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Enhancing teaching excellence through team-based learning

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ABSTRACT

Through the lens of implementing team-based learning (TBL), this paper unpacks elements of 'excellence' and investigates the influence of individual belief systems, the learning environment and institutional context in influencing perceptions of 'excellence'. We analyse the adoption of a student-centred approach to teaching and explore the implications for innovative approaches to teaching in a TEF environment. An outline of our findings in relation to TBL is discussed, and a conceptual framework of perceptions of excellence is presented. In recognition of the dichotomy between novice and expert learners, approaches to enhancing teaching excellence are discussed. We conclude with a mechanism by which metric-driven evaluation methods are likely to hinder pedagogical innovations and moves to enhance teaching excellence.

KEYWORDS

Teaching excellence; team-based learning; student engagement; TEF metrics

Introduction

This study examines an approach to enhancing teaching excellence via a radical change to teaching delivery in response to poor student engagement and underperformance in a business economics module. We begin by providing a rationale for the adoption of team-based learning (TBL) in the current UK context of massification and reduced government funding for HEIs. We then outline our implementation, methodology and findings, and reflect on our perception of the essential elements of TBL within local contextual factors. In evaluating our TBL pilot, we discuss the tensions between delivering an excellent student learning experience through an active and student-centred learning environment, and teaching excellence within a metrics-based system driven by market pressures.

The UK Higher Education Sector has experienced significant change in terms of funding and increased rates of participation. In the wake of the global economic crisis, the moves towards the creation of a market which had begun in 2002 with the introduction of fees, were followed in 2012 by dramatic cuts in Higher Education funding. This shift from government to personal funding of higher education accelerated the move to marketization in the UK HE sector, particularly in England. The positioning of education as a consumer good is beyond the scope of this paper; however, the increasing funding burden placed on students is engendering consumer behaviour and the need for instruments of choice such as Key

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Information Sets (KIS, introduced in 2012) and University Rankings such as the National Student Survey.

The latest instrument for student choice is the Teaching Excellence Framework (TEF), introduced by the UK government in 2015. TEF aims to raise the status of teaching by shining a spotlight on teaching excellence (Department for Education, 2016); however, contested metrics form the basis of judgements of teaching excellence in a process which is acknowledged to be 'in pilot stages' and subject to change (Universities UK, 2016). Through the lens of our TBL intervention, we consider how excellence, as defined by the TEF, may not fully reflect the diversity of student learning experience and student perceptions of excellence, and may adversely impact efforts to enhance student learning through innovative approaches to teaching.

Why TBL?

Student attendance and performance were key concerns in the module 'Economics for Business 2'. This module was being taught to Business (optional) and Accounting (compulsory) students through the traditional format of lectures and seminars (one hour each per week), plus an additional three hours of computer-based workshops, in a 12-week block. While the cohort size has steadily increased from around 35 to 110 in three years, lecture attendance remained poor (around 20%) and attainment on the module was low, with students averaging an adequate pass mark (around 57.5%). It had been noted that students were not engaging with the module content (macroeconomics), and that students were having difficulties with the quantitative aspects of the curriculum.

Depending on the degree programme, students in this module may have achieved minimal qualifications in mathematics (Business & Management) or grades sufficient for application to a mathematics degree (Accounting & Management). In this context of working with students who may have little prior experience of the theoretical and mathematical focus typical in economics, apparent difficulties in the mastery of threshold concepts (Land, Meyer, & Baillie, 2010) prompted us to investigate pedagogical models to support the necessary transformation of student understanding. While there is a programme-wide peer mentoring scheme to aid transition, there is an absence of supplementary mathematical support for economics. Alternative teaching methods, particularly those involving peer support, were considered as we believed this would foster confidence and engagement with the curriculum while enabling students to bridge mathematical skills gaps (Gill & Greenhow, 2011).

Our investigation into teaching methodologies to enhance student engagement showed that a more involved environment, particularly one using group-based learning can enhance transition and success of students (Thomas, 2012), and that links between student attendance and subsequent performance have been established (Gatherer & Manning, 1998; Paisey & Paisey, 2004). In our cohort, poor attendance and low achievement across all contact hours appeared to reflect students' psychological and social lack of engagement: features associated with transition difficulties compounded by the anonymity of large classes (Kahu, 2013; Thomas, 2012; Trowler, 2010). This led us to investigate alternative group/peer teaching methodologies and introduced us to TBL which utilises elements of peer and group learning in a 'flipped' environment.

