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Impact of structured group activities on pre-service teachers' beliefs about classroom motivation: An exploratory study

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Abstract

Pre-service teachers' beliefs about classroom motivation, and how these beliefs may be developed during initial teacher preparation, is a relatively new aspect of enquiry in the fields of motivation and teacher education. An empirical study, grounded in a social constructivist perspective, was designed to examine the impact of providing pre-service teachers with opportunities to develop their existing beliefs about classroom motivation in interaction with peers. Participants were 53 teacher education students who participated in three semi-structured small group seminars, involving guided reflection and collaborative activities. Data were collected through matched pre and post questionnaires and a final individual interview. The findings show that pre-service teachers' initial beliefs about classroom motivation can be consolidated and expanded through engagement in semi-structured collaborative learning activities that induce in-depth reflection and examination of beliefs, and in authentic problem-solving situations that connect with theory. Implications for further research and teacher education are discussed.

Keywords: pre-service teachers; beliefs; classroom motivation; teacher education

Introduction

Motivating students in classrooms can be a common challenge for pre-service teachers. Despite having concerns about the impact of lack of motivation on student behaviour and achievement, pre-service teachers may have limited knowledge about how to address student motivation and what practices, if any, can be effective with students who may seem unmotivated to learn. Often pre-service teachers have considered this issue prior to beginning their teacher education and as a result may have developed particular beliefs about the nature of student motivation and motivating educational practices. Research investigating pre-service teacher beliefs about motivation has shown that pre-service teachers may believe that motivation is a relatively stable, individual trait (Holt-Reynolds 1992, Patrick and Pintrich 2001) and that students are either motivated or not motivated. In terms of educational practices, research has shown that pre-service teachers believe that to enhance student motivation in classrooms teachers should use extrinsic rewards (Salisbury-Glennon and Stevens 1999) and fun activities (Woolfolk Hoy and Murphy 2001). Given that pre-service teachers are likely to have existing beliefs about classroom motivation, an important role of teacher education programs is to provide "pre-service teachers with opportunities to reveal, examine and challenge their beliefs" to "help them develop more theoretically sound beliefs and make more effective teaching decisions" (Peterson, Schreiber, and Moss 2011, 35). In line with this suggestion, an empirical study was designed to examine the value of providing pre-service teachers with opportunities to examine, justify and challenge their beliefs about classroom motivation in interaction with peers. A social constructivist perspective (Palincsar 1998) was adopted on the assumption that structured group activities would provide a

natural and potentially fertile environment for pre-service teachers' mutual examination of each other's beliefs.

Pre-service teacher beliefs

Research on pre-service teacher beliefs has important findings that inform this study. Pre-service teacher beliefs prior to teacher education, are typically developed as a result of extensive personal experience of learning (Salisbury-Glennon and Stevens 1999), experiences with schooling and instruction (Lortie 1975), experience with formal knowledge (Richardson 1996) as well as desired image of themselves as future teacher (Horn et al. 2008). While there is agreement on the origin of beliefs, there are differing views about the strength and stability of beliefs. It has been argued that prospective teachers' beliefs may be firmly entrenched (Ashton and Gregoire-Gill 2003, Chinn and Brewer 1993) and this stability or persistence of beliefs may provide resistance to change or development. Studies showing pre-service teachers to hold the same beliefs on entering and completing teacher education support this argument (for example, Joram and Gabriele 1998, Kagan 1992b). Other researchers, however, (e.g. Winitzky and Kauchak, 1997) have claimed that beliefs may not be well developed, but may be rather vague or fragmented and thus have potential to be developed into a more coherent belief system.

There has also been some debate about use of the term 'belief'. Pajares (1992) suggests that the term 'beliefs' is synonymous with other terms such as attitudes, values, theories, preconceptions, and images, also used in the literature. There has also been contention about the distinction between beliefs and knowledge. Richardson (1996) argues that 'knowledge' requires a "truth condition" (p. 104) and as such depends on evidence and general agreement from others. Beliefs on the other hand, do

4

not depend on truth, but "a proposition that is accepted as true by the individual holding the belief" (Richardson 1996, 104). Murphy and Mason (2006) argue that an important feature of beliefs is that "individuals attribute a valence of importance to them, and therefore, individuals are prepared to act on beliefs and to hold to them in the face of conflicting evidence" (p. 307). Furthermore, beliefs and knowledge are overlapping constructs in that "meaningful learning is most likely to occur when an individual knows and believes in the object of his or her interest" (Murphy and Mason 2006, p. 307). In this study we define beliefs as "tacit, often unconsciously held assumptions" (Kagan 1992a, 65) which are implicitly taken as true by individuals. Developing pre-service teachers' beliefs therefore is expected to require processes involving examination of beliefs in the light of new, convincing and possibly contradictory evidence. Opportunities to engage in such processes should be provided during teacher education, and may ideally take place in interaction with peers.

