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Evaluating the Impact of Professional Development on Teaching Practice: Research Findings and Future Research Directions

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Continuing professional development for teaching is important for institutional renewal, teacher development and student learning improvement. However, our longitudinal research into provision of continuing professional development has shown that the majority of educators who attend professional development workshops do not put what they have learned into practice. We present the background to our research, research method, research procedures and research results. Whilst the majority of participants in our professional development workshops have evaluated the workshops positively and achieved the intended learning outcomes, only a minority of participants have put what they learned into practice. We present a hypothesis to explain this phenomenon and conclude with a discussion of academics' motivation to improve and innovate in their teaching.

Keywords: distributed, flexible, learning, educators, professional, development, motivation

Online Instruction for the Professional Development of Educators

CPD (Continuing Professional Development) has been defined as formal and/or informal learning that leads to the enhancement of knowledge, skills and personal attributes necessary to carry out professional duties (Gosha, Billionniere, Gilbert, & Ramsey, 2010; Guskey, 2000; Stefani, 2005). Personal attributes might include beliefs about the importance of professional activities and attitude towards professional activities. For the sake of brevity, we will refer to CPD for teaching as EPD (Educational Professional Development) (Knight, 2006). EPD is important for the renewal and vitality of institutes of higher education, the professional development of individual staff members and developing teaching to improve and enhance student learning (Guskey, 2000; Lanthan, Camblin, & Steger, 2000).

The drivers for change in the current educational climate are significant and EPD has been perceived to be extremely important at this time (Bradwell, 2009; CLEX (Committee of Inquiry into the Changing Learner Experience), 2009). These drivers include: engaging more students from a greater diversity of backgrounds in higher education (CLEX, 2009); responding to open source content and to the threat of dominant online providers who will take away market share (Dede, 2000); the need to compete with institutions globally; the potential mismatch between students' school experiences and their university experience (CLEX, 2009); the necessity of developing students 21st century skills—collaboration, ICT (information and communication technology) skills, communication skills, team work skills and problem-solving to meet employers' requirements (Dede, 2000, 2004; The National Leadership Council for Liberal Education and America's Promise, 2007); a growing awareness of disjoint between current teaching practices, for example, delivering

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lectures and holding tutorials, and what we know about good teaching (Dede, 2000; 2004). Some thinkers have indicated that the future of our traditional higher education establishments is far from certain unless these institutions undergo a fundamental renewal to meet these challenges (Bradwell, 2009; CLEX, 2009; Dede, 2000). Whilst EPD per se is not the answer to the myriad challenges that we face in the current educational climate, EPD is important as a part of a strategy to meet those challenges (CLEX, 2009).

In order to be effective, EPD activities must be appropriately designed and delivered to meet the professional development needs of academic teaching staff. The research literature on effective EPD clearly indicates that EPD must be designed around meaningful learning activities (Adams, 2005; Chalmers & Keown, 2006; Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2006; Gosha, Billionniere, & Gilbert, 2010; Gosha et al., 2010; Judge & O'Bannon, 2008; Meehan, Obler, Schiorring, & Serban, 2002; Minshul, 2004; Mouza, 2009; Ostashewski, 2010; Samarawickrema, Benson, & Brack, 2010; Samarawickrema, Stacey, & Warren, 2008; Stefani, 2002; Tan, Hu, Wong, & Wettasinghe, 2003). Desimone (2009) provided a useful summary of pre-2009 research. Meaningful learning is characterized by contextual realism in which EPD is intimately connected with teaching practice (Adams, 2005). This means that training modules need to be linked to practical teaching situations and challenges and that training should focus on pedagogical innovation that will lead to improved student learning (Meehan et al., 2002).

Meaningful learning accords with what we know about cognitive theories of learning including Ausubel's (1963) meaningful reception learning theory and its elaboration through schema theory (R. Anderson, Spiro, & M. Anderson, 1978). These cognitive theories propose that learners actively seek meaning when encountering new information and that information is selectively processed and schematically encoded in long term memory under the influence of each individual's existing knowledge structures or schemata. Development of knowledge and understanding is, therefore, maximized when prior knowledge is taken into account, instruction is made meaningful through its content and organization, relevant prior knowledge is activated and learning is personalized or learner centered (Bransford, Brown, & Cocking, 1999; Doherty & Blake, 2009; Driscoll, 2005; Mergel, 1998).

