a degree in Early Childhood Studies and therefore had significant knowledge about Early Years pedagogy, as well as familiarity about the documentation and principles of the EYFS. The second group were at the other end of the spectrum and had just the minimum experience about the EYFS required by the course. This group of trainees had limited knowledge of the documentation or principles that underpin the early years. The final group were trainees who had experience of working within the EYFS, for example, as Teaching Assistants or Learning Support Assistants and had practical experience and varying knowledge of the documentation and the principles. Research by Reel (2006) and the end of module evaluations highlighted some dissatisfaction amongst a number of the trainees about the module. In particular, it was found that those who had recently completed a degree in Early Childhood Studies adopted a surface level approach (Marton and Säljö, 1976 a & b) to learning and were not taking the opportunity to develop and broaden their knowledge of the Foundation Stage. With this in mind it was decided to radically change the module by adopting an EBL approach. This module was revalidated in the summer of 2008 and introduced in the autumn of the same year with the intention that the trainee teachers would firmly establish early year's pedagogical knowledge and understanding. The EBL module was designed so that the trainees could pursue areas of interest and build upon and extend any previous knowledge and experience (Kahn and O'Rourke, 2005) as well as, promoting autonomy and independence (CEEBL, 2008). In addition, the freedom of using this approach would hopefully encourage a means of enquiry that would enhance their abilities and knowledge as future EYFS practitioners in an increasingly competitive professional context.

During the initial taught sessions the trainees were introduced to the EBL process and the assessment. The assessment required the trainees to work

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

in small groups (approx 3-4) to create a video documentary on one aspect of early years practice. The documentary was introduced to the trainees as a 'real life' scenario. Each group was required to submit an application to a mock Early Years Forum to produce a documentary on a focus of Early Years practice. Trainees were given time to investigate and discuss together with tutors' areas of interest before submitting a documentary proposal in response to the tender. It was hoped that, as Edelson *et al.* (1999) suggest, providing learners with authentic activities would motivate learners to acquire new knowledge and skills.

The documentary proposal had to demonstrate a sound understanding of the chosen topic and indicate how they would examine the chosen area from different points of view ensuring a critical examination of a variety of approaches to teaching and learning in different early years environments. (See Table 1. documentary outline, overleaf). It was important that the content of the documentary was negotiated with module tutors, so to ensure broad coverage of the EYFS and subsequent early years practice. In addition, some early years content was included in the taught sessions to ensure that trainees had a sufficiently broad understanding of the EYFS. These sessions were negotiated with trainees once the focus of the documentaries had been established. Sessions were also provided throughout the module on how to create a documentary and use the necessary equipment.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

As part of the commitment to ensuring that high quality practice is achieved in all early years settings the EYF is developing a series of documentaries which explores and examines current practice for 3-5 year olds. The aim of the documentaries is to raise standards and encourage practitioners to reflect on their practice and consider the underlying basis for such practice. Each documentary will examine an area of early years practice and will explore the challenges, issues and dilemmas faced by practitioners. The topics explored in these documentaries will vary considerably but will include important aspects of early years practice for those working with 3-5 year olds. For example, the topics might include one of the six areas of learning, assessment, the role of the adult, or child-initiated learning. Each documentary will have a supporting leaflet to accompany it with a description of the content of the documentary and will also include key research and publications. The documentary and leaflet are aimed at practitioners new to teaching or new to the Foundation Stage. Both the documentary and the leaflet will be scholarly and informed.

The EYF invites applications for the documentaries. Applicants will be expected to refer to relevant reading and research. Applications should be within the range of 300-500 words.

Your application should demonstrate the following:

- *Working title*
- *Names and student numbers*
- *Topic to be explored*
- *Brief outline of the documentary including some of the issues and dilemmas that will be explored*
- *Rationale*
- *Key reading and research*

The documentaries should be 10-15 minutes in length.

Your documentary should be in .wmv format and produced using Windows Movie Maker. The finished film should be submitted on blank CD-ROM or memory stick.