A further issue in which has been seldom addressed in the literature is the very common use of the word 'change' in relation to beliefs. For example, Tillema (1998) investigates stability and change in pre-service teachers' beliefs about teaching, and Woolfolk Hoy, Davis and Pape (2006) suggest that teacher beliefs can change when teachers are "exposed to powerful alternative conceptions" (p. 728). Yet, the word 'change' implies a direction, which may be problematic. This issue was raised by Richardson (1996) who suggested that use of the word 'change' "is often meant to imply change in a positive direction, but the worthiness of the change is seldom discussed" (p. 114). Furthermore, whether or not change has occurred in a positive direction may be influenced by sociocultural context and the implicit values in which the behaviours related to beliefs are enacted. A shared concern about the word

'change' is perhaps reflected in the use of alternative words such as 'impacting' (Cohen and Nath 2000), 'developing' (Mansfield and Volet, 2010), 'shaping' (Tatto 1998), 'altering' (Weinstein 1989), 'expanding' and 'strengthening' (Peterson, Schreiber, and Moss 2011) along with phrases such as 'promoting the development' of beliefs (Lundeberg and Levin 2003). Particularly, in the case of pre-service teacher beliefs, use of the word 'change' may imply that pre-service teachers' prior beliefs may be incorrect and therefore require 'changing', whereas it may be the case that prior beliefs are aligned with those espoused in teacher education and current research, in which case, beliefs would be more appropriately strengthened and consolidated in light of new confirmatory evidence and experiences. In this study we use the term 'develop' with the understanding that teacher education experiences, using social constructivist approaches, can should build on pre-service teachers' existing beliefs and provide opportunities to examine confirmatory and/or contradictory evidence. This process enables existing beliefs to be scrutinized and questioned in social interactions, and as a result be strengthened or modified.

The beliefs held by pre-service teachers' have also been shown to have an important influence on their learning at university (Anderson et al. 1995, Pajares 1992, Richardson 1996). Pre-existing beliefs about aspects of teaching and learning may influence pre-service teachers' responses to content in teacher education programs (Pajares 1992, Richardson 1996). Holt-Reynolds (1992) for example, found that even when teacher education courses aimed to challenge prior beliefs, those beliefs guided the content pre-service teachers attended to during university study. Similarly the strength of existing beliefs and the degree to which they are aligned with learning experiences can influence how beliefs develop (Mansfield and Volet, 2010).

Beliefs, therefore can act as 'filters' through which new information is interpreted and learning takes place (Kagan 1992a, Mansfield and Volet, 2010).

Teacher education experiences can influence pre-service teacher beliefs (Biasutti 2012). It is therefore important to provide opportunities for close examination of beliefs in teacher education programs (Anderson et al. 1995, Richardson 1996, Brownlee, Purdie, and Boulton-Lewis 2001, Woolfolk Hoy and Murphy 2001, Chong and Low 2009), particularly if "the program is to make a difference in the deep structure of knowledge and beliefs held" by pre-service teachers (Richardson 2006, p. 106). Reflection on beliefs also enables pre-service teachers to become "more 'meta-metacognitive'" (Brownlee, Purdie and Boulton-Lewis 2001,p. 12). Within teacher education programs, learning tasks should provoke pre-service teachers into "examining and transforming their assumptions" (Anderson et al., 1995, p. 150) by including multiple perspectives, using authentic situations, reflecting the complexity of teaching and providing opportunities for pre-service teachers to interact with each other. Refutational texts, (designed to create dissatisfaction with the readers' own beliefs through rebuttal supported by evidence) have been used to compare extrinsic and intrinsic views of motivation to influence pre-service teachers' towards an emphasis on intrinsic motivational practices (Salisbury-Glennon and Stevens, 1999). Along with refutational texts, Gill, Ashton and Algina (2004) also used augmented activation (asking pre-service teachers to attend to information in a text that differs to their own ideas) to promote change in beliefs about mathematics. Busch (2010) found that pre-service teachers attributed a change in beliefs regarding second language teaching to direct experiences with ESL students, as well as course activities designed to raise consciousness of beliefs.

