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The Effects of a Required Faculty Development Program on Novice Faculty Self-Efficacy and Teaching

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Executive Summary

This research was undertaken as a way to explore the effectiveness of a newly implemented required faculty development program at Durham College in Oshawa, Ontario. The Certificate in College Teaching program was launched in 2010, in the context of a period of unprecedented growth in student (and thus faculty) numbers at this college. The growth was perceived as an opportunity to implement a required program of study for new teachers that would support not only the development of their teaching skills and knowledge, but also the development of a commitment to a student-centred approach to teaching as espoused by the college leadership. The research study utilized a multiple-methods approach that combined qualitative techniques (semi-structured interviews and focus groups) with quantitative measures (surveys of teaching skills, self-efficacy and teaching philosophy) to examine two aspects of the program's effectiveness: its impact on measures of teacher self-efficacy, and its impact on the teaching philosophy of the novice teachers.

While the quantitative data collection suffered from non-completion by the research participants, the qualitative data enabled the researchers to reach some tentative conclusions about the faculty development program's effectiveness in its pilot years. While the specific effects of the program cannot be quantified with certainty, the researchers feel confident in stating that the program is having an impact on the two measures under examination. In short, our data show that the completion of the Durham College Certificate in College Teaching increases self-reported measures of teacher self-efficacy (defined as their confidence in their ability to teach well at a college level) and also influences novice teachers' approach to teaching in the direction of a student-centred approach, whether or not they held that philosophy prior to their hire.

The teaching certificate program consists of the following:

- Three required credit courses (42 hours each), taken within the first eighteen months of the new faculty's probationary period of hire
 - Teaching Methodologies
 - Curriculum Design and Development
 - Assessment and Evaluation
- Two optional credit courses (42 hours each), taken at the teacher's discretion
 - Diversity in Teaching and Learning
 - Professionalism and Scholarly Practice

Those who complete all five courses successfully are awarded a Durham College Certificate in College Teaching.

The goals of the program, from the college's perspective, are as follows:

- To ensure that new faculty members are educated in the required teaching skills and abilities laid out in the existing Durham College's Faculty Teaching Skills and Abilities document (Appendix A in the full report).
- To inculcate and model a teaching philosophy that includes active learning, reflective practice and teaching in community.
- To provide opportunities, resources and structures that support the formation of a spontaneous community of practice among faculty across disciplines.
- To enable new teachers to develop an early relationship with members of Durham College's Centre for Academic and Faculty Enrichment (the CAFE).

The research was undertaken at the request of the college's academic leadership to investigate whether the program was meeting its goals in its pilot implementation and to provide evidence for future decision-making with respect to the program as part of the organization's reflective practice. Because of the potential for the results of the study to have meaning outside of this specific college, HEQCO funding and support was sought and received. The research was undertaken by two investigators who are staff in the CAFE and who act as faculty members in the certificate program. Because of their association with the program, care was taken to ensure the highest level of anonymity and protection for participants in the research.

Specifically, we set out to gather data related to the following two questions:

- Did teachers report an increase in their confidence in their ability to teach well at a college level (self-efficacy) as a result of the program?
- Did teachers report a philosophy of active and engaged, student-centered learning at the conclusion of the program?

Participants were recruited by staff from the Office of Research Services and Innovation (ORSI) from the pilot cohort in the newly launched program. Five new teachers volunteered to complete the study, which required the following steps:

- Participants were invited to complete five survey instruments at three points in the research process (prior to beginning the program; at the completion of the three required courses; at the completion of the two optional courses, if taken).
- Completion of the Durham College Faculty Teaching Skills and Abilities Self-Assessment Survey
- Completion of Pratt and Collins' Teaching Perspectives Inventory (2013)
- Completion of the Teacher Self-Efficacy Scale (Schwarzer, Schmitz & Daytner, 1999)
- Completion of Trigwell and Prosser's (2004) Approaches to Teaching Inventory
- Completion of Zinn's Philosophy of Adult Education Inventory
- Participants were invited to complete one-on-one interviews with the research assistant at the completion of the three required courses.
- Participants were invited to attend a focus group facilitated by the research assistant at the completion of all five courses.

All data were gathered and analyzed in accordance with the requirements of Durham College's research ethics board to ensure that the new faculty members were free from any coercion or consequences of their participation in this project. Participation in the research was voluntary and strictly anonymous. Because the researchers are both staff in Durham College's teaching support centre and faculty in the teacher development program, extra care was taken to ensure that at no time did the researchers know the identities of the participants in the research project. The survey instruments were chosen following a review of their current use in the literature on teaching philosophies and approaches; additionally, these instruments had been approved for use in a HEQCO-funded research project into a similar topic in recent years.

The data collection phase of the research was spread out over eighteen months, in hopes of being able to detect changes and trends in both areas of interest (self-efficacy measures and approach to teaching) via repeated completion of the survey instruments. Unfortunately, only one participant actually completed two instances of a survey as required. As a result, no analysis can be conducted or conclusions drawn from the quantitative data, with the exception of some general observations regarding the starting point for this cohort of new teachers. These five measures (as listed above) revealed the following characteristics of the participants in the study at the time of the pre-test:

- They felt confident in their ability to engage students in active learning.
- They indicated, in general, weaker confidence in their understanding of college curriculum skills and knowledge, in the effective use of educational technology, and in their ability to engage in reflective practice.
- The majority espoused an information transmission, or teacher-centred, approach to teaching, with an emphasis on behavioural change.
- The majority indicated a high degree of agreement with statements about perceived self-efficacy; however, the single participant who completed this test as a post-test showed movement toward an increased level of confidence on this test at the end of the first year of the program.

The qualitative results provided a richer resource for our study. Analysis of interview transcripts, focus group notes (and written responses) enabled us to draw the following conclusions:

- Participation in the teaching certificate program resulted in increased levels of confidence in the teachers' self-reported ability to teach well in a college setting; those who completed all five courses reported the highest level of confidence, going beyond confidence in their classroom teaching to the ability to participate fully in program teams, departmental activities and college committees.
- Participation in the program supported and strengthened a student-centred approach to teaching/learning, whether or not the teacher espoused such an approach prior to participation in the program; this commitment to such an approach appeared to be the result of both exposure to "verbal persuasion" (Bandura, 1977; 1997) and to modeling on the part of the program faculty during the courses.
- Although outside of our two specific research questions, the qualitative data also revealed a strong appreciation for the emergent community of practice supported by participation in the program.
- Additionally, the qualitative data provided evidence of a shift towards a dual identity (discipline-specific expert and educator) on the part of the participants, especially those who completed all five courses.

Although a lack of data limited our ability to come to firm conclusions of a specific nature, teachers completing the program did report an increase in their confidence in their ability to teach well as a result of their participation in the program, and they also reported a commitment to a philosophy of active, engaged, student-centred learning. It is, of course, impossible to determine from this study whether these same statements would have been true without the experience of the faculty development program, but just as obviously the program is designed to accomplish much more than these two goals. According to reports gathered from study participants, it can be suggested that the program is meeting its goals.

