Using Microteaching to Enhance Teacher Efficacy in Pre-Service Teachers.

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Abstract

This study examined pre-service teachers' efficacy in relation to the utilisation of microteaching as an assessment tool for post-graduate education students in Australia. Three hundred and fifteen pre-service teachers completed the teacher efficacy survey and additional qualitative questions at Time 1 and 208 completed the survey and questions at Time 2. A principal components analysis conducted on the Time 1 survey data revealed teacher efficacy to be comprised of two components, 'teacher efficacy in classroom management' and 'personal teacher efficacy'. Repeated measures ANOVAs conducted on the 208 participants who completed the survey at Time 1 and 2 revealed that efficacy on both components significantly increased over time, and that internet students had higher efficacy levels than internal students. The qualitative data revealed that pre-service teachers enter teaching in order to positively impact on children, yet are concerned about behaviour management in the classroom. In addition, this data highlighted the positive impact that microteaching had on their developing teacher identity.

Keywords: microteaching, teacher efficacy, pre-service teachers, post-graduate education, educational psychology

Introduction

It has been found that the connections between theory and practice are often not made explicit during university teacher training programs (Bransford, Brown, & Cocking, 2000; Grossman, 2005), leaving pre-service teacher under-prepared for field experience. Not being fully prepared may result in pre-service teachers feeling less than efficacious about their ability to teach. This paper explores the efficacy beliefs of 208 post-graduate pre-service teachers in relation to their teacher preparation skills and knowledge through the use of microteaching sessions.

Teacher efficacy is an extension of self-efficacy which relates to individuals' judgements about their capabilities to execute behaviours needed to produce or attain designated teaching outcomes (Bandura, 1986, 1997; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998). Ghaith and Shaaban (1999) found that teachers with high efficacy were more likely to stay in teaching because they attributed students' successful achievements to their own personal efforts and abilities to teach. Teachers with a strong sense of efficacy put more effort into meeting the learning needs of their students, showed more enthusiasm for teaching and set higher goals for themselves as well as for their students.

Bandura (1977, 1997) outlined that mastery experiences and vicarious experiences contribute to the development of efficacy beliefs. Watching another demonstrate a required skill (such as teaching) is to engage in a vicarious learning experience (Woolfolk Hoy & Burke Spero, 2005). Pre-service teachers need to be exposed to skilled others who can model the teaching 'performance' to a high standard. However, simply viewing teaching is not enough to result in meaningful learning. Being able to then practice the task contributes to mastery of the needed skills. Feedback pre-service teachers receive about their teaching also plays an

important role in bolstering (or lowering) their efficacy (Woolfolk Hoy & Burke Spero, 2005). This type of social and verbal persuasion encourages pre-service teachers to reflect on their performance and offers an outside perspective that can impact on their efficacy. Specific feedback on their teaching performance may enable pre-service teachers to develop a clearer view of the ways in which they teach effectively.

Microteaching is one activity wherein pre-service teachers can engage in both vicarious and mastery learning experiences. Microteaching involves planning and delivering a small lesson to peers in class. Essential elements to the microteaching process are the skills of being able to implement theory into practice through a lesson, giving and receiving feedback and engaging in self-reflection. By observing what others do, pre-service teachers can then reflect on how they will execute their own microteaching sessions. Results from previous studies (Benton-Kupper, 2001; Borg, Kallenbach, Morris, & Friebel, 1969; Fernadez and Robinson, 2006; Subramaniam, 2006; Yeany, 1978), point out that pre-service teachers need to be prepared with information about the reasons for doing a microteaching session and that they need clear criteria to help them connect teaching theory to teaching practice. In the current study, microteaching was described as one way to raise pre-service teachers' efficacy in relation to learning about how theory can be used to guide a teaching task successfully. To assist pre-service teachers in understanding the criteria expected with the microteaching sessions, the tutors prepared and delivered a sample session. This tutor lead process was then thoroughly deconstructed with each class so that pre-service teachers would know what elements to prepare for their own microteaching episodes.