Table 1. Documentary Outline.

The decision to include ICT as a major aspect of the assessment process was informed by the fact that there is the requirement that ICT is more comprehensively incorporated across the EYFS and should extend to the young by being introduced to a broad range of ICT from an early age. (DfES, 2007). This can only happen if practitioners have the appropriate ICT knowledge and skills. The creation of a documentary therefore enabled trainees to develop technical skills as well as to critically engage with a specific area of the early years.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

Alongside the proposal, each group were required to follow the University College's ethics guidance. This was to ensure that the focus of each documentary was not controversial and would not cause any distress or harm to the participants. Each group submitted an ethics form outlining how they were going to gain informed consent from participants. Where children were being filmed, written permission from schools and parents was required. To ensure anonymity the names of children and the settings were not used in the documentaries.

In order to ascertain trainees' feelings regarding the EBL process, a mixed method approach using quantitative and qualitative data was adopted in order to gain reliability and to optimise validity (Cresswell & Clark 2011). Firstly, trainees were invited to complete an initial self-efficacy questionnaire with informed consent being obtained prior to the research commencing which formed the quantitative element of the research. Comer and Gould (2011) suggest that the higher a person's self – efficacy the more likely they are to be motivated to pursue a goal which eventually will be reinforced by the results of their diligence.

The validated self-efficacy questionnaire was adapted from Lane *et al.* (2003) to measure the impact of trainees' level of autonomy in seven key areas; motivation, planning, ability to seek support, understanding of theory, time management, and management overall production and writing in relation to their chosen topic area. Based upon Lane *et al.*'s (2003) research, each question was formulated around the phrase, 'how confident are you in your ability to?' Examples of the questions included 'how confident are you in your ability to motivate yourself to complete the task?' and 'how confident are you in your ability to set yourself realistic goals?' A Likert scale was used to specify the trainees' level of agreement to the statements with (0) indicating 'not confident at all' to (4) indicating 'very confident'. In the final session each of the groups presented their documentary subsequently answering questions

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

from tutors and peers. The trainees were then invited to repeat the initial self-efficacy questionnaire.

In addition to the self efficacy questionnaires, the trainees were encouraged to attend tutorials as a means for ongoing dialogue providing the opportunity to exchange ideas and issues between the trainee and the facilitator. This promoted a means of support for their ongoing research. The facilitators kept research diaries based around these discussions which documented observations of the groups' feelings, levels of confidence, the challenges that they felt needed to be overcome and the impact that these had on the groups' overall progress. Using this qualitative approach enhanced the quantitative data as it provided a platform that encouraged opportunities for reflection and shared thinking designed to motivate and stimulate the process outside of the arena.

Findings and Discussion

The pre and post intervention scores available for the chosen participants revealed the impact that the completion of the enquiry-based activity had on trainees' self-efficacy. Cronbach's Alpha score was used as an index of reliability of the self-efficacy questionnaire. The Alpha analysis suggested a strong reliability (0.7 and above). This internal consistency was confirmed through reliability analysis.

Scale	Pre intervention	Post intervention
Motivation self-efficacy overall score	2.33 (0.57)	2.84 (0.73)
Planning self-efficacy overall score	2.41 (0.50)	3.14 (0.41)
Support self-efficacy overall score	3.31 (0.53)	3.28 (0.49)
Theory self-efficacy score	2.33 (0.58)	3.02 (0.45)
Time management self-efficacy score	2.42 (0.75)	3.15 (0.57)
Writing self-efficacy score	2.31 (0.57)	2.95 (0.61)

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

Overall self-efficacy score	2.52 (0.40)	3.06 (0.42)
-----------------------------	-------------	-------------

Table 2 - Comparison of mean self-efficacy scores for pre and post intervention groups.

Descriptive statistics were produced to identify differences in pre and post intervention mean scores for each subscale and for overall self-efficacy (Table 2.). These showed an increase in scores following the enquiry-based activity, with the exception of support and motivation self-efficacy which decreased. Overall self-efficacy scores pre and post intervention show an average increase of 0.5 points on the self-efficacy scale.

