

[O2] Reflection as a component of a blended learning approach: encouraging engagement and re-engagement

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Abstract

Human Physiology is a level one undergraduate core module that is taught using a blended learning approach. Students are encouraged to direct their own learning using 'land-mark' lectures hosted on-line, linked to references to key resource material in textbooks, on websites and in computer software programmes. These elements constitute the base of a learning triangle, whose apex is class contact in the guise of dedicated workshops that enable staff to work alongside individual students or student groups. Reflection is viewed as both an approach and method for enhancing the quality and depth of student learning. To encourage a cycle of engagement and re-engagement, students complete a reflective diary. This is a vehicle for encouraging individual learners to think about their learning and to understand better what, how and why they learn. Reflective narratives provide an experiential window that offers an understanding of how and why students choose and use materials and resources. To determine the level of reflection, reflective statements were coded using the framework proposed by Kember *et al.* (1999). Students' diaries exhibited a progression from what is little more than a description to deep reflection. Engagement and re-engagement with learning as facilitated by reflective diaries has a positive influence on assessment performance, with a significant positive correlation noted. The outcomes from this project indicate the important role played by reflection in encouraging engagement and re-engagement in a blended learning model and the positive influence that reflection can have, in terms of, the process of good quality learning, the development of appropriate learning behaviour and student performance during assessment tasks.

Introduction

Blended learning can be accomplished through combination of technology-based materials, face-to-face sessions and print materials. To foster this approach through the medium of the University online learning framework, the traditional format of the module comprising a weekly programme of 2 lectures and one tutorial, was replaced by converting lectures into an on-line form and hosting them on the University's virtual learning environment (Wolverhampton Online Learning Framework, WOLF), linking these to key texts, online resources and computer software packages – comprising the two points of the base of the students' learning triangle (**Figure 1**). The apex point is one of 9 3-hour interactive workshops covering the key areas of physiology – the face-to-face 'class contact' element.

In learning and gaining new insights into human physiology, students need to be reflective and put what they have learned into perspective. An extensive review of the literature on reflection and experiential learning (Moon, 1999a; Moon, 1999b), provides a particular focus on the application of reflective writing via the vehicle of learning journals. Reflection

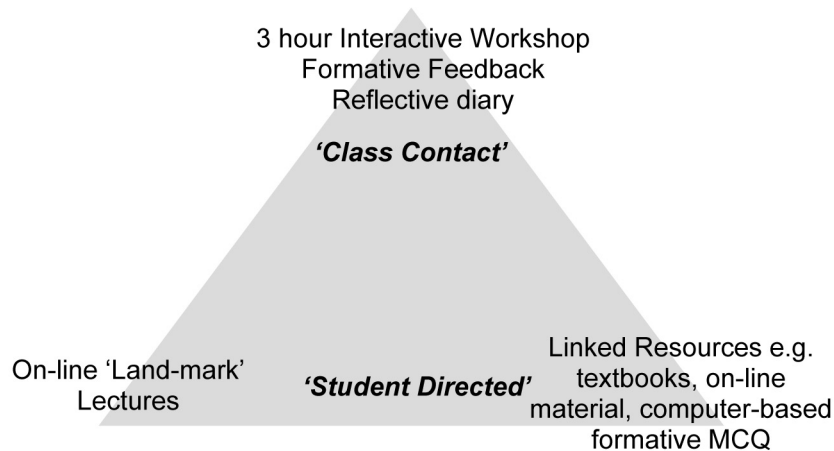


Figure 1: The students' learning triangle

can be viewed as both an approach and method for improving the quality and depth of student learning. In view of this linked into the 'class contact' element, a weekly student diary sheet designed to encourage and facilitate students to reflect on their learning and accomplishment during the week must be completed. Race (2002) captures the intentions of the reflective diary when he comments that 'the act of reflecting is one which causes us to make sense of what we've learned, why we learned it, and how that particular increment of learning took place. Moreover, reflection is about linking one increment of learning to the wider perspective of learning - heading towards seeing the bigger picture.' Reflection is therefore a way of thinking about learning and helping individual learners to understand what, how and why they learn. The reflective diary is the 'vehicle' for reflection and makes use of structured entries with simple prompt questions to provide scaffolding for the individual learner to make sense of their experience and make connections.