Important to microteaching is the process of self-reflection. Many researchers have acknowledged the value of reflection as an essential tool for improving teaching practices (Hongisfeld & Schiering, 2004; Kane, Sandretto & Heath, 2002; McAlpine & Westion, 2002). A precursor to meaningful reflection is feedback. The process of both providing and receiving feedback on a task allows pre-service teachers to reflect on their own teaching skills from a range of perspectives. The processes involved with feedback are important skills for pre-service teachers to develop (Bransford et al., 2000; Marzano, 2003), as eventually they will be the ones giving feedback to students in the classroom. Critical feedback, then, becomes an important element of the microteaching process where peers, aware of the theory being taught, can reflect on the skills of the presenter; in doing so they can develop their own skills. In reading over feedback given by peers pre-service teachers can identify ways in which they have successfully executed the teaching task as well as reflect on ideas about how they can improve future teaching performances.

Purpose of the current study

The present study involved testing pre-service teachers on their levels of teacher efficacy before and after their engagement with a microteaching assessment task (at the beginning and end of the educational psychology unit), to determine if changes in teacher efficacy had occurred over time. In addition, we were interested in exploring whether pre-service teachers in different modes of study (internal and internet) would reveal significantly different efficacy levels. As efficacy beliefs are established early and are resistant to change (Woolfolk Hoy & Burke Spero, 2005), it

is valuable to explore whether microteaching can be used to enhance pre-service teacher efficacy early in their degree.

The current study examined microteaching that combined four important elements. The first element was that the unit of study for pre-service teachers was not a discrete subject area such as mathematics or science but a core unit of educational psychology, a unit that all students must successfully complete to graduate. Secondly, the cohort of students was not undergraduate education students but post-graduates undertaking a one-year intensive degree in education. Thirdly, microteaching sessions were delivered as group presentations (three to a group) to the whole class. Finally, the microteaching sessions were conducted in both internal and internet modes of study. The combination of these four conditions in relation to microteaching, and an examination of the impact of such microteaching on teacher efficacy for pre-service teachers, has not been reported before now.

Instructional Procedures (Microteaching)

Educational psychology is a required subject that provides pre-service teachers with foundation knowledge on teaching. Students are expected to complete this subject before entering a school classroom for their first field experience placement. Ten topic areas were included as the focus for the microteaching sessions. These topics included areas such as motivation, diverse learning approaches, effective teaching strategies, effective classroom management and behaviour management strategies and diverse assessment practices, which are deemed essential in preparing pre-service teachers for practicum. Students covered the same material through the same Blackboard site online whichever mode of study they chose. Interactions

between internet students and their tutors were conducted through various media such as the Blackboard site, emails, AV chat rooms, through a blog created for the unit and more often through a created wiki. Interactions between internal students and their tutors were conducted via face-to-face contact, emails, phone contact and over the Blackboard site.

Each microteaching session was covered by a group of three pre-service teachers who had to first prepare a resource folder that provided peers with background information on a chosen topic. Required items for the resource folders included recent and relevant theory and practice on the topic, appropriate policy documents and legislation, links to valuable websites and further information on appropriate learning resources. A lesson was then developed from the information in the resource folder and delivered to the class as a whole. Microteaching as an assessment piece for the unit was considered a highly relevant way to enhance pre-service teachers' understanding of how to apply theory into actual teaching and learning experiences. It was proposed that having an opportunity to thoroughly research a topic and then teach a lesson on that topic would result in raising pre-service teachers' efficacy in relation to their teacher preparation skills and knowledge.

Method

Research Design

The design of this study included the pre- and post-testing of participants using the Tschannen-Moran and Hoy (2001) Teachers Sense of Efficacy Scale (short form) in a core educational psychology unit of the one-year Post-Graduate Diploma of Education. Data was collected in week three and week nine of semester 1. Students also completed three qualitative questions added to the end of this survey in order to

gather a deeper understanding of their sense of efficacy and the impact of microteaching upon them.