Savin–Baden & Howell Major (2004) acknowledge that successful implementation of EBL processes require a level of consciousness of the challenges to change. A profusion of research refers to the challenges of this process (Clancy, 2005); (Lane *et al.*, 2003) and (Kahn & O’Rourke, 2005). In response to these challenges, Macdonald (2005) states that there needs to be ‘... a lot of unlearning and letting go to be done by both trainees and tutors before there is a genuine alignment of assessment with the principles and practices of EBL.’ It remains undisputed that the trainees, at times felt uncomfortably challenged by the process which clearly impacted upon their levels of motivation. This may well have been consequential of their inability to ‘unlearn and let go.’ Instead, they held on to assessment processes with which they were familiar and comfortable and subsequently made constant comparisons. Clancy (2005) suggests that to successfully change to a curriculum that embraces the processes of EBL, all stakeholders need to be involved ‘the institution, staff and trainees.’ Although recognising the need for champions of the process, Clancy (2005) talks of the essentialities of all being supportively involved. It is questionable whether the purpose of this EBL process was made sufficiently transparent to all stakeholders encouraging full involvement as the option to attend and participate in tutorials was not adopted as fully anticipated. Where trainees did choose to attend,

Citation: Reel, D. and Davies, H. (2011) ‘Enquiry-based Learning: the impact on postgraduate trainees’ *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

observations revealed that although they were fluent in the rhetoric of deeper understanding of an aspect of early years they were nevertheless hampered by the ICT element of the process which in turn had an impact upon their motivation.

Consequently, product over process also emerged as an instrumental influence upon motivation. Schmidt and Moust (2000) and Savin-Badin & Howell Major (2004), each, in response to factors that impact on student motivation refer to the nature of the problem set and the impact that a poorly devised enquiry can have on intrinsic motivation. Although appropriately devised, the production of the DVD met with contention as trainees verbalised a resistance to this aspect of the assessment process preferring a more traditional written assessment. Clancy (2005) suggests that 'the assessment process must continuously challenge the learner.' Undoubtedly, the DVD documentary did provide a challenging alternative to traditional assessment strategies that may have distracted from the essence of the early years content (Savin-Baden & Howell Major, 2004). Although it could be argued that the absence of the production of the DVD may have strengthened the relationship between trainee and process as opposed to trainee versus product, the concept of reliability, validity and challenge in order to motivate prevailed coupled with the aforementioned importance of knowledge and understanding of ICT skills being promoted within the early years.

