Te Tipuranga – Growing Capability

Proceedings of the 2015 National Tertiary Learning and Teaching Conference

30 SEPTEMBER – 2 OCTOBER 2015
Bay of Plenty Polytechnic, Windermere Campus, Tauranga

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A Learning Journey: Unintended and Liberating Consequences of an Integrated Teaching Experience in Sport Science*

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In 2013-2014 a small team of sport science lecturers at Unitec Institute of Technology in Auckland undertook action research to better integrate their teaching of content across sport-related disciplines. They aimed to treat content holistically and for it to more closely reflect real world phenomena rather than being segmented by disciplines. The teaching team’s ‘integrated’ approach was enthusiastically received by students who began making significant conceptual connections between disciplines and frequently sought even stronger integration of content. For students, the integrated, holistic approach was perceived as a natural way to learn. For teachers, the positive student response was compelling evidence of the value of integration, leading them to powerful and unexpected insights into their teaching practices. The experience has been liberating and confidence enhancing for the teachers and for their conceptions of professional identity. This research offers significant insights into the difficult process of achieving effective, durable educational change. We identify a number of key elements in support of that change. First, the developmental action research approach supported deep understanding of issues and refinement of actions. Second, professional development was embedded in the project and driven by teachers’ needs - combining scholarship and experience in a problem-solving process. Third, the teaching team operated within a supportive, enabling ‘teaching and learning regime’. As a consequence of this project, the teaching team have more expansive plans for further integrating teaching practices in future.

Introduction

We are a group of three sport science teachers and associated researchers acting as a community of practice. In 2013 we made a number of modest interventions in our teaching practices and curriculum with the goal of a more integrated approach to teaching sport science. We recognised that students often struggled to make connections between courses, and could not easily transfer concepts from one subject to another without support.

We were aware that students ‘followed our lead’ in treating courses as discrete subjects, and that this was the opposite of how sport science problems occur in the ‘real world’, that is as holistic problems for whole persons. As teachers, we wanted to ensure that content, theory and concepts were treated holistically and modelled authentic, real world phenomena.

We were committed intellectually to an integrated approach. However, we were probably unaware of the extent of reservations we held about integration at a deeper level in relation to our core beliefs about teaching, our identities as teachers, the roles of our learners, and the traditions of the sport science discipline.

What followed was unexpected. Our students responded enthusiastically to our modest attempts at integration, so much so that they began to demand a greater degree of integration. We found the student response compelling, becoming deeply convinced of the importance of integration, but more significantly, of the importance of a changed approach to teaching and learning. We drew

confidence from these experiences and felt liberated to teach in different ways.

The significance of this story is in the durability and strength of our changed beliefs about teaching and learning. Meaningful change in practices is very hard to secure in higher education because, as this study shows, change is not simply a matter of scholarship and pedagogy, but is bound up in subjective issues of teacher identity – what Ball (2003) calls ‘ontological insecurity’.

This paper describes the processes that we put in place that supported a durable, meaningful educational change, and identifies their efficacy for educational change more generally.

**Approach to curriculum integration**

Curriculum integration encompasses any approach that combines two or more learning areas to produce a course of study that draws on the content and processes of both areas (Boyd & Hipkins, 2012). When we began discussing ways to improve student learning, we concluded that integration would benefit our students. By treating content holistically and reinforcing real world connections, we sought to bring the isolated pieces of our courses into a coherent whole.

Integration improves students’ ability to ask meaningful questions about complex problems and compare and contrast knowledge, information and perspectives (Anderson, 2013; Paisley et al., 2013; Tiwari et al., 2006; Woods, 2007). In a sport science undergraduate programme, Martin and Bill (2008) found that integration equipped students with work-related skills such as teamwork and communication. In a sport coaching programme, Jones and Turner (2006) established that integration better equipped students to practise reflectively and synthesise multiple knowledge strands when problem solving.

We reviewed a wide range of interdisciplinary approaches to integration in higher education in order to identify levels of integration (Anderson, 2013; Letterman & Dugan, 2004; Loepp, 1999; Pharo et al., 2012; Powell, 2013) (See Figure 1 below).

**Figure 1: Levels of Integration**

We chose an interdisciplinary approach to integration, that is, an approach that actively recognises and relates one discipline to another. In sport coaching, for example, this would require students to recognise and appreciate the relationships between biomechanics, psychology and nutrition. While we saw a transdisciplinary approach (Meeth, 1978) as the most desirable, in this exploratory phase we were not ready to undertake the required level of changes to our course and programme structure.