One dimension of reflection of interest in this study was depth, with an aim to better understanding the relationship between depth of reflection and effective learning behaviour and by implication performance. Frameworks to assess the 'level of reflection' tend to involve application of hierarchical models of reflective activity (Hatton and Smith, 1995; Kember *et al.*, 1999; Kember *et al.*, 2000), with progressive sophistication from description to deep reflection, the latter associated with perspective transformation (Mezirow, 1991). Predicated on Mezirow's (1991) work Kember *et al.* (1999) provide a substantiated model for estimating the depth of reflective thinking, from 'non-reflection' to 'premise reflection'. The seven levels define the coding system (**Figure 2**) for students' reflective diaries. The 'level of reflection' increases from 1 to 7, with parallel categories representing equivalent 'levels' and shaded boxes representing 'non-reflective' action.

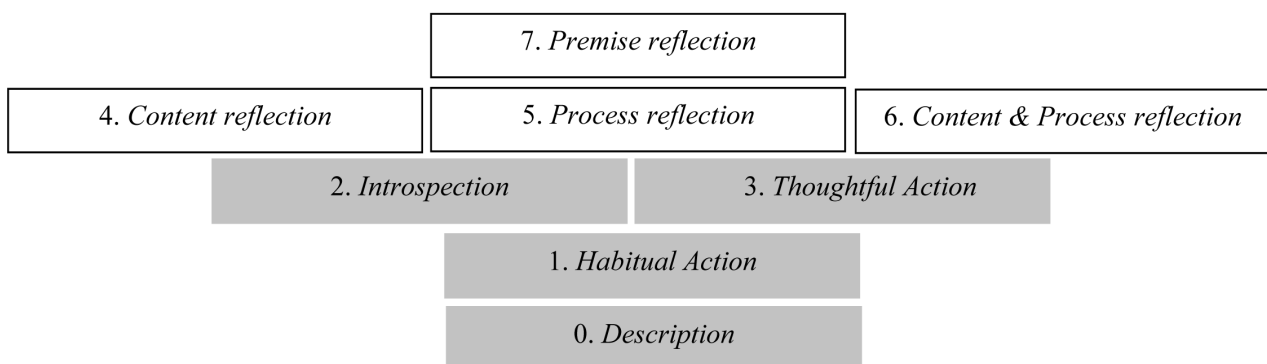


Figure 2: Coding categories for reflective thinking (reproduced from Kember *et al.*, 1999)

Habitual Action is activity performed automatically or with little conscious thought, often not a feature of journal narratives (Mezirow, 1991 p106). *Thoughtful Action* involves higher-order cognitive processes with a focus on ongoing action. It draws on existing knowledge and prior learning to make selective review rather than deliberate appraisal and reappraisal (Mezirow, 1991 p107). *Introspection* involves thinking about thoughts and feelings and therefore lies in the affective domain (Mezirow, 1999). '*Reflection* involves the critique of assumptions about the content or process of problem solving. *The critique of premises* . . . pertains to problem posing as distinct from problem solving' (Mezirow, 1991 p105). Premise reflection is considered to be at a higher level and involves transforming of meaning, being aware of why we perceive, think, feel or act in the way we do (Mezirow, 1991 p105).

Methodology

During the module, students were expected to engage with the process outlined in **Figure 3**.



Figure 3: Expectations of engagement required of the students

Students' reflective diaries were coded according to the framework developed by Kember *et al.* (1999). Statistical analysis was performed using SPSS (v 11.5). The correlation between completing the reflective diary and student performance was explored using a Spearman Rank test and multiple comparisons between 'level of reflection' and student performance were made using a one-way ANOVA.