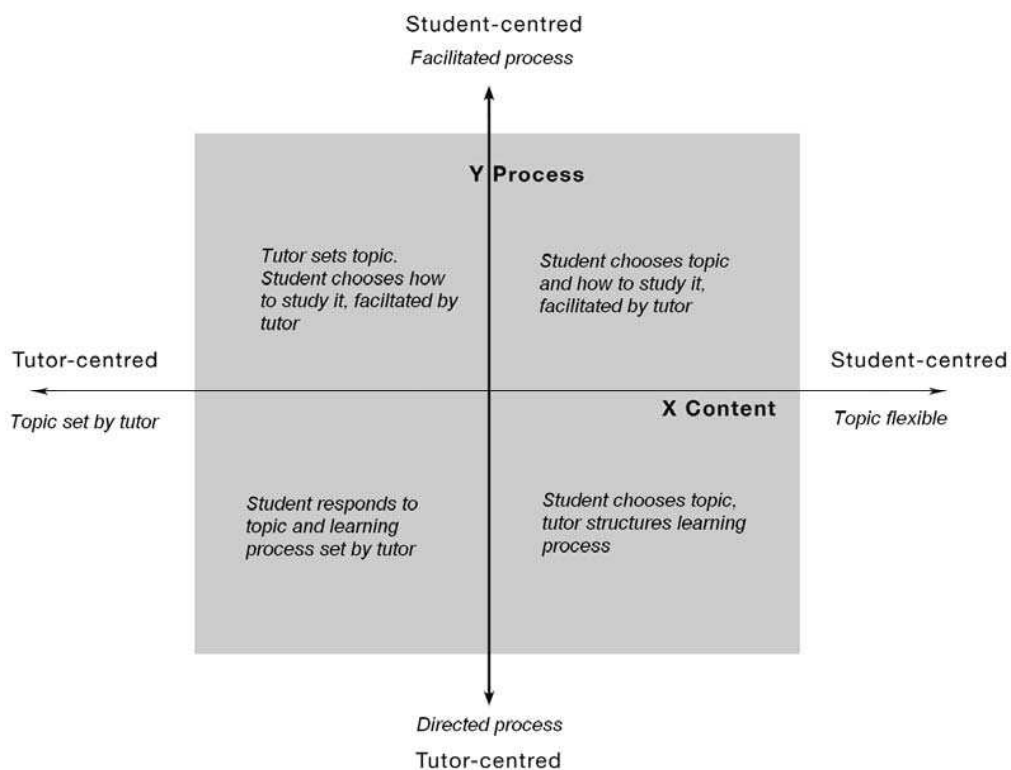
Support for the trainees as members of the learning community, arguably stems from the role of the facilitator and their relationship (Lave and Wenger, 1991). With motivation and support being the lowest of self-efficacy scores, it was felt that the type of support offered needed to be addressed. Aubrey and McMorrow (2010) with reference to the two dimensional model of learning and teaching practice (Fig.1.) state that the 'process axis' demonstrates the way in which trainees can move along the axis making personal decisions as how to frame their learning in order to fulfil the task set. Within this learning frame there are obvious extremes from tutor led to tutor facilitated centred

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

approaches to learning and the rate at which trainees move from one end to the other will vary considerably. This raises the issue of the value in personalising learning for the trainees as they enter HE with 'varying learning dispositions' (Carr & Caxton in Aubrey and McMorrow, 2010) and recognising the motivational factors that influence the depth to which they adapt to this level of personalisation and move throughout the quadrants. (See Fig. 1.) The ideal of EBL is for trainees to be working with the upper right quadrant. Although observations revealed that our trainees were working within this ideal, the reality appears to be that trainees are working within the lower left of this upper right quadrant, with some resistance but also with the potential for movement.

Fig. 1. Two-dimensional model of learning and teaching practice (Adapted from McMorrow 2008) in Aubrey & McMorrow (2010).



This potential for movement within the quadrant was found to have the most impact upon those who took advantage of the tutorial support. The benefits of

these tutorials gave opportunities for ongoing dialogue and social construct of knowledge led by collaborative learning environment. Delaney and Mitchell (2005) with reference to student led tutorials state that they characteristically create a sense of team membership. It is the integration of the different members within their new learning communities who share an agreed level of discourse and an understanding of such that brings benefits to the process. Having to bring this shared level of discourse and understanding to a tutorial, requires levels of interdependence. Recognising that we cannot expect trainees to know everything with gaps in their learning needing to be 'bridged,' Delaney & Mitchell (2005) assert that within a tutorial forum, trainees ask more pertinent and precise predetermined group questions which drive the process and subsequently impact upon the support for and between members of the small learning community.

There is a fine line between increasing levels of support to ensure the success of the learning process and the danger of losing the key principles of the EBL process. Aubrey and McMorro (2010) make reference to the importance of shifting ideology as well as practice as one engages in maintaining these EBL key principles. This shift in ideology is exemplified by the educational philosophy of Makiguchi (in Aubrey & McMorro, 2010) who highlight that::

'the aim of education is not to transfer knowledge; it is to guide the learning process, to equip the learner with the methods of research. It is not the piecemeal merchandising of information; it is to enable the acquisition of the methods for learning on one's own; it is the provision of keys to unlock the vault of knowledge. '

Conclusion

The differences in levels of self-efficacy were measured to determine the impact of EBL in order to encourage a deeper approach to learning through EBL (Prosser and Trigwell, 1999). This was in an attempt to improve aspects

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

of teaching and learning on this course that would be instrumental in deepening pedagogical levels of understanding of teaching and learning in the Early Years Foundation Stage. This approach was specifically adopted to challenge the difficulties in meeting the needs of the range of experienced trainees entering the course with a variety of knowledge and understanding of the EYFS.