At the study commencement, we were intellectually committed to integration, but unsure how our students would respond. Thus, we designed a modest organic, emergent research design, based on an interdisciplinary model. As will...
be shown, the results from our modest interventions were unexpected but in a very positive, constructive way.

**Research question and action research approach**

Our research question was: How can teachers improve curriculum integration to enhance opportunities for student learning within discrete sport science courses?

The research was undertaken at our workplace, Unitec Institute of Technology in Auckland, New Zealand. Our study focused on improving curriculum integration in the Bachelor of Sport and its majors in sport coaching, sport management and physical education.

Our research team comprised five academic staff from the Department of Sport and one staff member from Unitec’s teaching and learning unit. Three were 'teacher/participants' in the study, each teaching a sport science course (sport nutrition, sport psychology, sport biomechanics) and acting as participants in the study. The other team members had research expertise, but were not involved in teaching those courses.

In the research intervention we designed, students integrated their knowledge and shared problem-solving across the three disciplines through a mechanism of engagement with a virtual athlete on Facebook. We created ‘Luke the Triathlete’ to enable a cross-disciplinary view of ‘real life’ issues and to break down disciplinary boundaries. Students knew ‘Luke’ was virtual, but they engaged with him more or less as they would with a real person on Facebook, by posting comments, asking questions, responding to his posts, and so forth (see Figure 2 below). Our team of six conducted Luke’s virtual life, posting updates about events such as his training, preparation, and injuries. Luke’s postings reflected typical real life issues for a triathlete, but to engage effectively with Luke, students needed to acquire specific interdisciplinary knowledge.

![Figure 2: Luke the Triathlete on Facebook](image)

We chose an action research method that allowed us to modify our intervention as we progressed. The basic premise of action research is that change and research are not mutually exclusive. Rather, it is possible to achieve a simultaneous focus on improving practice and developing knowledge (Heron & Reason, 2001).

Our action research encompassed four phases based on Ferkins, Shilbury, and McDonald (2009). The phases were: Phase One – Issue Identification; Phase Two – Context Analysis; Phase Three – Intervention and Action; Phase Four – Evaluation of Action. Action research is a cyclical, iterative process that allows for deepening and refinement.
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in understanding of the issues presented (Heron & Reason, 2001). Figure 3 shows how each phase was linked to the research question and data generation.

Data generation methods were twofold. First our three researchers conducted focus groups with our three teacher/participants at regular intervals. These meetings established our understanding and interpretations of integration, and drove progress and reflection on learning. The researchers acted as facilitators, managing the process, introducing literature and discussing issues with the teacher/participants. Two focus groups were also undertaken with students. Reflective diaries were used as the second data generation method. All six team members kept a journal to capture thinking and reflect on learning.

A thematic analysis process (Stake, 2010) was applied to our journals and the transcriptions from the focus groups. In this way, data generation “...informed data analysis and vice versa, so the two processes became reciprocally integrated” (O’Sullivan, Hocking & Spence, 2014, p. 24).

We also drew on Coghlan and Brannick’s (2010) concept of ‘meta-learning’. As shown in Figure 3 (outside box), we engaged in cycles of experiencing, reflecting, interpreting, and taking action to encourage a holistic view of the four phases. This enabled us to step outside the immediate research/intervention process to uncover the meta-learning on wider issues such as teacher identity and interdisciplinarity.

Outcomes

In the early phases of the research, our intended goal was to achieve an interdisciplinary approach to content and knowledge to support student learning. It was only as the action research process advanced that some unintended outcomes...
emerged, requiring us to more closely examine our roles as teachers and those of our learners.

The intended outcome

‘Luke the Triathlete’ was a fictional person who proved popular with our students. He became a catalyst for interdisciplinary conversations on Facebook and in class. His success was such that, over time, rather than focus on specific topics within disciplines, we routinely focused on Luke’s situation as a starting point for discussions.

Within a few weeks of Luke’s introduction, we saw a difference in students’ behaviours. After some initial reluctance, students began to frame issues in more interdisciplinary, holistic terms. Some students even lobbied us to be allowed to take an interdisciplinary approach to assignments.