TBL has been an accepted method of teaching in the US since the 1980s (Sibley, Ostafichuk, & Michaelsen 2014). While uptake in UK HEIs has been limited, it is growing in popularity with the active support of a community of experts at the University of Bradford (see Fraser, Hartley, McCarter, & Tweddell, 2014). TBL is more than group-work: it is a well-established systematic approach that integrates individual study, immediate feedback and small-group activities to create an engaging learning environment, supported and evaluated by peers. TBL was indeed developed to respond to increasing class sizes with the associated lack of engagement that can follow (Sweet & Michaelsen, 2012, pp. 5–6). It has been shown to foster a small group atmosphere within large cohorts (Fraser et al., 2014) while improving attendance and performance. It was this aspect of TBL which attracted us to further investigate this methodology for piloting in one module of the Economics strand of the Business programme.

TBL utilises a flipped approach (centred around student teams) and a set process to reinforce three separate stages of learning: remembering; understanding; applying (cf Bloom's taxonomy of learning). In the first stage of TBL, students undertake pre-class preparation which is tested in-class by the 'readiness assurance process' (RAP). This comprises multiple choice questions (MCQ) completed first by individuals and then by the team. In this way, individuals receive immediate peer feedback on their recall and understanding of key concepts introduced in the pre-class reading. Students as a team then repeat the MCQs and receive immediate feedback from an answer key which is scored according to the number of attempts to find the correct MCQ response. This system of MCQ with immediate feedback at individual and team level is followed by teacher-led corrective instruction if necessary, which completes the RAP (their recall and understanding of pre-readings).

In the second stage of TBL, the team's factual knowledge and understanding is applied to the particular problem in a facilitated active team learning environment (in TBL parlance, the 'application exercise'). Ideally, one TBL cycle includes the RAP (individual and team MCQs testing the pre-readings) and the application exercise (team discussion and application of knowledge to a problem). In essence, TBL provides a peer supported learning experience with immediate and directed feedback. A full explanation of the detailed TBL methodology is beyond the scope of this paper but is provided in Sibley and Ostafichuk (2014).

It was determined that TBL would be an appropriate teaching methodology to address our concerns around student engagement because it utilises assessment to support learning (Gibbs & Simpson, 2004) and is scaleable, accountable and removes anonymity (Fraser et al., 2014; Sibley & Ostafichuk, 2014). By providing a small group experience with mixed ability peers, it was anticipated that students would engage with the materials and the teaching sessions, and improve their performance in the module.

Implementation of TBL within existing contextual constraints

In view of the nature of economics within the Business and Management programme, it was determined to pilot TBL in one module, prior to more extensive roll-out in the economics component within the programme. New materials were prepared for the pre-readings, application exercises and MCQs. Established TBL methodology was adapted to fit in with existing module assessment and timetabling patterns due to institutional restrictions on the ability to change these at short notice. As there was not enough time in either the lecture or the seminar to run a whole cycle of TBL in one session, it was decided to use the lecture to test pre-readings for the whole group and to use seminar slots for the application exercises. In

this way all teams could cover the basic material (including using scratch card feedback) and receive clarification as a whole in the 'lecture', while team activities and discussions occurred in 'seminar' slots. TBL materials including scratch cards and team packs (e.g. table stands and team response cards) were purchased for use in lecture and seminar sessions.

While not ideal, an advantage of having the team application exercises in the seminar slots included managing noise levels compared with the lecture space; however, the use of seminars also introduced variability in the student experience of TBL as there were three seminar leaders facilitating application exercises. A disadvantage of running the RAP in the scheduled lecture hour was the tight time-line which meant that any corrections seemed rushed. Further difficulties arose with the formation of teams as students are able to move seminar times or even to withdraw from or join the module for three weeks into the teaching term.

The lecture space is a converted church with mixed banked/flat area seating, while seminar rooms have fixed seating (horseshoe style) and limited capacity (24 students): neither of which are ideal for TBL. Inevitably, the adaptation of TBL delivery to accommodate contextual constraints led to problems in the pilot and some dissatisfaction for students.

Methodology for data collection and evaluation

To evaluate the success of the pilot we aimed to establish an improvement in attendance and/or performance. Overall attendance was measured by seminar attendance and handset responses in lectures, while performance was measured by grades (individual coursework and examination marks). We intuitively feel these reflect improved engagement leading to an excellent teaching experience for students. Student perceptions of the pilot were measured through focus groups, module evaluations and the TBL survey (including self-rated confidence with the curriculum) as qualitative dimensions of engagement.

Self-selected focus groups were conducted towards the end of the module to investigate attitudes to the TBL activities including preparation, study effort, understanding of the curriculum and study materials, and the impact of TBL on learning and confidence. Satisfaction ratings are available from previous and current module evaluations; however, the TBL surveys have no comparable data source from previous years. Therefore, to provide a comparison for the TBL survey data for the Stage 2[1] students, the Stage 1 economics cohort also received the survey.