The results of this small scale research revealed that there were significant changes to trainees' self-efficacy levels. Tutorials that promoted sustained and reflective discussions coupled with documented diary entries revealed that although the trainees found the process challenging they still engaged at a deeper level with the early years content. This was also evident in the depth of responses from the trainees, as detailed and thought provoking questions were asked by tutors and peers as their documentaries were viewed at the end of the module. Here, the trainees' increased knowledge of aspects of the early years was illustrated by the significant links made between practice, knowledge and research. Motivation and support however were identified by the study as areas needing further consideration. Bandura (cited in Lane *et al.*, 2003: 64) states that the guiding principle of the EBL process is that 'performance accomplishments should raise self-efficacy.' Arguably, all the trainees' accomplishments and the skills developed to create the documentary were not necessarily viewed as 'accomplishments' and did impact on self efficacy. However, the fact that the EBL approach did encourage deeper levels of learning and in addition gave opportunity to develop new competencies and skills (Broadfoot *et al*, 2004 in Crisp, 2007) appropriate as an assessment tool ensures that the documentary will remain a focus for this module. As ascertained, with reference in particular to ICT, the skills gained are of inevitable benefit to those working within the EYFS. They are not only transferable to the children but they can also be used to promote observation, recognition of children's interests and also to enhance reflective practice.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

The recognition of the need to guide the learning process as opposed to over, or under supporting the learner has the potential to influence subsequent rounds of the EBL process. Brockbank & McGill (2007) state the need for a secure relationship between the facilitator and the student. They continue that at postgraduate level, we are dealing with 'a pure thin stream of excellence' as they have twice undergone a selection process for HE. This stream of excellence, they suggest should be nurtured and protected so that they develop both professionally and personally through their learning journeys. Lave and Wenger (1991) offer a clear solution for the protection of these professional and personal learning journeys in their reference to membership of 'a 'community of practice' (Smith, 1999). Lave and Wenger (1991: 101) advocate that those engaging in new learning situations should be encouraged to participate within their learning community and as a full member have access to 'a wide range of ongoing activity.

References

- Atherton, J. S. (2005) *Learning and Teaching: Bloom's Taxonomy*. Available at: <http://www.learningandteaching.info/learning/bloomtax.htm> (Accessed 23 September 2010).
- Aubrey, A., and McMorrow, J. (2010) How Could We Model Enquiry- Based Learning? In CEEBL-Supported Projects, 2008-10, Centre for Excellence in Enquiry-Based Learning (CEEBL), University of Manchester, pp. 4-20.
- CEEBL (2008) *What is enquiry-based learning?* Available at: <http://www.campus.manchester.ac.uk/ceeb/eb/> (Accessed 17 September 2010).
- Clancy, A. (2005) *Researching Lecturers' Perspectives of Problem Based Learning*. Available at: <http://www.aishe.org/readings/2005-2/chapter20.pdf> (Accessed 01 June 2010).
- Comer, R. & Gould, E. (2011) *Psychology around us*. NJ: John Wiley & Sons.
- Cresswell, J.W. & Clark, V.L. *Designing and Conducting Mixed Methods Research* (2nd ed) Los Angelis: SAGE.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