Results

A strong positive correlation is evident from **Figure 4**, $r = 0.96$ ($p < 0.05$). Analysis using a one-way ANOVA shows that a significant difference exists between different 'levels' [$F(4,103) = 10.727$, $p = 0.000$]. The pair-wise comparisons (**Table 1**) locate these differences. Significant improvements in assessment performance are noted when *Descriptive narratives* are compared to those exhibiting *Introspection* and *Content & Process Reflection*. Assessment performance for students' diaries coded as demonstrating *Content & Process Reflection* also show significantly improved module grade when compared to *Habitual Action* and *Thoughtful Action*.

Discussion

Reflection is acknowledged as being both involved in and enhancing the quality of learning (Moon, 1999; Moon, 2001) and building on the experience of a pilot study, a weekly reflective diary was introduced in the module BM1119 Human Physiology. The foremost intention of the reflective diary was to integrate a reflective opportunity into the

Pair	Mean difference	p-value
D – HA	-1.29	0.972
D – TA	-3.83	0.140
D – IN	-5.18	0.015
D – CP	-8.23	0.000
HA – TA	-2.54	0.482
HA – IN	-3.89	0.093
HA – CP	-6.95	0.000
TA – IN	-1.35	0.597
TA – CP	-4.41	0.001
IN – CP	-3.06	0.054

Table 1: Pair-wise comparisons for mean module grade for the five levels of reflection

Note: D = Description; HA = Habitual Action; TA = Thoughtful Action; IN = Introspection; CP = Content & Process Reflection. Shaded areas represent mean difference is significant at the 0.05 level.

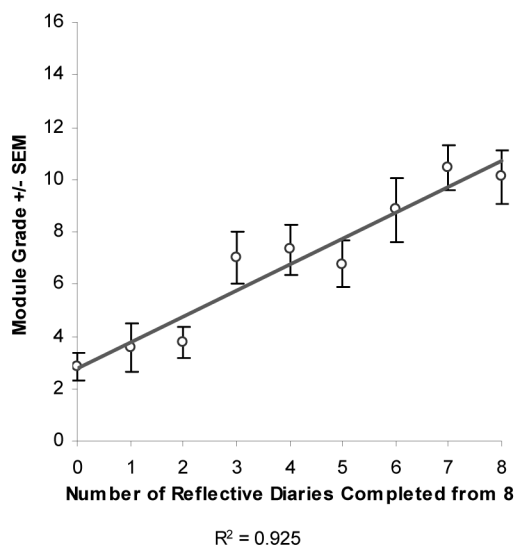


Figure 4: Relationship between module grade achieved and level of engagement as defined by number of reflective diaries completed (n=110)

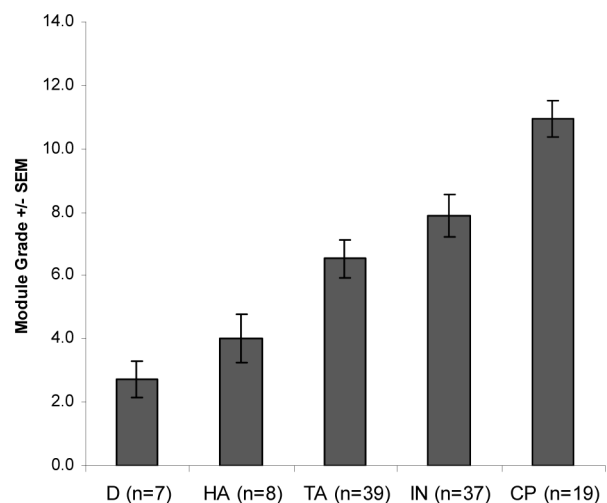


Figure 5: Sample means and SEM for the five levels of reflection (n=110). Note: D = Description; HA = Habitual Action; TA = Thoughtful Action; IN = Introspection; CP = Content & Process Reflection

curriculum. A ‘scaffolding’ document with questions to promote and support reflective writing was provided, and the learning intentions were discussed with the students, this provided a clear rationale for the process.