To develop expertise in a field, learners need to be provided with learning experiences that enhance their ability to recognize patterns of information that are meaningful for solving problems in that field (Bransford et al., 1999). This will not be possible if learning tasks are oversimplified or divorced from real world contexts. This implies the need for authentic learning tasks constructed around real-world activities, artifacts and interactions. In terms of designing learning that moves beyond a pre-determined transmission approach to professional development, principles for creating a situated learning environment can be employed. These include: Designing authentic activities that replicate the way that knowledge will be used in real life activities; providing multiple roles and perspectives; supporting the collaborative construction of knowledge; promoting reflection; promoting articulation; and providing coaching and scaffolding (Herrington & Oliver, 2000).

The purpose of our research was to evaluate the impact of a learning design for Web 2.0 EPD workshops on participants' teaching practice. Web 2.0 is a term that describes a world wide web defined by user participation, mass collaboration and traditional web consumers producing web content and sharing resources. The tools that have made this possible include but are not limited to: Blogs; Wikis; Social Networking sites; Social Bookmarking services; multimedia sharing services; audio Blogging; podcasting; and Real Simple Syndication or RSS (rich site summary) (Anderson, 2007). We predicted that a satisfactory participant experience along with participants achieving the intended EPD learning outcomes would result in participants

implementing EPD learning in their teaching practice. Longitudinal research into the benefits and impact of EPD has been lacking (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009; Mouza, 2009) and this is something that we have addressed through our three years of research. In this paper, we present research results from four EPD workshops that utilized a finalized EPD workshop design characterized by fully authentic and meaningful learning activities.

Method

Participants

We have been conducting research into EPD for three years and research results for prior workshops (workshops 1 to 5) have already been reported (Doherty, Blake, & Cooper, 2009; Doherty & Cooper, 2009). This research showed that whilst participants evaluated the workshops positively and achieved the intended learning outcomes, very few participants were implementing what they had learned in their teaching. The workshops described in this paper utilized an alternative learning design with the aim of increasing the number of participants translating their learning into changed behavior in their teaching.

The participants in this research study are from a series of four workshops, referred to as workshops 6, 7, 9 and 10, delivered during 2009 at the University of Auckland, within which all the participants were academics with teaching responsibilities. The participants came from a range of arts and sciences faculties from across the university including medical and health sciences, engineering, arts, education and science. Data on sex, age and ethnicity was not gathered, as we were not controlling for these variables in this study. Our concern was simply to look broadly at the impact of a particular learning design on participants' experience and achievement of intended learning outcomes and follow up with participants to see if learning was translated into a change in teaching practice.

Seven (N = 7) educators from workshop number six agreed to take part in the research. Seven (N = 7) of the participants completed the pre-workshop questionnaire and six (N = 6) of the participants completed the post-workshop survey. Six (N = 6) educators from workshop number 7 agreed to take part in the research and all those who agree to take part in the research completed the pre-workshop questionnaire and the post-workshops survey. Three (N = 3) educators from workshop number 9 agreed to take part in the research. Two (N = 2) of the participants completed the pre-workshop questionnaire and all the research participants for workshop number 9 completed the post-workshops survey. There were eight (N = 8) participants for workshop number 10. All eight (N = 8) participants completed the pre-workshop questionnaire. Six (N = 6) participants completed the post-workshop evaluation for workshop number 10. This gives a total number of participants who completed the pre-workshop questionnaire as 21 (N = 23) and the total number of participants who completed the post workshop evaluation as 21 (N = 21).

Research Design

Thomas Guskey (Guskey, 2000) draws on a number of evaluation models, including the well known Kirkpatrick model, to describe four levels of evaluation that are important if we want to measure whether teaching has become more rewarding and effective as a result of EPD. These levels are: participants' reactions to the EPD; whether or not participants achieved the desired learning outcomes; participants' use of new knowledge and skills in their teaching; resultant improvements in student learning. The first three levels of Guskey's evaluation model represent the dependent variables in this study. The independent variable in this

study consisted of the learning design for the EPD workshop, which was refined after workshops 1 to 5 until it was finalized in the learning design format used for the EPD workshops reported in this paper. The independent variable will be described in more detail in the procedures section. We also tried to take into account a number of extraneous variables that potentially impacted positively and negatively on whether or not participants put what they learned in the EPD workshops into practice. These extraneous variables will be described and discussed in further detail in the results section.