Thus, we compare the TBL cohort with two comparator groups; firstly, we have data on the performance and attendance of last year's cohort. These are students who sat the module under pre-TBL conditions. Secondly, we use this current year's Stage 1 students who are studying microeconomics. By combining a quantitative approach with the richer qualitative feedback from students, this study extends our understanding of the TBL pilot and notions of excellent teaching from staff and student perspectives.

Findings

Attendance: was marginally improved in seminar groups for males (68.4–71%) and home students (69.3–79.8%), while females (80.4–75.3%) and overseas students (75.9–72.1%) saw lower attendance over 2015/2016 and 2016/2017 year groups over 10 seminars. Anecdotally, lecture attendances were significantly improved. In focus group discussions, it was stated

that last year there had occasionally been as few as five or six people in certain lectures. In the 2016/2017 class, there were around 65–84% of students in the lecture as measured by completion of the readiness assurance tests.

Performance: final examination results indicate that there has been a 7% point improvement in performance on average compared with students on the module in the previous year. Students in 2015/2016 achieved an end of term exam result average of 56.3% (standard deviation 12) compared to 63.0% in 2016/2017 (standard deviation 11.4). This finding does not control for differences in characteristics between the cohorts but is indicative of cohort improvement. Particularly interesting is the difference in coursework improvement by gender, where we see female students experiencing a greater improvement in achievement (from 64 to 81%) despite reduced seminar attendance.

Qualitative data around student satisfaction and confidence is drawn from module evaluations, focus groups and online surveys including a self-rating of confidence with the curriculum. Eleven students from the cohort of 110 (10%) participated in the focus groups; 21 students completed the mid-term module evaluation; 32 completed the end-of-term module evaluation and 33 students (19 Stage 1; 14 Stage 2) completed the end of module TBL survey.

Module evaluation ratings indicate a fall in student satisfaction but satisfaction is still above 3.9/5. Student focus group comments (analysed using nVivo) indicate two distinct perspectives: those either enjoying TBL and finding it stimulating, or those finding the flipped approach inherent in TBL confusing and difficult:

Viewpoint A:

> This module was taught differently which I enjoyed. I enjoyed the team working element which promoted and encouraged learning and participation.
>
> I think that I like the structure, because it actually helps me to understand things, because last year I didn't really do that well at economics, and this year I've actually improved a lot …

Viewpoint B:

> Never studied economics before, so layout of this module where you read at home then come in and do test with no lectures was difficult for me. Difficult to understand terminology.
>
> The teaching method changed for this module. I personally did not like it because it was not very productive and felt like I was wasting my time.

Focus groups further indicate that student satisfaction with the module was affected by the practical implementation aspects of TBL rather than TBL methodology itself e.g. time wasted when students moved into teams and/or collected the team pack of materials in lectures. Most students indicated that the additional discussions and pre-reading materials were beneficial and that overall the TBL lectures were useful for their learning.

> I think that the interaction between the students, like one to one or just in your peers helps support your learning a little bit more rather than just sitting and taking notes from a lecture, as much as I enjoy that, … you have to make sure you're awake and being pushed to answer questions it does help in a way.

Additionally, students reported that their expectations of seminars were not always satisfied in the TBL applications as they were accustomed to using the seminars to ask questions of the seminar leader and to consolidate their understanding with notes which they then used in revision. By using seminars for the application exercises, students were expected to interact with peers rather than staff:

> … to me it didn't really make much sense, because I need to know if I'm going in the right direction, to be honest.

Survey data was collected and compared between a traditionally taught group (Stage 1) and the TBL pilot group (Stage 2). Stage 1 data was included as a comparison but we recognised that due to cohort differences, it cannot strictly be considered to be a formal control group. Thus, comparisons are only indicative of a TBL effect. The TBL group self-rated their confidence with explaining economics and with the future exam as somewhat higher than the non-TBL group, although this is not a statistically significant difference due to small sample sizes. Focus group comments support the indication of improved confidence in survey data:

> I think the MCQs was a good idea, … and it's a good idea to have people discussing together as a team, because you're more likely to ask questions through the peers.

> Well I think that if you could answer the questions confidently and then when you're discussing with your team-mates, you had a good understanding of the topic, then that's when you know it well …

In order to explore student perceptions of excellence in teaching, students were asked to rate a list of elements on the basis of (1) How important they were to their learning and (2) What they believe makes a good teacher. Students provided a wide range of answers regarding resources for learning, showing that students use and value teaching materials differently. However, in the case of what makes a good teacher, responses tended to indicate that possessing knowledge, being fair and being accessible to students were dominant and consistent beliefs.