Participants

The cohort was comprised of post-graduate students studying a one-year Diploma of Education degree at an Australian university and included those in both internal and internet modes of study. Approximately 450 students were enrolled in the unit (242 internal mode of study and 258 internet mode of study). A group of internet students may include students local to the university, students from other parts of Australia or students in overseas countries such as China, Germany and Great Britain. Two hundred and eight (F = 163, M = 45) students participated in this study (46% of the total number of pre-service teachers completing the degree). Participants were enrolled in either an Internal (60%, n=124) or Internet (40%, n=84) mode of study and ranged from 20 to 58 years of age ($\underline{M}$ = 31.85, $\underline{SD}$ = 8.21). Level of previous qualification varied, with the majority having completed a Bachelors degree (68%), 1 percent having completed a TAFE degree and 24 percent having completed a previous post-graduate qualification (of these, 5 percent were doctoral degrees). The remaining 7 percent did not list their previous qualification.

Data Source and Data Analysis

Teachers Sense of Efficacy Scale (short form). The Teachers Sense of Efficacy Scale (short form) (Tschannen-Moran & Woolfolk Hoy, 2001) is a 12-item questionnaire designed to measure how confident teachers feel about their ability to teach. Participants rate how much they can do on a nine-point scale with *1* being *nothing* and *9* being *a great deal.* Example items include, '*How much can you do to motivate students who show low interest in school work?*' and *'To what extent can you provide an alternative explanation or example when students are confused?'*

Scores on this measure can range from 12 to 108 if measuring teacher efficacy as one single construct. The scale has been found to consist of three factors (efficacy in student engagement, efficacy in instructional strategies and efficacy in classroom management) with reliabilities at $\alpha = .81$, $\alpha = .86$ and $\alpha = .86$ respectively (Tschannen-Moran & Woolfolk Hoy). Tschannen-Moran and Woolfolk Hoy advocate that researchers conduct their own analyses on the scale to determine the best factor structure, as this may differ between pre-service and in-service teachers. To determine the optimal way of combining the items for pre-service teachers, a principal components analysis was used (Thompson, 2004).

Open-ended questions. Participants were asked a series of open-ended questions to provide additional support for the quantitative data received, and to explicitly examine their perception of the microteaching task. These questions included, *'Why do you want to be a teacher?' 'What is your biggest concern about being a teacher?'* and *'What did you think of the microteaching assessment piece for EDP415'* (asked only on the second application of the survey once assessment had been completed). Participants were provided with free text space after each question in which to write their responses (henceforth when the 'survey' is referenced, this means the 12-item teacher efficacy scale and the open-ended questions). Responses for the qualitative items were analysed, grouped into similar responses, and coded so that a frequency count could be performed.

Data Collection Procedures

As participants were Internal and Internet students, the survey was completed in different ways. For Internal students, the survey was completed in a tutorial in Week 3, and again in Week 9, of Semester 1. Participants were initially provided with a coversheet that outlined the confidential and voluntary nature of the survey,

and their right to withdraw from the study at any time. Students were informed that completion of the survey was viewed as their consent to participate. As students were to be tested at the beginning and end of the semester, an ID code was used in order to assess changes in efficacy levels over time. This code consisted of the student's initials, month and year of birth, and was used to ensure anonymity while allowing for the matching of surveys over time.

Internet students were sent an email on the Monday of Week 3 and Week 9, and an announcement was posted on the unit's Blackboard (online learning) site, that contained a link to the survey and requested their participation. They were also provided with a link to the coversheet outlining the confidential and anonymous nature of the study, and outlining the need for the ID code. Internet students were given a one-week timeframe in which to complete the survey. The completion of the survey was viewed as their consent to participate.