This was a mixed method quantitative and qualitative study. Our quantitative data gathering (measures described in the next section) were designed to provide us with data against which we could judge whether or not the learning design that we used was having the intended effect. Our qualitative data gathering were designed to flesh out the quantitative results and help us to explain or give meaning to the quantitative data. We were not seeking to generalize from this study. Rather, we were engaged in what is referred to as development research (Reeves, 2000) which involves changing practice in order to gradually clarify problems and potential solutions through a process of "evolutionary prototyping" which consists of producing, over time, a series of practical solutions or interventions.

Measures

We used an online pre-course questionnaire to gather information on participants' extant levels of knowledge regarding the Web 2.0 tools to be taught in the workshops. The questionnaire asked participants to rate their level of knowledge with respect to each of the Web 2.0 tools by responding to a statement along a five-point Likert scale that ranged from strongly agree to disagree. For example, participants were asked to respond to the statement, "I know what a Blog is". This data provided us with a baseline for participants' knowledge of Web 2.0 tools prior to the EPD workshops. We used an online post-workshop evaluation to gather data on participants' EPD workshop experiences and determine whether participants had achieved the desired learning outcomes. Participants could respond to questions concerning their workshop experience using a five-point Likert scale. Participants could also report concerning their learning through responding positively or negatively to a statement about whether they felt able to use the Web 2.0 tools in their teaching at the completion of the workshop. This measure provided us with data to determine whether two necessary conditions for changing teaching practice (positive participant experience and learning) had been achieved. Finally, we followed up with participants approximately three months after the workshops to determine whether they had put what they had learned into practice. The follow-up consisted of a semi-structured interview which was recorded by the interviewer and transcribed by a third party.

Procedures

The University of Auckland Human Ethics Committee granted ethics approval for this research for a period of three years on April 17th, 2008. The workshop facilitators explained the purpose of the research to all attendees at the workshops and workshop attendees were provided with PIS (participant information sheet) and PCF (participant consent form). Attendees who agreed to take part in the workshop were asked to sign the PCF and return the form to the workshop facilitators. Participants completed the online pre-workshop questionnaire prior to the commencement of the workshop. Completion of this questionnaire only took 2-3 minutes. Participants completed the online post-workshop evaluation at the end of the workshop. Completion of the questionnaire took approximately two to three minutes.

Our workshop design made use of active learning techniques and the various types of interactions that have been reported in detail elsewhere (Doherty, 2010b). In summary, our overall pedagogical strategy (Goodyear, 2005) was to create an authentic learning environment (Herrington & Oliver, 2000; Reeves, Herrington, & Oliver, 2002) in which participants would acquire knowledge and skills in a way that would reflect real life use. We employed a model of active learning (Fink, 2006) in which activities were constituted by experience (doing and observing) and dialogue (conversation and self-reflection). The workshop itself was structured in terms of a series of interaction types based on a modification of the work of Dunlap, Sobel and Sands (2007). These interaction types are detailed in Table 1.