We recommend that this study or a variation of it be repeated with future cohorts. If this is done, we recommend reducing the number of survey instruments to three: the Durham College Faculty Teaching Skills and Abilities Self-Assessment Survey, the Teaching Perspectives Inventory (Pratt, 2013), and the Teacher Self-Efficacy Scale (Schwarzer, Schmitz & Daytner, 1999). Restricting the study to these three instruments would perhaps increase compliance by lightening the expectations placed on participants while still providing specific and useful data about the primary areas of interest (confidence and teaching approach). Longitudinal research into the impact of the program on student learning outcomes should also be considered, perhaps using methods such as peer observation, analysis of teaching materials, teaching portfolios and student interviews to supplement self-report mechanisms.

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Introduction

Context and Purpose

This research project was undertaken to examine the efficacy of a new teacher education program piloted at Durham College between 2010 and 2013. Using a combination of data collected through teacher surveys, interviews and focus groups, the project sought to explore the impact of the program and determine whether it was meeting its goals, specifically in two areas:

- Did teachers report an increase in their confidence in their ability to teach well at a college level (self-efficacy) as a result of the program?
- Did teachers report a philosophy of active and engaged, student-centered learning at the conclusion of the program?

Durham College is a comprehensive college of applied arts and technology located in Oshawa, Ontario. In 2009, the college opted to introduce a mandatory development program for new faculty, which included credit courses leading to an institutional certificate in college teaching. While most other teacher induction programs in the Ontario college system require participation in various courses and/or workshops, none of these (as far as Durham could determine) included credit courses that involved formal evaluation of new faculty skills in an academic setting.

The decision to launch this program was taken in the context of several compelling factors:

- The college had decided to enter into a period of intensive growth, targeting a doubling of its student population within five years (from approximately 5,000 to 10,000 students);
- The need for a large number of new full-time faculty members resulting from this growth initiative; and
- A mandate was established in the college's Strategic Plan and Academic Direction documents to highlight teacher effectiveness and the quality of the student experience.

The college leaders saw in these factors an opportunity to pilot a comprehensive teacher education program that would serve a number of purposes, as listed below. These purposes were developed in the context of a review of good practices in teaching and teacher education by members of the Centre for Academic and Faculty Enrichment (CAFE) staff, who subsequently developed the teaching certificate program.

- To ensure that new faculty members are educated in the required teaching skills and abilities laid out in the existing Durham College's Faculty Teaching Skills and Abilities document (Appendix A).
- To inculcate and model a teaching philosophy that includes active learning, reflective practice and teaching in community.
- To provide opportunities, resources and structures that support the formation of a spontaneous community of practice among faculty across disciplines.
- To enable new teachers to develop an early relationship with members of Durham College's CAFE.

Accordingly, members of the CAFE developed a program of study that would address these goals and exemplify good teaching practices. The resulting program, launched in September 2010, is structured as follows:

- Three required credit courses (42 hours each), taken within the first eighteen months of the new faculty member's probationary period of hire
 - Teaching Methodologies
 - Curriculum Design and Development
 - Assessment and Evaluation
- Two optional credit courses (42 hours each), taken at the teacher's discretion
 - Diversity in Teaching and Learning
 - Professionalism and Scholarly Practice

All novice faculty members are required to complete the three mandatory courses prior to the end of their probation. Those who complete all five courses successfully are awarded a Durham College Certificate in College Teaching.

Throughout the program, new faculty members participate in hybrid courses (50% online) taught by qualified faculty within the CAFE staff. The first three courses are scheduled into the weekly teaching schedule, and participation in them is reflected on the teacher's standard workload formula (SWF) document each term (i.e., time is given for participation in the courses via course/workload release). The optional courses (open to all full-time Durham College faculty members in addition to probationary faculty) are delivered in the evening and are not reflected on the SWF. There is no tuition for the courses, but participants purchase one comprehensive textbook used in all five courses. The courses are designed to build practical teaching skills by utilizing actual course documents and tasks drawn from the teacher's own teaching load as the basis for assignments, and by infusing a reflective practice approach across the program. At the same time, through modeling and the design of the course curriculum, the college's philosophy of active, engaged learning is communicated and experienced. The full curriculum and policies of the program are available in the program guide.¹

Research Questions

As directed by the college's leadership team, the launch of the pilot program included a plan for gathering evidence of its effectiveness in meeting its mandate as determined by the college Strategic Plan and Academic Direction. Specifically, the college was interested in determining if the program was effective in two areas, as noted above:

- Did teachers report an increase in their confidence in their ability to teach well at a college level (self-efficacy) as a result of the program?
- Did teachers report a philosophy of active and engaged, student-centered learning at the conclusion of the program?

¹ <http://innovation.dc-uoit.ca/links/dctc>

Research Methods and Methodology

Given the experiential and individual nature of the effects we wanted to study, we took a multiple methods approach that included data from a variety of sources, as follows:

- Participants were invited to complete five survey instruments at three points in the research process (prior to beginning the program; at the completion of the three required courses; at the completion of the two optional courses, if taken):
 - The Durham College Faculty Teaching Skills and Abilities Self-Assessment²
 - Pratt and Collins' Teaching Perspectives Inventory (2013)³
 - Schwarzer, Schmitz and Daytner's Teacher Self-Efficacy Scale (1999)⁴
 - Trigwell and Prosser's Approaches to Teaching Inventory (2004)⁵
 - Zinn's Philosophy of Adult Education Inventory⁶
- Participants were invited to complete one-on-one interviews with the research assistant at the completion of the three required courses.⁷
- Participants were invited to attend a focus group facilitated by the research assistant at the completion of all five courses.⁸

All data were gathered and analyzed in accordance with the requirements of Durham College's research ethics board to ensure that the new faculty members were free from any coercion or consequences of their participation in this project. Participation in the study was voluntary and strictly anonymous. Because the researchers are both staff in Durham College's teaching support centre and faculty in the teacher development program, extra care was taken to ensure that at no time did the researchers know the identity of the participants in the research project. This was accomplished through the use of pseudonyms and the assistance of Durham College's Office of Research Services and Innovation (ORSI) staff in promoting the project, registering participants, and collecting and anonymizing the data. A neutral research assistant (not employed at Durham College), who was not previously known to the participants and had no official or unofficial relationship to them, was also used.

The survey instruments were chosen following a review of their current use in the literature on teaching philosophies and approaches. Furthermore, these instruments had been approved for use in a HEQCO-funded research project into a similar topic in recent years. Specifically, the work of Stes, Clement and Van Petegem (2007), Stes, Coertjens and Van Petegem (2010) and Stes, Min-Leliveld and Van Petegem (2010) was instrumental in our choice of the Approaches to Teaching (ATI) Inventory, as this research addressed questions similar to our own, including a test-retest use of this inventory. No other test-retest information was found in relation to the other instruments.

Survey, interview and focus group data sets were analyzed manually by the RA.

² <http://cafe.durhamcollege.ca/facultysa/>

³ <http://teachingperspectives.com/drupal/about/about>

⁴ <http://www.statisticssolutions.com/resources/directory-of-survey-instruments/teacher-self-efficacy-scale>

⁵ Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching inventory. *Educational Psychology Review*, 16(4), 409-424.