Results

Data Screening

All results were entered into an SPSS data file. Initial culling included deleting the results of students who had 25% or more of the items unanswered on the Teachers Sense of Efficacy Scale (short form), resulting in a deletion of three participants at Time 1 and four participants at Time 2. The remaining responses were analysed for any abnormalities in relation to missing data. The missing data were found to have no particular pattern, and were replaced in the data set by establishing the item mean for each item and inserting these in the place of the missing values (Tabachnick & Fidell, 1996).

Principal Components Analysis

As suggested by Tschannen-Moran and Woolfolk Hoy (2001), an analysis was conducted on the items from the Teachers Sense of Efficacy Scale (short form) to determine what factors or components were present. To ensure the largest participant pool, Time 1 data (n=315) was used. In order to determine the most reliable components to be used with pre-service teachers, a Principal Components Analysis (PCA) was used, with a varimax rotation (Tabachnick & Fidell, 1996; Thompson, 2004). For this analysis, the KMO measure of sampling adequacy was .91 and the Bartlett's Test of Sphericity was significant (<.001). The PCA highlighted two main components. Both factors had eigenvalues greater than 1 (component 1 = 6.45; component 2 = 1.32) and an examination of the scree plot clearly identified two distinct components. These two components accounted for 65% of the variance (component 1 = 33% variance; component 2 = 32% variance). Table 1 shows the item loadings for each component.

<center>Insert Table 1 about here</center>

Teacher Efficacy Levels

As previous research has identified that teacher efficacy is a complex construct with more than one component (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Woolfolk & Hoy, 1990), and the PCA identified two distinct components, the results are discussed as subscores on the two components as opposed to one total efficacy score. Component 1 (items 1, 2, 3, 6, 7 and 8) was labelled 'teacher efficacy in classroom management' and component 2 (items 4, 5, 9, 10, 11 and 12) was labelled 'personal teacher efficacy'. For each component, total scores could range between 6

to 54. As such, a score of 6-24 was viewed as low efficacy, a score of 25-39 was viewed as medium efficacy, while high efficacy was determined to be a score of 40-56. Repeated Measures ANOVA's were run to determine whether scores on the two components differed due to course status (Internal and Internet) and over time (Time 1 to Time 2).

Do population means on the teacher efficacy in classroom management component vary over time based on mode of study (Internal or Internet)?

A Repeated Measures ANOVA was conducted with the within subjects factor being teacher efficacy in classroom management at Time 1 and Time 2 and the between subjects factor being mode of study (Internal and Internet). As Box's M was found to be violated, a Bonferoni adjustment was used, where the alpha level of .05 was divided by the number of tests in order to establish a more conservative alpha level of .025 (.05/2). The results indicated a significant time effect, Wilks's Λ = .91, $F(1, 206)$ = 21.49, p = 0.05, partial eta² = .094. Examination of the mean scores revealed an increase in teacher efficacy in classroom management from Time 1 to Time 2 (see table 2).

Insert Table 2 about here

There was a significant effect for mode of study (Internal and Internet), $F(1,206)$ = 7.036, p = .009, partial eta² = .033. Figure 1 provides a graphical representation of the differences across time and between groups (see figure 1). There was no significant interaction effect, Wilks's Λ = .999, $F(1,206)$ = .266, p = .607, partial eta² = .001.

Insert Figure 1 about here

Teacher efficacy in classroom management over time by mode of study (internal and internet)

Do population means on the personal teacher efficacy component vary over time based on mode of study (Internal or Internet)?

A Repeated Measures ANOVA was conducted with the within subjects factor being personal teacher efficacy at Time 1 and Time 2 and the between subjects factor being mode of study (Internal or Internet). The results indicated a significant time effect, Wilks's $\Lambda = .882$, $F(1, 206) = 27.59$, $p = 0.05$, partial eta² = .118. Examination of the mean scores revealed an increase in personal teacher efficacy from Time 1 to Time 2 (see table 3).