Table 1

Interaction Types

Interaction type	Implementation	Intermediate outcomes
Triggering interactions enable participants to see a problem or lead to a sense of puzzlement.	Have participants work in pairs to reflect on why they were attending the workshop and to consider what they hoped to gain from the workshop. Have participants post their responses to the Wiki discussion board. Provide an explanation of what constitutes "deep learning" and set participants the specific task of reflecting on how the three Web 2.0 tools might be used in their own teaching context.	Participants engage with one another and meaningful answers posted to Wiki discussion board. Questions about their own teaching context throughout workshop. Engaged paired discussions.
Exploration interactions encourage participants to follow their own paths through content and pursue their own areas of interest.	Have students create their own Blogs, Wikis and social tags whilst keeping in mind the question of using the tools in their own teaching practice.	Participants' questions are a balance of technical and pedagogical.
Reflective inquiry interactions enable participants to ask questions, challenge assumptions and critically examine the implications of their actions.	Encourage students to ask the instructors questions (both concerning the technologies and their pedagogical value) throughout the workshop. Provide the opportunity for reflective inquiry through group discussion.	Participants are focused on both the technologies and their pedagogical use.
Integration interactions enable participants to connect ideas and create solutions.	At the end of each practical session, divide participants into pairs to talk about educational uses of the tools.	Participants engage with one another and with facilitators.
Resolution interactions enable participants to apply new ideas and assess solutions.	Ask each participant to post to the discussion board on their thoughts on uses of the tools for their own teaching context and discuss as a group.	Discussion board postings evidence uses of tools for student learning.
Met cognitive interactions enable participants to reflect on their own cognitive processes or to think about their own thinking.	At the end of the workshop, return the participants to their reflections from the initial exercise and ask them if and how their perceptions of the technologies for teaching and learning had changed during the workshop.	Discussion that reflects met cognitive thought processes.

We initially engaged participants in self-reflection and conversation with others by asking participants to discuss in pairs why they were attending the workshop and what they hoped to gain from attending. Participants were then asked to report back to the group. Our purpose was to encourage participants to activate participants' prior learning and have them think about their reasons for their attendance, so that they might connect their learning with their own particular needs, thereby making the workshop experience a meaningful one for them. We concluded the opening discussion by letting participants know that we expected them to create a learning design during the second half of the workshop to purposefully integrate one or more of the Web 2.0 tools into their teaching.

The facilitators then demonstrated the main features of each of the tools—a blog (Blogger), a wiki

(Wikispaces), a social bookmarking service (Delicious) and a social networking service (Ning), in turn for approximately 15 minutes. Each presentation included examples of the ways in which the various tools might be used purposefully in teaching. Participants were asked to create an account for each of the tools after each presentation and use the basic features of the tools. For example, participants were asked to create a blog account, create a basic blog entry and use the blog editing features. Facilitators moved around the classroom during each of the "hands on" sessions to help participants as they worked with each of the tools. These "hands on" sessions were designed to teach participants basic skills with each of the tools.

The second part of the workshop began with the workshop facilitators presenting the concept of constructive alignment (Biggs, 2003) with the purpose of bringing participants to understand how Web 2.0 tools might be meaningfully integrated into a learning design (Jones, 2007). The facilitators then provided a more detailed explanation of the learning design template that participants were required to complete in the second part of the workshop (see Table 2). Our conjecture was that working with the learning design template would result in participants achieving the desired learning outcomes and being able to integrate Web 2.0 tools purposefully in their teaching. The template itself required educators to specify: The learning outcomes for a course; the learning activities for the course including use of Web 2.0 tools; the assessment methods for the course; the ways in which the course might be evaluated for effectiveness. The structure of the template ensured that the Web 2.0 tools were integrated purposefully into teaching practice.

Table 2

Learning Design Template

<table>
<tr><td>Aim</td><td colspan="2">Learners will work collaboratively in small groups for one week to produce a group presentation and written individual assignment summarizing the key principles of transmission, disease process and management of influenza(s) from both individual patient and public health perspectives.</td></tr>
<tr><td>Learning Objectives/outcomes</td><td colspan="2">Learners will be able to demonstrate an understanding of the key principles of transmission, disease process and clinical and public health management of influenza(s).</td></tr>
<tr><td>Methods</td><td>Assessment</td><td>Evaluation</td></tr>
<tr><td>Learner activities:
Students will work collaboratively in small groups to produce a summary of the key principles of transmission, disease process and clinical and public health management of influenza(s).</td><td rowspan="4">Formative assessment e.g., learners present their groups' summaries (online or face-to-face).
Summative assessment e.g., written individual assignment.
Assignments marked in accordance with defined criteria and marking scheme, constructive feedback is provided.</td><td rowspan="4">Student feedback questionnaire on: whether the content provided was helpful/appropriate; any difficulties with accessing materials/links; did they feel equipped/confident to in using Web 2.0 tools; how group communication worked; whether tutor support was sufficient; whether they felt that e-learning helped them to achieve the learning outcomes.</td></tr>
<tr><td>Content and Resources:
Hard copy materials scanned and uploaded to a VLE (virtual learning environment), multimedia resources such as video, audio and images, selected online links to relevant websites, links to e-library.</td></tr>
<tr><td>Delivery Mode and Interaction:
Web-based learning materials, CD (compact disc)-based delivery of multimedia resources, group work through a Wiki, or blog.</td></tr>
<tr><td>Support Mechanisms:
Written instructions, marking schemes, course announcements, FAQ page, and moderation of online discussions.</td></tr>
</table>