Professional placements have also been reported to influence pre-service teachers beliefs about good teaching (Ng, Nicholas, and Williams 2010, Wong 2013) along with reflection activities such as journal writing (Bernack et al. 2010) which are common in teacher education programs. Interestingly, studies regarding shaping pre-service teacher beliefs tend to mostly focus on learning activities that are undertaken individually and there is little literature where belief development is considered in the context of a social constructivist learning environment.

Pre-service teacher beliefs about classroom motivation

Classroom motivation is an important field of study for pre-service teachers (Alderman and Beyeler 2008), yet can be confusing as most chapters in Educational Psychology textbooks describe a suite of theories about motivation. It has been argued that the assumption pre-service teachers need to know the full gamut of theories has generated an emphasis on content knowledge rather than conceptual understanding about classroom motivation (see for example, Patrick et al. 2011), and perhaps contributed to pre-service teachers' confusion about classroom motivation (Anderman and Leake 2005). Furthermore, pre-service teachers are aware of the critical role of motivation in students' learning and behaviour, and concern that school students may lack motivation (Hagger and Malmberg 2011) is common.

Despite the importance of classroom motivation in teacher preparation, only a handful of studies over the last fifteen years have investigated pre-service teacher beliefs about classroom motivation. In 1999, for example, Salisbury-Glennon and Stevens suggested pre-service teachers are inclined to believe that providing extrinsic rewards is the most effective strategy for motivating students. In 2001, Woolfolk Hoy

8

and Murphy argued pre-service teachers believe "motivating is about connecting activities with students' interests and making the activities fun" (p. 162). Patrick and Pintrich (2001) reported that pre-service teachers often describe motivation as a stable, "relatively trait-like characteristic of students" (whereby students are motivated or unmotivated), and "one that is crucial to classroom engagement and learning of students" (p. 122). On the contrary, and more recently, Duffin (2009) reported pre-service teachers advocated motivational strategies designed to support student autonomy and enhance intrinsic motivation, rather than controlling strategies relying on extrinsic motivation. The importance of teacher education experiences is highlighted by Peterson, Schreiber and Moss (2011) who found pre-service teacher beliefs reflected particular motivation theories when learning experiences provided opportunities to examine beliefs in an educational psychology course.

Promoting knowledge and understanding about classroom motivation is especially critical in teacher education since such understanding influences teachers' instructional decisions (Perry, Turner, and Meyer 2006), capacity to create effective learning environments (see for example, Patrick, Kaplan, and Ryan 2011) and consequently students' learning and achievement (see for example, Steinmayr and Spinath 2008). Furthermore, beginning teachers are often concerned about challenging student behaviour, and enhancing motivation is seen as a useful way of preventing unwanted behaviour. Yet even so, pre-existing beliefs about motivation do influence pre-service teachers' learning (Mansfield and Volet, 2010), and therefore it is important to explore how particular learning activities in teacher education may encourage pre-service teachers to reflect upon and reconsider beliefs about classroom motivation.

Building on our prior research, and the literature regarding pre-service teacher beliefs about classroom motivation, this study was designed to facilitate examination of pre-service teachers' existing beliefs regarding classroom motivation through three semi-structured small group seminars. Consistent with a social constructivist perspective, the purpose of the seminars was to provide structured group learning opportunities for pre-service teachers to unpack and discuss their current beliefs about classroom motivation in interaction with each other while aligning with the concepts and ideas promoted in their educational psychology unit.

Methods

Context of the study

This study was located in a pre-service teacher education program, where pre-service teachers were enrolled in an educational psychology unit addressing theory, research and practice, regarding effective learning, teaching and assessment. In terms of classroom motivation, the unit provides an overview of theory and research on motivation, focusing on understanding the importance of individual cognitions and the critical role of the teacher in designing learning activities and an environment conducive to enhancing student motivation in schools. Key motivation themes in this unit include the importance of individual cognitions (such as goals, appreciating the value of learning, self-efficacy, positive relationships with teachers and peers) as well as educational practices that promote self-regulated, social constructivist learning (including caution about reliance on extrinsic rewards, design of learning activities to promote self-regulation and working with peers).