We began to realise that as teachers, we could give, or withhold, licence for our students to explore topics in interdisciplinary ways. With our encouragement, they did so and the benefits began to accrue.

Once allowed, students started making connections with previous or concurrent courses and their own experience. Moreover, it seemed that the course and understanding of the concepts we covered finally ‘made sense’ to them. As we modelled a more integrated approach, so our students responded positively. (Michelle, Teacher/participant).

Observing these student behaviours, essentially seeing them trying to integrate, really demonstrated to me that they were willing to move outside of their comfort zones and felt safe in discussing other courses even if being taught in one discipline (Dave, Teacher/participant).

Students felt empowered to think more holistically, to the extent of demanding further integration. For us, the student response provided a very compelling case for further integration and changes in our teaching approaches. What began as an intellectual understanding about the value of integration was growing into a strong conviction.

The challenges for teachers

In response to our students’ enthusiasm, we began to reconsider our teaching approaches. We understood that we needed to give students more freedom to range across the interdisciplinary content. But we were sometimes surprised at the extent to which the need to cede control and shed content sparked resistance in us.

To let go of content meant I also needed to shift my perception of my role and what counts as ‘a good enough’ amount of knowledge and skills… This turned out to be a difficult process and internal struggle (Michelle).

I actually realized I was stopping students when they started making links with other discipline or their own experience in class to focus on the core knowledge that I believed needed to be covered (Michelle).

Initially I thought that this type of teaching would reflect a lack of expertise, a lack of knowledge, a lack of professionalism, but in fact it was to the contrary. Students could see that I could look beyond psychological solutions [and that] I understood more than just my area and topics (Dave).

The unintended outcome

The unintended outcome of our research has been a lasting, transformative, and liberating change in our teaching practices and identities. This outcome has been very positive, but also ‘unintended’ and destabilizing because it has posed significant ontological and epistemological challenges.

The positive response from our students and their demand for further integration was compelling evidence for the benefits of integration. We have been persuaded, where previously our commitment was more intellectual. This shift has been a huge confidence-booster for us, providing a growing sense of ability to ‘let go of control’ and ‘shed content’ and yet feel competent to guide our students through muddy, holistic, real world problems. Over time, we have developed a stronger professional identity as ‘interdisciplinary teachers’, and a sense of the huge possibilities of this approach.

As our three teacher/participants observed:

I’ve had a complete reversal. The press to get every slide done… now is the opposite (Michelle).

We were not aware of how empowering it was for the students and therefore how compelling for us… Students see [interdisciplinary] connections where we don’t (Dave).

Students are making these cross-disciplinary connections independently and this is impacting on my thinking! (Craig).

Findings

Our team of six are all experienced teachers; one is also a teaching and learning advisor. We understand how difficult it is to achieve educational change on matters of teaching practice, and challenges to roles and professional identities. As participants, researchers and teachers, we recognized the significance of the transformative changes experienced by our three teacher/participants. We agree with Fullan (1993) about the importance of these four elements in achieving durable educational change:
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• Effective change cannot be mandated. It is more likely to be inspired by teachers’ experiences and challenges than by top-down strategies.

• Change is uncertain, not linear or easily planned. Problems and conflict are ever-present elements in change initiatives.

• Collaboration between institutional leadership and the teaching team is required but individual agency also matters.

• The wider educational environment of norms, rules and processes must be taken into account.

Fullan’s four elements can clearly be seen at play in the following findings. Here we identify three key success factors in achieving durable educational change.

Action research supported deep understanding and problem-solving
The enthusiastic response of our students compelled us towards change in our teaching practices. But it was the action research cycle of intervention, reflection, coaching and scholarship that rendered the learnings from those experiences accessible to us. Through this iterative cycle, we developed a shared epistemology of practice based on reflection-in-action (Schon, 1987).

We see action research as having features that clearly supported a durable educational change in our teacher/participants.

First, action research supported a simultaneous process of learning from, and improving on, practice. Given evidence that integration was gaining traction and that more intervention would be better, we were able to respond and test that hypothesis and learn (for example, by modifying our assessments).

Second, our action research study was experiential, immediate and personal. For our teacher/participants, the emotional experience of seeing students’ responses bolstered their intellectual understanding of integration. Importantly, our teacher/participants’ growing awareness of the value of integration was arrived at inductively, and thus was far more compelling than an externally-driven initiative would be.