Student engagement with the process of completing the weekly reflective diary was positive, with a strong positive correlation ($r = 0.96$; $p < 0.05$) (**Figure 4**). Completing the reflective diary encourages a cycle of engagement and re-engagement. Results suggest that improved assessment performance is associated with higher levels of engagement with this cycle. Many accounts are characterised by candour; however the majority of diaries (91 from 110) are characterised by descriptive writing or ‘non reflective’ actions as defined by Mezirow (1991).

- ‘the workshop this week was quite difficult. This maybe because I didn’t do any reading about the topic beforehand’
- ‘the work was quite difficult, there was so much you needed to understand’
- ‘the workshop was very challenging and too many calculations involved. I need to do so much more reading in order to be able to complete workshop questions in the phase test’

- 'work was a little challenging maybe due to not reading before attending'

Despite 'scaffolding' the approach, many students tend to be mechanistic and uniform rather than critical, an approach consistent with the findings of Hatton and Smith (1995). Reflective diaries were successful in developing the students' awareness of the value of formative feedback; with the majority of students acknowledging the value of the formative feedback opportunity:

- 'very useful'
- 'useful, it gives sense of direction that I have to follow'
- 'Yes, useful but much information to be retained'
- 'It was very good, good explanations of the issues'
- 'Very useful explained in detail'

There is an increasing awareness that the superficial or 'non reflection' noted above may not be effective as a means of learning (Mezirow, 1998; Kember *et al.*, 1999; Kember *et al.*, 2000). Some students' diaries (n=19) developed a deeper level of reflection, with content and process reflection coupled with acknowledgement of the value and potential application of formative feedback:

- 'Feedback useful, helped me to understand my weaker areas'
- 'Key points on cue cards, extra reading on relevant theory on questions that were incorrect'
- 'Made extra notes and corrected those things where I went wrong. Useful as it tells and explains where went wrong. If proper notes aren't made, can't revise properly'
- 'The feedback session at the end of the workshop was very useful. The use of the feedback made me understand in more depth about the subject'
- 'Feedback session was useful. Used session to take notes on additional points'
- 'I used the feedback to correct and amend my answers to the workshop Qs [questions] and realise what I need to revise and make more notes on'

Of particular interest is the comparison between 'levels of reflection' and performance on the module assessment. **Table 1** and **Figure 5** compares the mean module grades of students for each of the five 'levels of reflective thinking', *Description* through to *Content & Process Reflection*. From the analysis, significant difference exists between different 'levels' of reflection [$F(4,103) = 10.727, p = 0.000$]. The pair-wise comparisons (**Table 1**) locate these differences. Students engaging in reflective activity as represented by CP (*Content & Process Reflection*) coding for their reflective diaries, demonstrate significantly improved assessment performance when compared to their peers who engage in 'non-reflective' activity as characterised by *Descriptive, Habitual Action* or *Thoughtful Action*. Progressive levels of sophistication of reflective thinking are associated with improved assessment performance. Those students with reflective diaries characterised by *Description* and *Habitual Action* exhibit significantly poorer levels of assessment performance when compared to those who engage in *Thoughtful Action*, drawing on their existing knowledge

and prior learning or *Introspection* by integrating thoughts and feelings in their reflective narratives.

Conclusion

Reflective diary writing is a process that accentuates favourable conditions for learning. A significant improvement in assessment performance is associated with increasing 'levels of reflection' in students' reflective narratives. The outcomes of this project indicate the important role played by reflection in encouraging engagement and re-engagement in a blended learning model and the positive influence that reflection can have, in terms of, the process of good quality learning, the development of appropriate learning behaviour and student performance during assessment tasks.

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