⁶ http://www25.brinkster.com/educ605/paei_howtouse.htm

⁷ Interview questions can be found in Appendix C.

⁸ Focus group questions can be found in Appendix E.

Limitations of the Data

The requirement to complete five surveys on three occasions within two years appears to have been overly demanding for probationary faculty members managing full teaching workloads as well as the teacher education program. As a result, none of the project participants completed all the requirements of the project. We had hoped to track specific changes by individual (using pseudonyms) across the duration of the program, but this was not possible. Only one participant completed two surveys. As a result, while evidence collected via interviews and focus groups suggests increased confidence among the participants, we cannot attribute specific changes in efficacy measures or teaching approach (as evidenced by survey items) to the effects of the program.

In addition, it must be noted that these results were gathered from the first cohort of the new teacher development program. This may have had the effect of encouraging the participants to be especially generous in their comments about the program (given its newness), but may also have resulted in results reflecting the inevitable glitches and errors inherent in delivering a program for the first time. Further data collection and analysis on future cohorts are suggested to corroborate our conclusions and ensure that the program continues to meet its goals.

Literature Review

Introduction

The following is a review of the literature on conceptions of teaching, teacher self-efficacy, and the impact of faculty development on both, which connects directly to our research questions. The review will begin with a summary of several systematic literature reviews focusing on the effects of faculty development activities in higher education. It will then examine the research related to conceptions of teaching and the impact of faculty development on faculty's conceptions of teaching and student learning. Finally, it will highlight the literature associated with teacher self-efficacy and faculty development.

Reviews of Faculty Development

To date, a number of authors have conducted systematic literature reviews focusing on the effects of faculty development activities in higher education (Levinson-Rose & Menges, 1981; Prebble et al., 2004; Steinert et al., 2006; Stes, Min-Leliveld, Gijbels & Van Petegem, 2010; Weimer & Lenze, 1991; Wilson, 2012). The first systematic review was conducted by Levinson-Rose and Menges (1981) and was based on a synthesis of 71 studies published between the mid-1960s and 1980s, mostly addressing faculty development in American institutions. The authors noted that although workshops and seminars were the most common instructional development intervention (short, "one-shot" workshops were most common), they were also the least evaluated and the least likely to "produce lasting changes in teaching behaviour or lasting impact on students" (Levinson-Rose & Menges, 1981, p. 419).

Weimer and Lenze (1991) updated Levinson-Rose and Menges' (1981) review, focusing on literature published in the eighties, drawing mostly on American sources. Workshops and seminars, they found, remained the most common type of faculty development activity. Overall, the results of their review regarding the effects of instructional development in higher education were inconclusive (Stes, 2010). Prebble et al. (2004) conducted an extensive review of more than 150 published studies between 1990 and 2004 from

Australia, New Zealand, North America, the UK, Singapore and Hong Kong. They concluded that short training courses tend to have only limited impact on actual teaching practice.

Steinert et al. (2006) conducted a discipline-specific review that was based on 53 identified articles published between 1980 and 2002 which focused specifically on faculty development in the medical sciences, the majority of which were published in the US. Steinert et al. (2006) reported high satisfaction of teachers with faculty development initiatives, and positive changes in teachers' attitudes, knowledge, skills and behavior following participation in faculty development activities.

Another empirical review by Stes et al. (2010) differed from previous reviews as it clustered the studies reviewed according to the level of outcome that was measured (i.e., change within teachers, institutional impact, and change within students) and the research designs used, rather than on the basis of the type of faculty development intervention. In a selection of 36 studies they found evidence that instructional development interventions that were extended over time had more positive behavioral outcomes than one-time events.

Most recently, Wilson (2012) provided an analysis of the faculty development literature in higher education via a meta-study of 73 research studies conducted between 2000 and 2009. Wilson found that it was not possible to draw conclusions regarding the relationship between faculty development approaches used in higher education and effective teaching outcomes, as the research is mostly based on narrow research questions that focus on the impact on individual teachers, with no mention of the impact on students, departments or institutions. Wilson (2012) concluded that "We in fact know very little about the connection between instructional development initiatives and improvements in university teaching" (Wilson, 2012, p. 138).

The reviews discussed above show differences in the reported effects of faculty development. The reviews suggest that short training courses have little impact on teaching and learning, whereas intensive, more comprehensive faculty development programs can influence teacher beliefs and behaviour and may lead to a more student-focused approach in teaching. With that said, Levinson-Rose and Menges (1981) and Steinert et al. (2006) indicate a positive effect for the majority of faculty development interventions, but Weimer and Lenze (1991) and Wilson (2012) point out that results were inconclusive. Prebble et al. (2004) and Stes et al. (2010) indicate that the difference in effect depends on the format of the faculty development activity. All of the reviews revealed weaknesses in the findings they reported and noted a need for more research, more evaluation and generally more sophisticated design of research studies examining the effects of faculty development activities in higher education.

Conceptions of Teaching

Research has revealed that personal conceptions of teaching result from faculty's own experiences, both as students and teachers (Dall'Alba, 1991; Martin & Balla, 1991; Pratt, 1992; Prosser, Trigwell & Taylor, 1994; Samuelowicz & Bain, 1992). Within the literature, two broad orientations regarding conceptions of teaching are typically distinguished: (1) teacher-centered orientation, which describes faculty who consider teaching to be the transmission of knowledge to students, and (2) student (or learner)-centered orientation, which describes those faculty who regard teaching as facilitating students' personal construction of knowledge and conceptual change (Calderhead, 1996; Kember, 1997; Trigwell & Prosser, 2004).

Kember (1997) found that 13 independent empirical studies identified similar conceptions of teaching among university faculty along a continuum ranging from a teacher-centred/content-oriented on one end, to a student-centred/learning-oriented on the other end. Similarly, Prosser and Trigwell (1999) identified several conceptions of teaching and approaches to teaching which ranged from teacher-centered to learner-centered.

Samuelowicz and Bain (2001) have also suggested that conceptions of teaching are primarily teacher-centred or student-centred.

Faculty members' teaching conceptions have also been shown to inform their teaching approaches (Kember, 1997; Kember & Kwan, 2000; Trigwell & Prosser, 2004). For example, Kember and Kwan (2000) interviewed 17 lecturers in order to characterize their conceptions of and approaches to teaching. They observed that lecturers who considered teaching to be a process of transmitting knowledge were more likely to use content-centred approaches to teaching, while those who conceived teaching as a facilitative process tended to use learner-centred approaches. Coffey and Gibbs (2002) also found that student-centred teachers use a wider repertoire of teaching methods than teachers who adopt a teacher-centred approach to teaching.