Workshop facilitators supported participants in the use of the tools as the participants worked on their learning designs. There were two facilitators for each workshop so facilitators were able to spend adequate amounts of time with each of the participants. At the end of the workshop, participants were asked to reflect on

their learning design and post their thoughts to a social networking space that had been created by the workshop facilitators. Finally, participants were asked to give a short presentation to the group about their learning design. Participants posted reflections along with their presentations that showed clear evidence of understanding how the Web 2.0 tools might be used in teaching.

Results

Familiarity with Web 2.0 as a concept and with the four web 2.0 tools was limited (see Table 3). Only 26% of participants (*N* = 6) agreed or strongly agreed with the statement that "I know what web 2.0 is". Participants were most familiar with blogs with 60% of participants (*N* = 16) "Agreeing" or "Strongly agreeing" with the statement that "I know what a blog is". Participants were less familiar with wikis and social networking with only 48% of participants (*N* = 11) "Agreeing" or "Strongly agreeing" respectively with the statements that "I know what a wiki is" and "I know what social networking tools are". Participants were least familiar with social bookmarking with only 26% of participants (*N* = 6) "Agreeing" or "Strongly agreeing" with the statement, "I know what social bookmarking is". The vast majority of participants had not used a blog 96% (*N* = 22), a wiki 91% (*N* = 21), social bookmarking 100% (*N* = 23) or social networking 96% (*N* = 22) in their teaching (see Table 4). Overall, participants were not familiar with Web 2.0 tools and, not surprisingly, had not made use of the tools in their teaching. This data provides a baseline for judging the degree of learning that occurred as a result of participants attending the workshops.

Table 3

Pre-course Evaluation for Web 2.0 Knowledge

	SA	*%*	*A*	*%*	*N*	*%*	*D*	*%*	*SD*	*%*
I know what Web 2.0 is.	2	9	4	17	4	17	7	31	6	26
I know what a blog is.	6	26	10	44	3	13	4	17	-	-
I know what a wiki is.	1	4	10	44	9	39	3	13	-	-
I know what social bookmarking is.	1	4	5	22	5	22	11	48	1	4
I know what social networking tools are.	2	9	9	39	5	22	7	31	-	-

Notes. SA = Strongly agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly disagree.

Table 4

Pre-course Evaluation for Web 2.0 Use

	Yes	%	No	%
I have used a blog in my teaching.	1	4	22	96
I have used a wiki in my teaching.	2	9	21	91
I have used social bookmarking in my teaching.	-	-	23	100
I have used social networking tools in my teaching.	1	4	22	96

Participants responses to the post-workshop evaluation (see Table 5) clearly indicate that the learning design functioned to create a positive learning experience and that the learning design enabled participants to achieve the intended learning outcomes. The majority of participants, 67% (*N* = 14), agreed or strongly agreed that they had a clear idea about what was expected from them in the workshop. The majority of participants, 91% (*N* = 19) strongly agreed or agreed that the workshop motivated them to learn. The majority of participants, 85% (*N* = 18), strongly agreed or agreed that the workshop was intellectually stimulating. The majority of participants, 91% (*N* = 19) strongly agreed or agreed that the workshop helped to deepen their understanding.

Participants were also positive about the role of the workshop facilitators with 95% (*N* = 20) "Strongly agreeing" or "Agreeing" that the teaching staff showed an interest in their needs during the workshop and 86% (*N* = 18) "Strongly Agreeing" or "Agreeing" that they received helpful feedback during the workshop. Overall 95% (*N* = 20) of participants strongly agreed or agreed that they were satisfied with the quality of the workshop.