Insert Table 3 about here

There was a significant effect for mode of study (Internal and Internet), $F(1,206) = 4.763$, $p = .030$, partial eta² = .023. Figure 2 provides a graphical representation of the differences across time and between groups (see figure 2). There was no significant interaction effect, Wilks's $\Lambda = 1$, $F(1,206) = .003$, $p = .955$, partial eta² = .0.

Insert Figure 2 about here

Figure 2

Personal teacher efficacy over time by mode of study (internal and internet)

Open-ended questions

Pre-service teachers were asked at Times 1 and 2 why they wanted to be a teacher. Just over half (54%) of students at Time 1 and 2 (n=111) outlined their key reason for choosing teaching as their desire to positively impact on children and children's learning. Twelve percent of students at Time 1 and 13% at Time 2 stated that they were choosing teaching as they wanted a career change that would provide them with challenge, engagement and satisfaction. At Time 1, 10% of students (5% at Time 2) stated that they had already done some teaching and enjoyed it, and therefore wanted to continue. A smaller number of students wanted to teach as they felt they would be good at teaching (6% at Time 1 and 4% at Time 2) and for social justice reasons (provide access to, and believe in importance of, education – 9% at Time 1 and Time 2). A further four percent of students at Time 1 wanted to teach due to lifestyle factors (pay and good hours), while at Time 2 this had reduced to three percent of students. A handful of students listed things such as 'It will allow me to keep learning' (1% at Time 1 and Time 2), 'Teaching will allow me to combine my skills' (2% at Time 1, 4% at Time 2), and 'I want to support students who have special needs' (1% at Time 1 and 2% at Time 2). One percent of students at Time 2 (n = 2) stated that they no longer wanted to be a teacher.

Pre-service teachers were asked what their biggest concern was in relation to being a teacher. Behaviour management received by far the largest amount of responses, with 26% of responses at Time 1 (n=53) and Time 2 (n=54). The ability to positively connect with and impact on children was reported by 14% of students at Time 1 and 18% at Time 2. At Time 1, 13% of students were concerned about their

ability to teach students effectively due to a lack of knowledge and skills. This concern had reduced to 8% of students by Time 2. Concern with workload demands was noted by 6% of students at Time 1 and 7% at Time 2, while responding effectively to student diversity was a concern for 8% of students at Time 1 and 5% of students at Time 2. The ability to plan and organise effectively was noted as a concern for 5% of students at Time 1 and 8% of students at Time 2. Students also noted as concerns an overwhelming sense of responsibility (4% at Time 1, 3% at Time 2), the poor treatment of teachers by students, parents, the community and the education department (3% at Time 1 and 2% at Time 2), and dealing with parents (3% at Time 1 and 2). At Time 1, 1% of students (n=3) pointed out that they did not have any concerns about being a teacher and were looking forward to beginning their careers in teaching. This number had increased to 4% (n=9) by Time 2.

When examining pre-service teacher responses to the microteaching assessment piece, the following quotes were indicative of the responses received:

"The idea of the presentations was good as we were able to use the theory in a practical way and gave us experience as teachers."

"Important issues/topics were discussed and related to real-life contexts (us being teachers) which was highly beneficial"

"Great unit. I learnt a great deal about a variety of topics, amassed a huge resource file and saw how each topic will be used in a classroom setting."

These responses support the quantitative data that the use of microteaching increased pre-service teachers sense of efficacy, largely because they got to observe, practice and discuss the actual skills that they would be required to draw upon as teachers.