Furthermore, research on these two main teaching orientations has revealed an important relationship between faculty approaches to teaching and student approaches to learning (Kember & Gow, 1994; Prosser & Trigwell, 1999; Sheppard & Gilbert, 1991). Sheppard and Gilbert (1991) found that a lecturer's theory of learning influences students' beliefs about subject knowledge structure, which in turn influences the students' learning approach. A study by Kember and Gow (1994) also found that a learning facilitation orientation (learner-centred) encouraged more meaningful learning among students. Prosser and Trigwell (1999) also reported that "university teachers who focus on their students and their students' learning tend to have students who focus on meaning and understanding in their studies, while university teachers who focus on themselves and what they are doing tend to have students who focus on reproduction" (p. 142). A further study by Trigwell, Prosser and Waterhouse (1999) suggested that teachers using a teacher-centred approach were more likely to encourage surface learning approaches in their students. There was also a converse but slightly weaker relationship indicating that teachers who adopted a learner-centred approach encouraged deeper learning approaches in their students.

According to Kember and Kwan (2000), fundamental changes in the quality of teaching and learning are unlikely to occur without changes in teachers' conceptions of teaching. Therefore, encouraging learner-centred approaches requires the broadening and developing of underlying conceptions of what teaching and learning means (Kember & Gow, 1994). As such, it has been argued that faculty development efforts should be focused on changing faculty conceptions of teaching in order to emphasize the facilitation of student learning (Kember & Gow, 1994; Trigwell & Prosser, 1996). This approach requires a move away from traditional faculty development approaches that simply highlight various teaching strategies to more sophisticated approaches that challenge conceptions of teaching and help faculty become more aware of wider variations in teaching and learning styles (Åkerlind, 2007; Trigwell & Prosser, 1996).

The Impact of Faculty Development on Faculty's Conceptions of Teaching

A number of studies have investigated the impact of faculty development on faculty's conceptions of teaching (Butcher & Stoncel, 2012; Cilliers & Herman, 2010; Ginns, Kitay & Prosser, 2008; Hanbury, Prosser & Rickinson, 2008; Hubball, Collins & Pratt, 2005; Gibbs & Coffey, 2004; Ho, Watkins & Kelly, 2001; Postareff, Lindblom-Ylänne & Nevgi, 2007; Stes, Coertjens & Van Petegem, 2010). One of the most cited studies is that of Gibbs and Coffey (2004), who studied the effectiveness of faculty training programs at 22 universities in eight countries and included a group of teachers and their students who were studied both at the start of their training and one year later. A control group of new teachers who received no training and their students were also studied in the same way. Gibbs and Coffey (2004) found that those who had participated in university faculty development programs were more likely to adopt a learner-centred teaching practice, whereas faculty who did not engage in the faculty development programs actually reduced the extent to which they adopted a learner-centred teaching focus and became more reliant on instructor-centred teaching practices. Ho et al. (2001) conducted a smaller-scale study of a faculty development program at Hong Kong Polytechnic

University by comparing conceptions of teaching at the end of the faculty development program and again one year later. They found that out of the nine teachers who started with a relatively low-level conception of teaching, six of them (66%) showed positive changes in their conceptions of teaching and demonstrated a significant improvement in their teaching practices as perceived by their students after the faculty development program. The authors concluded that faculty development programs can lead to changed conceptions of teaching with consequential changes in teaching practice and student learning.

More recently, Stes, Coertjens and Van Petegem (2010) examined whether there were differences in teaching approach between teachers who participated in a faculty development program for beginning teachers at the University of Antwerp and those who did not. They concluded that faculty development can increase the extent to which faculty adopt a student-focused approach to teaching. Butcher and Stoncel (2012) also provided recent evidence of this using an institutional case study approach which explored the impact of a post-graduate certificate in higher education at the University of Northampton, UK, for new teaching staff who joined the university directly from the workplace. The research revealed that new faculty members were willing to adopt novel approaches to teaching, planning and assessment, with a shift from teacher-centred to learner-centred approaches. Impacts from the faculty development were discernible at the individual and departmental levels, on the student experience, and on participants' careers. Several other authors have also reported similar findings, indicating that faculty development initiatives can be effective in shifting faculty's beliefs from a teacher-centred to a more student-focused approach to teaching.

Postareff et al. (2007) undertook a systematic review based on 200 higher education faculty from different disciplines at the University of Helsinki. The study examined whether the length of faculty development has an effect on approaches to teaching and on self-efficacy beliefs. Their assessment showed that faculty development encourages a shift from the information transmission/teacher-focused approach to a conceptual change/student-focused approach, but cautioned that this is a slow process. Faculty members who had pedagogical training reporting being more student-centred than those who did not only after a year of training. The evidence suggested that it takes at least a one-year faculty development process for positive effects to emerge. Similar findings of delayed transfer of learning have been reported in other studies (Cilliers & Herman, 2010; Light, Calkins, Luna & Drane, 2009).

In general, the literature confirms that it is possible to evidence a shift from teacher-focused to student-focused approaches in teaching and learning following participation in faculty development programs. With that said, there has been some criticism of the literature regarding the impact of faculty development on faculty's conceptions of teaching. For example, Eley (2006) and Kane, Sandretto and Heath (2002) have challenged the legitimacy of a number of studies, arguing that in most cases the studies rely on self-reporting and do not observe teachers' practice. Gibbs (2003) also warns that studies which rely solely on self-reporting are likely to draw flawed conclusions about the impact of faculty development on faculty behaviour.

The Impact of Faculty Development on Student Learning

Several studies have also explored the effects of faculty development on student learning. Gibbs and Coffey (2004) found that students took a surface learning approach to a significantly lesser extent after their faculty had participated in a faculty development program. They also took a deep learning approach to a greater extent, but this change was small and not significant. Gibbs and Coffey (2004) implied that faculty development in higher education should be oriented towards changing teachers' conceptions of teaching to a more student-centred approach because of its reasonable effect on improving student learning processes and outcomes. In their study, Ho et al. (2001) found that the faculty development program brought about detectable conceptual change or conceptual development in two-thirds of the sample group, who in turn received better ratings on their teaching practices from their students in the following academic year. In

addition, a positive impact on their students' studying approaches was observed for half of the faculty who changed their teaching conceptions. Similar findings were also confirmed by Hanbury et al. (2008), who found that when faculty adopt a student-focused teaching approach following participation in a faculty development program, their students adopt deep learning approaches to their studies. This was determined using classroom surveys which gathered data on the amount of time students spent on a course, their participation in class, their interest in learning, the degree of personal responsibility taken for their learning, the quality of their assignments, their exam results and perceived quality of their education program as a whole.

Prebble et al. (2004) also concluded that faculty development can have a direct impact on teaching quality, which in turn can have a positive influence on student learning, but that the relationship between faculty development and student learning outcomes was indirect. McAlpine, Oviedo & Emrick (2008) and Horsburgh (1999) also highlighted a difficulty in directly linking faculty development to student learning, suggesting that improvements in student learning outcomes might be attributed to curriculum design rather than the individual teaching practices of the faculty. Further evidence of the complexity of trying to measure the effectiveness of faculty development on student learning is outlined by Devlin (2008), who noted that changes in classroom practice following participation in faculty development are not immediate, and that therefore any impact on student learning outcomes is difficult to track. These findings also suggest that evidence of impact on student learning outcomes should be collected longitudinally and using more rigorous methods than self-reporting including peer observation, analysis of teaching and learning materials, teaching portfolios and student interviews (Devlin, 2008; Horsburgh, 1999; McAlpine et al., 2008; Prebble et al., 2004).