Third, action research has facilitated significant durable changes because it was empowering and our teacher/participants had agency. As a research team, we controlled the intervention design and decision-making. Notwithstanding the ontological challenges, as authors of the interventions, we were able to choose to pass more control of learning to our students. Once students began easily making natural connections between disciplines, we were able to support further integration by expanding our interdisciplinary approach. Action research facilitated our learning and development as interdisciplinary teachers.

Professional development was just-in-time and embedded
The transformative, durable nature of the change in our teacher/participants’ practices and identities was also a result of the professional development that we undertook within our team of six. We collaborated in coaching, questioning, and seeking scholarship that supported an examination of our teacher/participants’ conceptions and beliefs. Such durable educational changes are widely regarded as difficult to achieve (Devlin, 2006; Ho, Watkins & Kelly, 2001). Our professional development was collaborative, just-in-time and embedded in our action research process.

Knight, Tait and Yorke (2006) categorise teachers’ educational professional development as ‘formal’ or ‘non-formal’ and ‘intentional’ or ‘non-intentional’. Our professional development was almost exclusively in the non-formal, non-intentional quadrant.
Table 1: Intentional and non-intentional, formal and non-formal learning (Reproduced from Knight, et al., 2006, p. 327)

<table>
<thead>
<tr>
<th>Intentionality</th>
<th>Formal</th>
<th>Non-formal</th>
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<tbody>
<tr>
<td>Intentional</td>
<td>Processes: learning that follows a curriculum. May involve instruction and certification. Outcomes: greater or lesser mastery of curriculum objectives</td>
<td>Processes: reflection, self-directed reading groups, mentoring. No pre-set curriculum. Outcomes: formation of explicit understandings of achievement, often associated with an intention to build upon them</td>
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Describing our development as ‘non-formal, non-intentional’ is not to imply there was no structure; rather, that our collaborative, action research structure supported a process of ‘learning by being and doing’. We were able to reflect on and learn from our experiences. As Schon (1987) argues, teaching practices are often informed by tacit, unexamined ‘theories-in-use’ that become challenged in situations of difficulty or stress. When our teacher/participants were challenged, our team was able to support our teachers as they examined their tacit beliefs about teaching and considered alternative strategies.

We found that our most effective learning occurred when it was non-intentional and non-formal, taking place as part of powerful, unpredictable learning experiences and ‘critical incidents’. When students sought more integration, our teacher/participants were able to “…gain new understandings and become able to do new things, or do old things better” (Knight et al., 2006, p. 321). Such experiential learning is compelling but only if we can avoid it being ‘unlearned’ again over time (Knight et al, 2006; McAlpine et al., 2006; Schon, 1987).

A supportive ‘teaching and learning regime’

Our educational change occurred as a small community of practice of six teachers and researchers, and within a wider supportive department of sport teachers. Within our core team of six, we were able to successfully share common tools and discourses, and a context-specific understanding of issues, and to socially construct solutions (Trowler et al, 2005). When learning takes place within such a supportive environment, educational change is likely to be less threatening and ‘unlearning’ is less likely to occur because the system allows changed practices to be accommodated (Wenger, 1998; Knight et al., 2006; Engestrom, 2001).

At both the research team and departmental levels, a robust ‘teaching and learning regime’ supported a culture of distinctive approaches to teaching and learning (Trowler et al., 2005). While such regimes can be powerful forces for conservatism, ours was a driver of educational change that supported our reflexivity about our ‘disciplinary epistemologies’ (Trowler et al., 2005). We became aware of the need for change, and were supported to make good decisions about culturally new patterns of activity (Engestrom, 2001).

Conclusion

Over 2013-2014, during our action research study into integration of our sport science curriculum, our team of six researchers and teacher/participants experienced a durable, transformational change in attitudes and beliefs as teachers. In response to compelling evidence from our students, we became strong advocates for interdisciplinary, integrated teaching practices. In the course of that shift, our teacher identities were challenged. We have developed a significantly more student-centred, enabling approach to learning that gives agency to our students and focuses on authentic, real world learning. We fully plan to expand our integrated practices in future, including by implementing structural changes in our programmes.

The significance of these shifts is less in the advances made in curriculum integration, and much
more in the durability of our changed educational beliefs and practices. Our durable shift has occurred because it is internally-driven, embedded in real problem-solving about teaching practices, supported by reflection and learning, and co-constructed by a committed team of teachers and researchers.

References