In summary, our analysis of the pilot showed that cohort examination performance and attendance improved. Overall student satisfaction while lower, was still good. Qualitative data indicate that although students may have a consistent view of a 'good teacher', satisfaction with 'excellent teaching' via teaching materials was inconsistent. Satisfaction with 'excellent teaching' via student-centred learning inherent in TBL produced split responses: those that liked TBL and those that found it confusing.

Discussion

A key driver in piloting TBL was to deliver teaching excellence to address pedagogical concerns. Our perception of teaching excellence led us to deliver an active, student-centred pedagogy. Intuitively, excellence as a concept is not difficult to define: 'outstanding', very good' or 'high quality' spring to mind. However, our findings have indicated that excellence in the context of our teaching innovation is more complex and is likely to be perceived differently not only by staff and students but also amongst students depending on their level of sophistication as learners. In the scope of this discussion, we assume that terms including 'excellent teaching', 'teaching excellence' or even 'excelling in teaching' as set out by Saunders and Blanco Ramirez (2017) are synonymous with *an excellent teaching experience for students resulting in learning*. As a result, we focus on the implications of differing perceptions of excellence for both designing and evaluating pedagogical innovation in the current context of metrics-driven TEF ratings rather than further attempting to define excellence *per se*.

From our staff perspective and as supported by student feedback, we feel that this pilot has been successful in creating a more interactive environment for students, improving attendance and performance, and particularly, improving the final exam results. From the

student perspective, reduced satisfaction scores on the module evaluations may be indicative of a mismatch between student expectation and their learning experience due to the radical change in teaching delivery. This indicates that students are largely unfamiliar with a fully student centred learning environment, and as Lee and Branch (2017) show, a 'mismatch between students' expectations and their learning experience can influence how they evaluate their courses and teachers' (p. 7).

Student satisfaction was also adversely affected by limitations imposed by institutional contextual constraints. The most serious of these were the inability to deliver the TBL cycle in one session due to lead times required for changes to curriculum delivery and the inappropriate existing teaching spaces for team activities. While these aspects combined can be seen as resulting in a less than excellent experience for students, it is not necessarily indicative of a failure of TBL per se. As Apampa and Cohen show, students tend to adopt a personal, short term perspective in evaluating teaching quality (2013). For our pilot, reduced satisfaction is likely to arise from short-term concerns such as TBL delivery, rather than a longer term consideration of the quality of their learning.

Interestingly, while the TBL pilot met staff criteria for success in quantitative measures, qualitative data analysis of focus group comments showed two student perspectives: that the TBL experience was enjoyable and 'promoted and encouraged learning and participation' (Viewpoint A), or that TBL was confusing and unstructured (Viewpoint B). This dichotomy is illuminated by literature on novice versus expert learner perspectives. Lee and Branch (2017) argue that student perceptions of learning and teaching environments are influenced by their personal belief systems. In particular, they show that students fall broadly into two categories of learner: those with a didactic/reproductive approach to learning (novice) and those with a facilitative/transformative approach (expert). They add that students with novice beliefs have difficulty adjusting to student-centred learning environments: a feature common in HE and one delivered in our pilot. Students coming from a traditionally didactic environment may find it difficult to adjust to the student-centred approach of TBL which includes active (and even pro-active) participation in learning environments. This seems evident in Viewpoint B. On the other hand, students with facilitative/transformative attitudes to learning may tend to report higher satisfaction with student-centred teaching (Viewpoint A).

While we recognise the existence of a range of learner perspectives, we found evidence of a dichotomy of opinion regarding satisfaction with TBL which appears to reflect the novice/expert learner perspectives described in the existing literature (e.g. Lee & Branch, 2017). Specifically, we found that students reporting higher satisfaction cited elements compatible with a student-centred teaching approach such as TBL (Viewpoint A). Furthermore, those students who were less satisfied, appeared to be confused and frustrated by the lack of direct teacher input (Viewpoint B). Additionally, our TBL pilot relied heavily on online resources for the pre-reading, and this use of technology alongside the introduction of TBL may further confuse some students for whom student-centred learning and technology is particularly isolating and confusing (see Lee & Branch, 2017 on the links between self-efficacy, technology and satisfaction).