Teacher Self-Efficacy

Research on teacher self-efficacy dates back to educational studies carried out by the RAND organization in the mid-1970s, when two questionnaire items based on Rotter's (1966) social learning theory were added to an already existing questionnaire to investigate teachers' beliefs in their ability to influence student achievement (Tschannen-Moran, Hoy & Hoy, 1998). The total of the scores on the two RAND items was called teacher efficacy (TE), and it indicated the degree to which he or she believed that they controlled the consequences of learning and student motivation (Tschannen-Moran et al., 1998). Spurred on by the success of the RAND studies, several researchers (i.e., Ashton & Webb, 1986; Guskey, 1981; Rose & Medway, 1981) sought to expand and refine the notion of teacher efficacy, developing additional instruments to help measure this construct.

In the late 1970s a second strand of research developed from Bandura's (1977; 1997) social cognitive theory and theory of self-efficacy. Teacher self-efficacy may be conceptualized as individual teachers' beliefs in their own ability to plan, organize and carry out activities that are required to attain given educational goals (Bandura, 1977; 1997). According to Bandura's theory, self-efficacy has two components: efficacy expectation and outcome expectancy. Efficacy expectation is the conviction that one has the ability, knowledge and skills to successfully execute the behaviour or actions required to produce the desired outcome(s), whereas outcome expectancy is the belief that a given behaviour or action will indeed lead to the expected outcome(s). Thus, in order to be successful, the teacher must have both high efficacy expectations and high outcome expectancy (Bandura, 1977; 1997). Bandura's theory also influenced the development of a number of efficacy instruments, including the Teacher Efficacy Scale (Gibson & Dembo, 1984), the Ashton Vignettes (Ashton, Buhr & Crocker, 1984), the Science Teaching Efficacy Belief Instrument (Riggs & Enochs, 1990), and the Ohio State Teacher Efficacy Scale (Tschannen-Moran & Hoy, 2001).

Teacher self-efficacy has been found to be one of the variables most consistently related to positive teaching behavior (Akbari et al., 2009; Ashton & Webb, 1986; Bümen, 2009; Gibson & Dembo, 1984). Research on teacher self-efficacy suggests that teaching behaviors such as persistence at a task, risk-taking and the use

of innovations are related to high levels of self-efficacy (Ashton & Webb, 1986; Guskey, 1988). Gibson and Dembo (1984) revealed that high-efficacy teachers devoted more effort to teaching students and did so with better instructional strategies than low-efficacy teachers. It has also been argued that teachers with a strong sense of self-efficacy adapt teaching practices to student needs (Saklofske et al., 1988), are more likely to use hands-on teaching methods (Riggs & Enochs, 1990), and are more involved in collaborative activities with others (Bümen, 2009; Gibson & Dembo, 1984). It has also been shown that teachers with a stronger sense of self-efficacy tend to exhibit greater levels of planning and organization (Allinder, 1994) and experience lower levels of stress than their less efficacious counterparts (Akbari et al., 2009).

Researchers have also suggested that teacher self-efficacy is related to student achievement (Ashton & Webb, 1986; Brownell & Pajares, 1999; Gibson & Dembo, 1984; Woolfolk, Rosoff & Hoy, 1990). For example, Woolfolk et al. (1990) discovered that teachers with high self-efficacy beliefs believed that they had the ability to make a difference in student achievement and tended to trust their students' abilities. Moreover, Ross (1992; 1998) found that teachers with higher levels of efficacy are more likely to build students' self-perceptions of their academic skills and suggested that teacher self-efficacy is also related to student efficacy beliefs. McLaughlin and Marsh (1978), Ashton and Webb (1986), and Gibson and Dembo (1984) have also reported similar correlations between teacher self-efficacy and student achievement.

To date, much of the teacher self-efficacy research has been dominated by quantitative methodologies and has explored the consequences of self-efficacy. While such research has been successful in establishing the power of teacher self-efficacy, several researchers have called for more qualitative and longitudinal studies. For example, Tschannen-Moran et al. (1998) suggested that qualitative approaches would serve to deepen the understanding of how teacher self-efficacy beliefs function. In addition, Henson (2002) commented that a greater diversity of methodologies would lead to the growth of teacher self-efficacy research. Similarly, Wheatley's (2005) critique of teacher efficacy also called for qualitative studies.

Overall, the research indicates that teacher self-efficacy may positively impact teacher behaviors and student achievement. Teacher self-efficacy usually develops early in a teacher's career and becomes relatively stable over time (Morris & Usher, 2011; Tschannen-Moran et al., 1998), which makes faculty development especially critical for developing teaching self-efficacy in future faculty.

The Impact of Faculty Development on Teacher Self-Efficacy

Although a growing body of research attests to the benefits associated with teacher self-efficacy, less is known about how teaching self-efficacy is developed (Morris & Usher, 2011). To date, the literature related to teacher self-efficacy and faculty development has mainly focused on the K-12 sector, and research focused on higher education is relatively scarce. Bandura (1977; 1997) proposed four possible sources of teacher self-efficacy: (1) mastery experiences; (2) vicarious experiences; (3) verbal persuasion; and (4) physiological arousal. Mastery experience is the most powerful source of self-efficacy as it involves experiences that are direct and personal (Bandura, 1997). Vicarious experiences provide individuals with an opportunity to observe the successes and failures of others and may thereby alter self-efficacy. The third source of self-efficacy comes from the verbal persuasions individuals receive from others. Finally, physiological and affective states, including stress, fatigue, anxiety and mood can also influence self-efficacy (Morris & Usher, 2011).

Bandura's (1997) theory of self-efficacy suggests that efficacy is developed early in learning, thus the first years of teaching can be critical to the long-term development of teacher self-efficacy. According to Mulholland & Wallace (2001), one of the most powerful influences on the development of teacher efficacy is mastery experiences during the first years of teaching. Similarly, Morris and Usher (2011) found that early

successful instructional experiences, which involve a combination of mastery experiences and verbal persuasions, are important for developing high teaching self-efficacy in professors, and that their teaching self-efficacy solidified within the first few years as a faculty member. Studies have also shown that teacher efficacy is more likely to increase during the period of pre-service training. For instance, Hoy and Woolfolk (1990) discovered that a sense of self-efficacy for teaching increases during college teacher preparation and student teaching. Furthermore, it has been shown that teacher efficacy may be enhanced through in-service training (Prieto & Meyers, 1999; Stein & Wang, 1988). It has also been found that longer training periods result in greater increases in teacher self-efficacy (Henson, 2002; Postareff et al., 2007).

Data Presentation and Analysis

Survey Data

Participants in the research project were issued a package containing an overview of the requirements of the research, instructions for completing the surveys, and survey documents. The instructions requested that the completed surveys be delivered to the Office of Research Services and Innovation (ORSI) at Durham College, where they were labeled with the participants' chosen pseudonyms and delivered to the research assistant for analysis.