Discussion

Findings from the research indicate support for a two-component model of teacher efficacy with the two components being teacher efficacy in classroom management and personal teacher efficacy. Such a two-factor model is consistent with much teacher efficacy research (Gibson & Dembo, 1984; Guskey & Passaro, 1994; Woolfolk & Hoy, 1990). Another finding of the research was that there was a significant increase in efficacy from Time 1 to Time 2. This finding is not a surprising result, as one would expect pre-service teachers to feel more efficacious about the subject matter being taught over a semester, especially as they participated in learning the subject through such a hands-on approach as microteaching. What did make the result surprising was that the cohort of internet students reported higher efficacy than the cohort of internal students. The program for both internet and internal students was the same but the mode of delivery differed. While internal students participated in face-to-face learning, the only contact internet students had with their tutor and each other was by-and-large electronic (via the Blackboard site, wikis, emails).

A popular myth is that older students do not feel comfortable with online learning. In the current study, internet students were slightly older on average than internal students (35 to 30 years respectively). There was an indication from the internet group that this subject was the first they had ever studied online. However, this mode of study does not appear to have diminished efficacy for these pre-service teachers, quite the contrary. The finding of such a discrepancy between internet and internal students was not anticipated; indeed, tutors predicted the opposite, that students who had the face-to-face contact would feel more efficacious because they would have immediate feedback from their tutors and peers. Internet students, in

contrast, had to wait until peers came online before any interactions occurred. As many of the internet students worked full-time, tutorial interactions varied according to individual tutor and tutorial group negotiations. However, these limitations do not appear to have resulted in lower efficacy for this group. More research is needed in this intriguing area as the number of people taking on post-graduate studies online continues to increase. For example, we need to know what common factors lead pre-service teachers to feel higher efficacy after learning online than learning in a classroom situation. What strategies for online teaching can be transferred to other subject areas to achieve high efficacy for these students?

The most cited reason for choosing teaching as a career (54%) was that pre-service teachers wanted to have a positive impact on students' learning. However, their greatest concern (26%) was behaviour management issues and not feeling confident about positively connecting with students. The subject, Educational Psychology, is largely theory driven and students in this study performed microteaching sessions based on the theory. Another iteration of the process needs to be considered wherein the microteaching lessons are more aligned to actual classroom lessons in which theoretical strategies for classroom management, behaviour management and learning-teaching strategies for establishing positive connections between teachers and their students are generally embedded in the lesson plan. Such a revision of the microteaching sessions would assist pre-service teachers in learning better how to create appropriate lessons that they can use during their practicum in schools. That being said, feedback from students indicated that microteaching as an authentic assessment was well received.

Conclusion

Teacher efficacy continues to be an important construct to consider in preparing pre-service teachers for their future teaching careers, but as Pajares (1992) described it long ago, teacher efficacy continues to be a 'messy' concept, which may be one reason why it is so fascinating to study. The current study examined teacher efficacy in relation to using microteaching as an authentic assessment piece. It was found that internet students expressed higher efficacy than internal students but, overall, efficacy was high for both cohorts. Further study of teacher efficacy in relation to post-graduate studies is needed.

Implications and recommendations

The results of this study demonstrate that both internal and internet post-graduate pre-service teachers show increases in their level of teacher efficacy after exposure to a microteaching task. In addition, the qualitative data supports the idea that the process of microteaching is a valuable one to aid pre-service teachers in their development of teacher efficacy. As internet pre-service teachers demonstrated higher levels of teacher efficacy than their internal counterparts, it may be that providing post-graduate education degrees online is an effective way to assist teachers in developing strong teacher efficacy. The results of the current study support the continued use of microteaching in one-year post-graduate education degrees for all students, whether students are enrolled internally or via the internet.

Limitations

A limitation with the current study is that the surveys were completed at both times before pre-service teachers went out on practicum. While this does allow us to attribute changes in efficacy to content learned and practiced before pre-service teachers face the classroom, a follow-up survey completed after practicum would provide important information on teacher efficacy for this cohort of students that

would extend our understanding of the significance of the assessment piece for preparing students for field experience. In addition, pre-service teachers completed three other units during their first semester (if enrolled full-time), and the effect that these units and their assessment pieces had on their developing teacher efficacy is unclear.

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