These distinct perceptions of teaching excellence stand in contrast to the implicit beliefs we hold as teachers: namely that excellent teaching encourages and supports student engagement, attainment and mastery of curriculum content. As such, this is not a controversial viewpoint (cf Thomas, 2012: engagement and belonging; Gibbs & Simpson's: time and effort, 2004). Indeed, our choice of metrics for evaluation reflects our implicit

assumptions about education based on our epistemic belief system as 'expert' educators (Dreyfuss & Dreyfuss, 1986 in Land & Gordon, 2015). Teaching excellence, from an expert perspective, delivers an education that is a transformational experience requiring effort, time (Ingham, 2016) and involving 'liminality and troublesome knowledge' (Land et al., 2010). Elements which will be experienced differently by students depending on their individually contextualised novice or expert perspectives. This is represented in the conceptual framework in Figure 1.

In attempting to deliver teaching excellence, our results indicate that not all students were able to fully benefit from the pedagogical advantages offered in TBL. Moving forward, it is important to include enabling activities for those students requiring support to develop sophistication as learners while also addressing contextual constraints regarding timetabling and spaces. In recognition of this, activities to accommodate novice learners are being developed and module timetabling and rooms have been revised.

Having established that teaching excellence is highly contextualised in the epistemic belief systems of participants, what are the implications for delivering and evaluating teaching excellence?

There is intrinsic tension around constructions of teaching excellence embedded in individual perceptions of the tangible and intangible aspects of education. In the TEF environment where attention is focused on measurable metrics for comparison, overall excellence is likely to be eroded as the intangible elements of higher education are overlooked in a competitive market system relying on the commodification of education (Saunders & Blanco Ramirez, 2017). Furthermore, by measuring institutional quality through TEF metrics such as the National Student Survey, teachers are likely to become risk averse and unwilling to introduce any elements into their teaching which may adversely affect their own professional or institutional ratings (Gibbs, 2012). Through this mechanism, the phenomenon of pedagogic frailty may develop and negatively impact teaching innovation and efforts to provide teaching excellence (Kinchin et al., 2016).

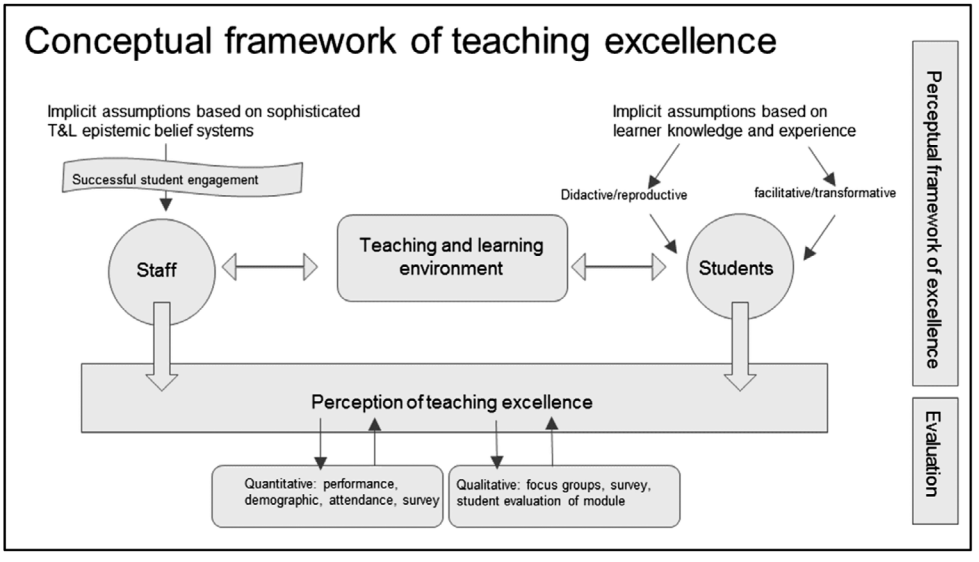

Figure 1. Conceptual framework.

Conclusion

It is clear that evaluation of 'teaching excellence' is here to stay regardless of the tenuous nature of the concept and the difficulty in pinning down reliable metrics. It is also clear that while excellence from a staff perspective tends to reflect expert knowledge, the student perspective is likely to be measured against the backdrop of personal interest framed by the dichotomy of novice/expert experience.

In the context of TEF, any move towards student-centred learning is likely to be constrained by the implications of performance metrics while being driven by the imperatives of commodification of education and a competitive market. In the context of implementing TBL, the complexity of the novice/expert dimension in learning needs to be accommodated, along with managing institutional constraints and student expectations of their learning environment. Future work in this area will include ways of using TBL to facilitate the development of an expert perspective in learners and an examination of student resilience for coping with student-centred learning.

Note

1. Stages correspond to year of study within a programme: Stage 2 is the second year of study etc.

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