As noted above, our ability to analyze the test-retest survey data was negated by the failure of our volunteer participants to complete the retests of the surveys. However, what follows is an analysis of what we were able to glean from the limited data we gathered from these instruments.

Research Results

All participants in the program were asked to participate in the research at the beginning of the teaching program and then again after they had completed the three mandatory courses. Five participants volunteered to be in the initial research that included five assessments. These five chose pseudonyms – Cheesy, Donut, Joshua, Oliver and Silverweed. Only one participant, Oliver, completed the tests again after three courses. Not all the participants completed all four of the inventories at the beginning of the study, so some of the comparison data are not complete.

Teaching Perspectives Inventory (TPI) Pratt & Collins

Research participants were asked to complete the Teaching Perspectives Inventory. The inventory consists of 45 items that are designed to capture a teacher's commitment to teaching including beliefs, intentions and actions (Pratt & Collins, 2013). The purpose of the inventory is to enable teachers to see how their beliefs about teaching are reflected in their practices along a five-item scale – transmission, apprenticeship, developmental, nurturing and social reform. According to the TPI website, which contains the inventory, the assessment often identifies two strong orientations in an instructor, one which is termed "dominant" and the other "back-up". The inventory returns scores for beliefs, intention and actions within each philosophy in order to assist teachers in determining whether their beliefs align with their teaching practice. See Appendix B for a detailed description of the TPI.

Four of the participants took the TPI inventory at the beginning of the program. Scores over 40 indicate a dominant perspective. Scores under 30 indicate a recessive perspective. The participants were to complete

the survey considering one educational context and one group of learners. The survey also takes into account a teacher's (B) beliefs, (I) intentions and (A) actions to determine if they are consistent with the perspective.

Table 1: Teaching Perspective Inventory Results

Participant	Transmission	Apprenticeship	Developmental	Nurturing	Social Reform
Cheesy	35	36	36	37 (B:13, I:12, A:12)	34
Silverweed	37	39	39	40 (B: 15, I:15, A:10)	24 (R)
Donut	35	39	31	41(D) (B:14, I:13, A:13)	28 (R)
Joshua	37	43 (D) (B:14, I:15, A:14)	34	34	28 (R)
Oliver (initial)					
Oliver (retest)	39	40 (B:14, I:14, A:12)	37	36	23 (R)

(D) – dominant

(R) – recessive

B: beliefs, I: intention, A: actions

The results from the four participants who completed the survey at the beginning of the program indicate that three had a dominant or somewhat dominant nurturing philosophy, which was supported by their BIA scores. One instructor had a dominant apprenticeship score which was supported by the BIA scores. However, of the participants who took the TPI survey at the beginning of the program, Cheesy's scores were somewhat flat, with no particular inventory being dominant or recessive. The inventory states that agreeing with one parameter of the test means to disagree with another and, in doing so, makes it more difficult to get flat ratings, so it is doubtful that this person completed the inventory correctly. Three of the four had consistent recessive scores in the social reform category.

The nurturing perspective is one where teachers are caring and supportive of student success. It is the second highest score on the TPI scale. The highest, social reform, was consistently recessive in this group of teachers. The social reform perspective requires students to demonstrate deep learning through critical thinking. Assumptions are challenged and the students are encouraged to create new knowledge that includes a wider view of the world and is more inclusive. In doing so, students are empowered to take on issues in society and push for reform. On the TPI scale, social reform is the highest level of teaching and the philosophy aligned with the lowest score for most of the participants.

Although Oliver did not hand in results for a TPI score at the beginning of the program, the TPI inventory was returned after three courses. The results indicate a somewhat dominant apprenticeship philosophy at 40 and a sub-dominant transmission philosophy (39).

Philosophies of Adult Education (Zinn)

This inventory requires participants to complete statements according to their beliefs. There are 15 statements, each with five answers to complete each statement. Participants are to rate each of the five answers on a seven-point scale, from strongly disagree to strongly agree. Scores returned indicate a particular philosophy of education. A score of 95-100 indicates a strong agreement with a particular philosophy; a score of 15 to 25 indicates a strong disagreement with a philosophy. Five of the teachers participated in this inventory and one teacher, Oliver, completed it twice – once at the beginning of the program and then after three courses.

Table 2: Philosophies of Adult Education Results

Participant	Liberal	Behaviourist	Progressive	Humanistic	Radical
Cheesy	68	18 (SD)	81	75	86
Silverweed	83	93	87	76	49
Donut	71	75	73	71	44
Joshua	87	94	92	77	74
Oliver (initial)	90	92	83	70	72
Oliver (retest)	84	97 (SA)	82	65	52

(SA) – Strongly Agree

(SD) – Strongly Disagree

Of the five participants, four scored fairly high in the Behaviourist category, which some might say would be typical of new teachers. Behaviourist teaching focuses on changing a student's behaviour. Students exhibit a strong response to their environment by practicing skills and receiving feedback. The role of the teacher is one of manager who designs the lessons, directs the learning and controls the environment. Behaviourist is considered a more traditional learning philosophy. One participant scored relatively high for the Radical philosophy, where the purpose of education is to empower students to bring about change in society. The teacher plays a supportive role by enabling students to autonomously combine action with reflection. It is interesting to note that as Oliver moved through the program he became more strongly aligned with Behaviourist philosophy.

Approaches to Teaching Inventory (Trigwell and Prosser)

This inventory is designed to identify a teacher's approach to teaching as student-focused or teacher-focused. The questionnaire contained 16 items measuring intentions and strategies – conceptual-change (student-focused) methods and information transmission (teacher-focused) methods. Research has found that teachers who incorporated student-focused methods reported using a wider variety of teaching activities than those who use a teacher-focused approach (Norton, Richardson, Hartley, Newstead & Mayes, 2005).

Table 3: Approaches to Adult Education Inventory Results

Participant	Conceptual Change/Student	Information Transmission/Teaching
Cheesy	50	34
Silverweed	41	40
Donut	31	45
Joshua	38	50
Oliver (initial)	35	43
Oliver (retest)		

Cheesy was the only participant to score higher for a student-focused approach to teaching. While Silverweed showed just a one-point difference between the two measures, the other participants demonstrated substantial differences in scores favouring information transmission/teacher-focused approaches. Oliver did not hand in any results for a post-test with this inventory. These results indicate that these are new teachers without a sophisticated knowledge or understanding of good teaching practices that can lead to transformative learning.

Teacher Self-Efficacy Inventory (Schwarzer, Schmitz and Daytner)

The Teacher Self-Efficacy Inventory is a ten-item measure that identifies job skills and groups them into four major areas: (a) job accomplishment, (b) skill development on the job, (c) social interaction with students, parents and colleagues, and (d) coping with job stress (Schwarzer, Schmitz & Daytner, 1999). Participants are to rate ten statements on a four-point scale, from not true at all to exactly true. Research has shown that teachers with a high sense of efficacy feel a personal accomplishment, have high expectations for students, feel responsibility for student learning, have strategies for achieving objectives, a positive attitude about teaching and believe they can influence student learning (Ashton, 1984.) Teachers who perceive themselves as efficacious will spend more time on student learning, support students in their goals and reinforce intrinsic motivation (Bandura, 1993).