Table 5

Post-course Evaluation for Learning Experience

	SA	*%*	*A*	*%*	*N*	*%*
I had a clear idea of what was expected of me in this workshop.	2	10	12	57	7	33
The workshop helped motivate me to learn.	9	43	10	48	2	10
I found the workshop intellectually stimulating.	7	33	11	52	3	14
The workshop materials helped me to learn.	4	19	15	71	2	10
This workshop helped deepen my understanding.	7	33	12	57	2	10
The volume of work in this workshop was appropriate.	5	24	11	52	2	10
The teaching staff showed an interest in my needs during this workshop.	12	57	8	38	1	5
I received helpful feedback on how I was going in this workshop.	9	43	9	43	2	10
The physical environment of the workshop helped me to learn.	4	19	10	48	6	29
The learning design project helped me to understand how to integrate Web 2.0 technologies into my teaching.	6	29	10	48	5	23
Overall, I was satisfied with the quality of this workshop.	8	38	12	57	1	5

Notes. SA = Strongly agree; A = Agree; N = Neutral.

Only 77% (*N* = 16) of research participants strongly agreed or agreed with the statement, "The learning design project helped me to understand how to integrate Web 2.0 technologies into my teaching". Twenty three percentages (*N* = 5) were neutral concerning the value of the learning design project. We would have wanted more participants to respond positively to this statement. However, with one exception, the participants who made use of the respective Web 2.0 tools in their learning design project all felt able to use those tools in their teaching by the end of the workshop (see Table 6). Thus, although 23% (*N* = 5) of respondents were neutral concerning the value of the learning design, we might infer that the learning design project did in fact prepare workshop participants to use the Web 2.0 tools in their teaching. An alternative explanation for the preparedness of participants to use the tools in their teaching might be that the delivery of the workshop as a whole prepared them to use the tools in their teaching. For example, participants who did not respond positively concerning the learning design might have found the facilitators particularly helpful.

Table 6

Post-course Evaluation for Web 2.0 Tool Use

	B	%	W	%	SB	%	SN	%
Which of the Web 2.0 tools did you use in your project?	7	37	15	80	6	32	4	21
I could now make use of Web 2.0 tools in my teaching (check all that apply).	7	37	14	74	6	32	4	21

Notes. B = Blog; W = Wiki; SB = Social bookmarking; SN = Social networking.

We conducted follow-up interviews for these workshops to see whether participants had put what they learned into practice. We attempted to contact all participants for three-month follow up interviews. However, the response rate was low. We conducted a total of seven (*N* = 7) follow-up interviews for workshops 6, 7 and 10. We did not conduct any interviews for workshop number 9 because none of the research participants

responded to our email/telephone requests. The breakdown for the interviews is as follows: two (N = 2) interviews were conducted for workshop number 6; two (N = 2) interviews were conducted for workshop number 7; three (N = 3) interviews were conducted for workshop number 10. During the interviews three (N = 3) of the respondents indicated that they had used the Web 2.0 tools since the workshop. However, in reality only two (N = 2) out of the seven (N = 7) interviewees had actually made use of Web 2.0 tools in their teaching since completing the workshop as 1 (N = 1) of the interviewees who responded positively had actually set up course evaluations using an online survey tool. We are at a loss to explain this response.

Each of the respondents (N = 2) who had made use of the Web 2.0 tools in their teaching was able to explain what they had done with the tool. One participant (N = 1) had successfully set up a national social network for nurses. Whilst actual participation rates in the social network were low, the nurse was pleased to have mastered the technical skills required to establish the network. The same respondent was working through a design to incorporate a Wiki into an undergraduate course as a part of the student assessment. One (N = 1) participant had established a collaborative Wiki assessment that required third year undergraduate pharmacy students to work in five different groups to produce a wiki page on their particular topic. The interviewee had also produced a marking rubric for the assessment and the assessment exercise had been delivered successfully.