- Crisp, G. (2007) *The e-Assessment Handbook*. London: Continuum International Publishing Group.
- Delaney, D., & Mitchell, G. (2005) *Tutoring Project Based Learning*. Available at: <http://www.aishe.org/readings/2005-2/chapter7.pdf> (Accessed 1 June 2010).
- Department for Education and Skills (DFES), (2007) *The Early Years Foundation Stage*. London: DFES.
- Edelson, D. C. Gordin, D. N. & Pea, R. D. (1999). Addressing the challenges of inquiry-based learning through technology and curriculum design. *Journal of the Learning Sciences*, 8 (3/4), 391-450.
- Gough, G. (2008) *Encouraging groups to take responsibility for learning: First steps in EBL*. Available at: http://www.campus.manchester.ac.uk/ceeb/resources/papers/gough_EngCETLsymp2008.pdf (Accessed 28 March 2010).
- Hutchings, B. (2006) *Principles of Enquiry-based Learning*. Available at: <http://www.campus.manchester.ac.uk/ceeb/resources/papers/ceeb/ceeb/2.pdf> (Accessed 05 February 2010).
- Hutchings, B. and O'Rourke, K. (2006) *Evaluating Learning Change: How Third-year English Literature Trainees adapt to Problem-Based Learning*. Available at: <http://www.campus.manchester.ac.uk/ceeb/resources/casestudies/ceeb/essay002.pdf> (Accessed 17 September 2010).
- Kahn, P., and O'Rourke, K. (2005) 'Understanding Enquiry-based learning' in T. Barrett, I. Mac Labhrainn, H. Fallon, (eds). *Handbook of Enquiry & Problem Based Learning*. Available online at: <http://www.nuigalway.ie/celt/pblbook/> (Accessed 23 September 2010).
- Kahn, P. and O'Rourke, K. (2007) *Guide to Curriculum Design: Enquiry-Based Learning*. Available at: <http://www.palatine.ac.uk/files/1009.pdf> (Accessed 23 September 2010).
- Lane, A, Devonport, T. Milton, K, and Williams, L. (2003) Self-efficacy and Dissertation Performance among sport trainees. *Journal of Hospitality, Leisure, Sport and Tourism Education*. 2 (2) pp.59-66.

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).

- Lave, J. and Wenger, E. (1991) *Situated learning: legitimate and peripheral participation*. Cambridge: Cambridge University Press.
- MacDonald, R. (2005) 'Assessment Strategies for Enquiry and Problem Based Learning'. Available online at <http://www.aishe.org/readings/2005-2/chapter9.pdf> (Accessed 3 May 2008).
- Marton, F. and Säljö, R. (1976a) 'On qualitative differences in learning I: outcome and process', in *British Journal of Educational Psychology*, 46, pp. 4-11.
- Marton, F. and Säljö, R. (1976b) 'On qualitative differences in learning II: outcome and process', in *British Journal of Educational Psychology*, 46, pp.115-127.
- Park, C. (2008) *The taught postgraduate student experience: Overview of a Higher Education Academy survey*. Available online at <http://www.heacademy.ac.uk/assets/York/documents/ourwork/postgraduate/PGTSurvey.pdf> (Accessed 12 February 2010).
- Prosser, M. and Trigwell, K. (1999). *Understanding Learning and Teaching, on Deep and Surface Learning*, Society for Research into Higher Education & Open University Press, Chapter 4.
- Reel, D. (2006) *The Opportunity for change: How Effective is the Postgraduate Certificate of Education in preparing trainees for the NQT year*. Unpublished MEd thesis. Leicester University.
- Savin-Baden, M. and Howell Major, C. (2004) *Foundations in Problem Based Learning*. London: Open University Press.
- Schmidt, H. and Moust, J. (2000) *Factors affecting Small Group Tutorial Learning: a Review of Research*. In D. Evensen, & C. Hmelo, (Eds) *Problem-based Learning: A Research Perspective on Learning Interactions*, London: Routledge.
- Smith, M. K. (1999) 'The social/situational orientation to learning', *The Encyclopedia of Informal Education* [Online]. Available at: www.infed.org/biblio/learning-social.htm. (Accessed 27 September 2010).

Citation:

Reel, D. and Davies, H. (2011) 'Enquiry-based Learning: the impact on postgraduate trainees' *Teian Journal* 3 (1) September [Online]. Available at: <http://bit.ly/xMlqKB> (Accessed 01 September 2011).