The ten questions for the inventory include:

1. I am convinced that I am able to successfully teach all relevant subject content to even the most difficult students.
2. I know that I can maintain a positive relationship with parents even when tensions arise.
3. When I try really hard, I am able to reach even the most difficult students.
4. I am convinced that, as time goes by, I will continue to become more and more capable of helping to address my students' needs.
5. Even if I get disrupted while teaching, I am confident that I can maintain my composure and continue to teach well.
6. I am confident in my ability to be responsive to my students' needs even if I am having a bad day.
7. If I try hard enough, I know that I can exert a positive influence on both the personal and academic development of my students.
8. I am convinced that I can develop creative ways to cope with system constraints (such as budget cuts and other administrative problems) and continue to teach well.
9. I know that I can motivate my students to participate in innovative projects.
10. I know that I can carry out innovative projects even when I am opposed by skeptical colleagues.

Table 4: Teacher Self-Efficacy Inventory Results

Participant	Not at all true	Barely true	Moderately True	Exactly True
Cheesy			1	2-10
Silverweed		1	3,5,6,10	2,4,7,8,9,
Donut				1-10
Joshua			1,3,9,10	2,4,5,6,7,8
Oliver (initial)		9	1,3,5,6,7,8,10	2,4
Oliver 2 (retest)			1,3,7	2,4,5,6,8,9,10

Cheesy was the only participant to score higher for a student-focused approach to teaching. While Silverweed showed just a one-point difference between the two measures, the other participants demonstrated substantial differences in scores favouring information transmission/teacher-focused approaches over student focused ones. In comparing pre- and post-tests, Oliver showed distinct change in his level of efficacy, moving five of the statements into the exactly true category.

The Durham College Faculty Skills and Abilities Self-Assessment was designed by the CAFE staff at Durham College to:

- orient faculty to the specific skills, knowledge and behaviours expected of a professor at Durham College
- enable faculty to assess their own teaching strengths and areas for development
- provide resources and contacts related to the various skill areas, so that faculty can make plans to continue to develop their skills

The self-assessment is categorized into six sections: (1) Designing curriculum; (2) Respecting and accommodating the different learning styles of the learners; (3) Engaging and motivating learners in active and collaborative learning; (4) Incorporating effective assessment strategies; (5) Using technology in teaching and learning; (6) Engaging in reflective practice and ongoing faculty development opportunities. The results of the self-assessment are organized by category, and for each category it is possible to obtain scores of either “satisfactory skill attainment” (>80%), “emerging strength with room for further improvement” (80%-50%), or “requires further development” (<50%).

All five of the participants completed the self-assessment at the beginning of the program. The results indicate that most of the participants felt confident in their skills and abilities as they related to engaging and motivating learners in active and collaborative learning. The majority of the participants also had satisfactory or emerging strength in the remaining skills and abilities, and only two participants required further development in the areas of using technology in teaching and learning and engaging in reflective practice and ongoing faculty development opportunities.

Unfortunately, none of the participants completed the self-assessment at the end of the three mandatory courses or at the end of the program, so it is not possible to make any pre-/post-test comparisons.

Table 5: Durham College Faculty Skills and Abilities Results

Section	Satisfactory Skill Attainment	Emerging Strength with Room for Further Improvement	Requires Further Development
1. Designing Curriculum	Oliver	Cheesy Donut Joshua Silverweed	
2. Respecting and accommodating the different learning styles of the learners	Cheesy	Donut Joshua Oliver Silverweed	
3. Engaging and motivating learners in active and collaborative learning	Cheesy Donut Oliver Silverweed	Joshua	
4. Incorporating effective assessment strategies	Oliver	Cheesy Donut Joshua Silverweed	
5. Using technology in teaching and learning	Oliver	Cheesy Joshua Silverweed	Donut
6. Engaging in reflective practice and ongoing faculty development opportunities	Cheesy Donut	Oliver Silverweed	Joshua

In summary, the pre-tests, the results indicate a fairly traditional group of instructors focused primarily on transmission-like models for teaching, as well as Behaviourist and Apprenticeship philosophies. Cheesy seems to be the only participant with a more progressive teaching style. This is supported by the results of the Durham College Faculty Skills and Abilities Inventory which indicated that both Cheesy and Oliver were the most accomplished in their teaching abilities. Donut and Joshua required further development in the use of technology and in engaging in reflective practice. These two also scored lower in the Approaches to Teaching Inventory and were aligned mainly with Behaviourist teaching perspectives.

Individual Interviews

Although all those who registered to participate in the study were invited (by ORSI staff) to schedule one-on-one interviews with the research assistant at the completion of their three required courses (June 2012), only two persons completed these interviews. While this is disappointing, these two interviews provide a rich insight into the experiences of two very different teachers at the end of the required courses. Each participant was interviewed over the telephone using a series of open-ended questions. Each interview took about 30 minutes.

Both of the interviewees had previous teaching experience and were confident in their abilities to teach. However, the faculty development courses provided them with the tools necessary to further improve and

develop their teaching abilities. For example, one teacher stated that when she was teaching a course in which she was not a subject matter expert, she knew the course was not working but did not know why or how to fix it. After taking the curriculum development and the assessment courses, she was able to identify where the problems in the course were – the alignment of learning to the outcomes, assignments that did not reflect student learning and activities that did not support student learning integrity.

The faculty development program provided them with the theories, models and strategies to improve learning activities and student engagement. Both interviewees discussed how the program enabled them to modify their teaching philosophies where the role of the teacher moved from content expert to learning facilitator. One participant discussed how she realized that she was not the only teacher in the room but that students could learn from each other. She began structuring learning activities that would provide opportunities for students to interact with each other and the content. The second interview discussed the importance of modeling, as it was described in the faculty development program. Integrity was an important component of his profession and he began that discussion early with his students and modeled integrity in his actions and interactions with the students.

It is evident that the program had a positive and significant effect on these two teachers, and clearly both communicated and modeled the preferred teaching approach of active and engaged learning. As well, we can see increased confidence in both teachers, both of whom appear to have come into the role of college teacher with some prior teaching experience.

Focus Group Analysis

At the end of the five courses, participants who had completed the entire program were invited (by the RA) to attend a focus group discussion. Six participants attended and responded to the pre-determined set of questions (Appendix E; verbatim written responses in Appendix F).

Confidence

Focus group participants reported an increased confidence in their teaching and level of professionalism. They gained an understanding of how to develop effective courses and found that they were able to take that knowledge back to their colleagues in their programs. As first-year teachers, they were assisting other faculty members with course outlines and program reviews. The program enabled them to identify issues with their courses and put strategies in place to address them. They found their confidence increased by sharing with each other, by being part of a cohort. They were able to see that they were not alone and that what they were experiencing was not unique. Every teacher in the group was struggling. The program also gave them the confidence to try new techniques and have them fail: “There was no mass anarchy when you fail. Students appreciate it when you admit it and fix your mistake.”