Of the five (N = 5) participants who had not made use of the tools in their teaching: (1) One (N = 1) respondent provided an explanation concerning their intention to develop introductory course material; (2) One (N = 1) participant was considering ways to help students to collaborate and interact online; (3) One (N = 1) respondent articulated a potential project to use a Web 2.0 tool to help distance students to stay in touch with one another; (4) One (N = 1) respondent indicated a desire to establish a social networking site to enable students to collaborate and share knowledge; and (5) One (N = 1) respondent was in the process of setting up a social networking site for undergraduate students. Thus, whilst these participants had not put what they learned into practice, they did articulate clear ways in which they might make use of the Web 2.0 tools in their teaching. This fact further supports our judgment that the learning design template prepared participants to use the tools in their teaching. However, it remains the case that actual change in behavior, measured in terms of changing teaching practice as a result of learning, was very limited. Whether or not this means that the workshops are not working is open to discussion.

Discussion and Conclusions

Despite offering pedagogically sound professional development opportunities that have been evaluated positively by participants who have achieved the intended learning outcomes, the majority of educators who engaged in EPD had not translated their EPD learning into changes in teaching practice at the three-month follow up interview point. Whilst the number of participants who participated in the follow up interviews was relatively low, we have seen a similar pattern of positive evaluations and achievement of intended learning outcomes followed by low implementation rates in previous follow up interviews for our workshops (Doherty et al., 2009; Doherty & Cooper, 2009). Given the positive results for the evaluation of the workshops in terms of both experience and achievement of intended learning outcomes, we are hypothesizing that there is an issue with participants translating learning into changed behaviour in their teaching practice. However, despite asking participants questions concerning factors that had facilitated and factors that had inhibited putting learning into practice, the follow up interviews did not elicit responses indicating obvious barriers to implementing learning in teaching practice. We are, therefore, working on a research approach that will target

the question of academics' motivation to put EPD learning into practice.

Dede (2004) noted that the barriers to EPD are psychological (motivation and reward), organizational (provision of support), political (strategic drivers), and cultural (values and norms). These are the extraneous variables, such as departmental support for innovation in teaching and recognition and reward for teaching practice mentioned earlier in our paper. Whilst Dede may well be correct in categorizing the barriers to EPD in this way, each barrier bears upon the question of motivation from the perspective of the individual academic. The reason for this is, for example, that lack of support will likely undermine participants' motivation to put what they have learned into practice. The same is true with respect to an individual's motivation if innovation in teaching is not perceived to be strategically important and if the culture of the University or department is not conducive to innovating in teaching. The next logical step in our research is, therefore, to look specifically at factors that are impacting upon participants' motivation to translate learning into changed behavior. We are currently considering using a theory of motivation, such as Azjen's (1991; 1996) theory of planned behavior as this theory provides a measurement for assessing: (1) participants' beliefs about the importance of engaging in an action; (2) participants' beliefs about how significant others perceive the action; and (3) participants' beliefs about their ability to complete the action in which they engage.

A second issue that arises from the hypothesis that there is a motivation issue with participants' translating their learning into changed behavior has to do with the lack of control EPD specialists have over the teaching and learning environment. For example, EPD specialists are unlikely to exercise any degree of direct control over the strategic direction of a research-intensive university in which discipline research is the main strategic driver. EPD specialists can, however, work at a local level to raise the profile of teaching and learning in order to create conditions in which academics are more motivated to engage in EPD to innovate in their teaching. The author of this paper has been involved in one such initiative to provide online EPD resources directly linked to a faculty's reward and recognition processes (Doherty, 2010a).

The final issue that we are considering with our research approach has to do with timing of the follow up interviews. When we created our research design, it seemed reasonable to follow up at a three-month point as we judged that the three-month period would provide academics with time to translate their learning into practice. In retrospect, it now seems possible that the lack of implementation may result in some cases from the fact that academics are unlikely to change their teaching approach until they are revising a course for a new semester. The follow up interviews did not provide any evidence for this hypothesis. However, a revised research approach targeting the question of motivation to change behaviour should provide us with data for this hypothesis. For example, a question about the importance of engaging in the action should enable us to find out whether participants are waiting for the start of a new semester before making changes to their teaching practice.

In summary, the learning design for our EPD workshops results in a positive learning experience along with participants achieving the intended learning outcomes. Having conducted this research for three years and finalized an EPD workshop design that works, we will now concentrate on the question of how to create the conditions that will result in participants putting what they have learned into practice. This may well be a motivation issue for the participants and we will be looking at a research design that allows us to gather data about participants' motivation to put their learning into practice.

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