Program Strengths

Participants said that one of the strengths of the program was its length – the five courses are completed over two years through a program where the facilitators modeled effective and innovative teaching practices. The participants were required to write reflective journals about their teaching and learning. For some, it was a new process but they found it very rewarding: “I think of myself as being fairly self-aware but writing it down changes it. It takes your reflections further.”

Program Weaknesses

Participants felt that the program was intense and suggested that they start it in August rather than September. Although they were given a reduction in teaching load to complete the program, some felt that even this did not provide them with enough time to complete the work. Several participants mentioned that they wished the online portion of the program had more depth, whereas others welcomed the lighter course load as a break. As well, one student said that all first-year teachers should take the program and not be able to receive prior credit for it. Although she had a bachelor of education and was working on a master's of education, she gained much valuable knowledge and expertise from the program that she could not have gotten in other programs.

Discussion

As might be expected, we were frustrated and disappointed that our original data collection expectations were unfulfilled. While our data collection approach did not provide the specificity or ability to track the concrete, individual changes that we would have wished, it did enable us to make a reasonable assessment of the status of the teachers' confidence levels and teaching approaches throughout the faculty development program.

As we review the survey data we did collect, it becomes apparent from the TPI results that most of the new teachers already took a somewhat student-centred approach to their teaching from the beginning. This predisposition may well be the result of hiring practices that are based upon the Durham College Faculty Teaching Skills and Abilities matrix (see Appendix A), which is designed to support the hiring of new teachers who would be a good fit with Durham's philosophy of student-centred teaching/learning. On the other hand, the limited data we have from the ATI reveal a more information-transmission or teacher-focused bias as our participants began their full-time teaching careers; it is possible that a lack of alternate skills/tools or simple newness at teaching were at the root of this result. Without post-test data we cannot speculate on what difference the program might have made on this particular measure. As noted by many researchers (Dall'Alba, 1991; Martin & Balla, 1991; Pratt, 1992; Prosser, Trigwell & Taylor, 1994; Samuelowicz & Bain, 1992), novice faculty members begin their careers with an established approach to teaching formed by their own educational experiences. As the participants learned more about how students learn and acquired more skill and experience with the use of active learning approaches, it is clear that they embraced this approach, whether or not they came with that predisposition. In fact, a number of them articulated that they had changed their approach as a result of the program (both what they had learned and what they had experienced). This result echoes those found by other researchers such as Ho et al. (2001), Gibbs and Coffey (2004), Stes et al. (2010) and Butcher and Stoncel (2012). As Postareff et al. (2007) found, a year-long faculty development program showed the best results in shifting teaching approaches toward a student-focused perspective. Our results support this view; in fact, those who persisted into the fourth and fifth courses showed an even stronger inclination toward student-centred learning than those who completed only three courses.

As well, we find that most participants in the study revealed a primarily Behaviourist approach to their teaching (as shown in the Zinn results) when surveyed early in the program. This is also unsurprising, given that Durham is a community college, focused on education for employment, and that the teachers come primarily from business, industry or other professional backgrounds as opposed to having an extensive academic history. Because of this, they would be quite likely to have decided to move into teaching with the express goal of readying their students for success in their career field through the acquisition of specific skills, and therefore been likely to adopt information-transmission approaches, as was shown in the work of

Kember and Kwan (2000). Again, we cannot speculate about whether this specific measure would have changed for individuals as the program progressed; however, comments made in the final focus group reveal a much different emphasis. Focus group attendees recognized their role in facilitating a learning experience that goes well beyond simple behavioural change to addressing issues of lifelong learning skills, attitudes and approaches.

The single test-retest score we have, on the Teacher Self-Efficacy Inventory, did show an increase in confidence, with five items moving from the “moderately true” category to the “entirely true” category and one item moving from the “barely true” category to the “exactly true” category. No conclusions can be drawn from the evidence of only one participant, but again the interview and focus group comments showed that participants in the program affirmed its role in increasing their confidence in their effectiveness as teachers. They also reported different (and more satisfying) results in their classes. As noted in the literature review, research has suggested a correlation between teacher self-efficacy and student achievement (Ashton & Webb, 1986; Brownell & Pajares, 1999; Gibson & Dembo, 1984; Woolfolk, Rosoff & Hoy, 1990). It appears that some members of this cohort experienced this relationship to some extent. We can see from the interview and focus group responses that the teaching certificate program provided a number of the experiences identified by Bandura (1977; 1997) as critical to increased self-efficacy, including mastery experiences, vicarious experiences, verbal persuasion, and even physiological arousal as the teachers gave presentations to their peers and mentors. Bandura recommended that such experiences take place early in a teacher's career, so participation in this required program in the first eighteen months seems well-positioned to provide these key experiences to the college's novice teachers.

Two other themes of note emerged from the overall data. First, a strong sense of a community of practice emerged among the members of the cohort, most particularly among those who took the additional two optional courses. Many comments in the focus group revealed a valuing of the sharing and mutual support across disciplines that was supported by participation in the program. While this aspect was not one of our research questions, it is a goal of the program, so it is useful to note its emergence. Future research into this program might focus on this particular aspect and its effects on novice teachers.

As well, those who completed all five courses showed a deep understanding, commitment and confidence in themselves as professional educators. They remarked that they now felt that they could contribute effectively at program team, school and organizational levels. While those who would choose to register for the two optional courses are obviously already committed to increasing their knowledge and skills in the teaching profession, it appears that participation in the entire program assisted them in clarifying and articulating this transition from “subject matter expert” to “teacher of subject.” Again, future research might explore the development of a professional dual identity among novice faculty completing this program.

Conclusion

Although a lack of data limited our ability to come to firm conclusions of a specific nature, teachers completing the program did report an increase in their confidence in their ability to teach well as a result of their participation in the program, and they also reported a commitment to a philosophy of active, engaged, student-centred learning. It is, of course, impossible to determine from this study whether these same statements would have been true without the experience of the faculty development program, but just as obviously the program is designed to accomplish much more than these two goals. According to all of the reports gathered from participants in the pilot cohort as part of our research, it can be suggested that the program appears to be meeting its goals. However, clearly more data must be collected before this can be concluded with any confidence.

We recommend that this study or a variation of it be repeated with future cohorts. If this is done, we recommend reducing the number of survey instruments to three: the Durham College Faculty Teaching Skills and Abilities Self-Assessment Survey; the Teaching Perspectives Inventory (Pratt, 2013); and the Teacher Self-Efficacy Scale (Schwarzer, Schmitz & Daytner, 1999). Restricting the study to these three instruments would perhaps increase compliance with their completion while still providing specific and useful data about the primary areas of interest (confidence and teaching approach). The instruments chosen share the attributes of direct relevance to Durham College teachers, ease of completion (two are available online) and brevity. As well, longitudinal research into the impact of the program on student learning outcomes should be considered, perhaps using methods used by others (Devlin, 2008; Horsburgh, 1999; McAlpine et al.; 2008; Prebble et al., 2004), such as peer observation, analysis of teaching materials, teaching portfolios and student interviews to supplement self-report mechanisms.

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