The small group seminars aimed to consolidate the course learning objectives in regard to motivation, through offering pre-service teachers opportunities to reflect upon their existing beliefs in light of those promoted in the course. The group activities enabled sharing of beliefs, commenting on ideas of others and group problem solving. Furthermore, as participants were experienced learners, having extensive experience of how motivation impacts learning and possibly strong beliefs about this, it was important to assist them to reflect upon, integrate and further develop those beliefs. It was assumed that targeted structured activities could make a significant difference in pre-service teacher learning.

Participants

Participants were 53 volunteers enrolled in a year-long Graduate Diploma of Education program at a university in Western Australia. Participants had completed an undergraduate degree prior to enrolment and were aged between 22 and 54 (average age 35). Eight participants were male. Seventeen participants were studying to become secondary (years 8-12) and 36 were studying to become primary teachers (years 1-7).

Participation in the study involved completing two questionnaires (before and after the seminars), engaging in three seminars with group tasks, and taking part in a final individual interview. An overview of the study is shown in Figure 1.

FIGURE 1 ABOUT HERE

Data collection and instruments

Questionnaires

Two matched questionnaires, completed at beginning and end of the study, were used to evaluate the effectiveness of the seminars. The first survey was administered in class.

The aim of the matched questionnaires was to identify pre-service teachers' initial beliefs about what motivates students to learn and the importance given to particular motivating factors before the seminars, and the extent to which their views had developed at the end. More specifically the aim was to determine whether the study had impacted the emphasis on individual cognitions as primary motivating factors, and if it had increased the importance of designing learning activities that fostered self-regulation and social constructivist practices, to enhance classroom motivation.

The first part of the questionnaires focused on pre-service teachers' *beliefs about what motivates students to learn*. Participants were invited to write three beliefs about *when* students are motivated to engage in learning and why. These beliefs provided qualitative indicators of development over time. The second part aimed to obtain *quantitative measures of pre-service teachers' beliefs about what motivates students to engage in learning* - concentrating on those aspects targeted for change through the seminars. No suitable instruments could be located in the literature, thus original measures inspired from key motivation concepts and relevant to the focus of the study, were developed. The instrument comprised four measures of individual cognitions and four measures of educational activities, all expected to enhance

motivation to learn, (5 scales of 2 to 5 items and 3 single-item measures, totalling 18 statements). The measures of individual cognitions were inspired by ideas from social cognitive theories of motivation (e.g. goal theory, expectancy-value theory, self-determination theory). In turn, the measures of educational practices represented perspectives related to intrinsic/extrinsic motivation, self-regulation and social constructivist learning, collaborative learning and making learning activities fun (Woolfolk Hoy and Murphy 2001). These items were presented for rating on a scale of 1 (slightly motivating) to 4 (extremely motivating). Table 1 presents an overview of the eight measures.

TABLE 1 ABOUT HERE

Small group seminars

The seminars of between 3 and 5 participants, aimed to create a space where pre-service teachers could engage in in-depth reflection and discussion regarding classroom motivation. The design of seminar tasks was influenced by literature (Woolfolk Hoy and Murphy 2001, Anderson et al. 1995) advising that teacher education should provide opportunities for pre-service teachers to understand and explain their own beliefs and assumptions, consider alternative points of view, discuss multiple aspects of key ideas with peers, and engage with classroom scenarios that feel authentic. Specifically, the seminars were designed to:

- enable 'unpacking' of beliefs and development of relationship between group members;

13

- provide semi-structured learning activities with prompts allowing examination of beliefs in light of motivation concepts;

- provide opportunities for reflection on learning about motivation; and

- connect theoretical understanding about classroom motivation with an authentic situation involving problem solving through a structured activity.

The researcher who facilitated each seminar was not involved in the teacher education program. To provide the context in which the study occurred, a brief overview of each seminar is presented below.

Seminar 1: Unpacking prior beliefs. Seminar 1 aimed to enable expression and examination of prior beliefs about classroom motivation. Participants were invited to share their main ideas about student motivation and explain why they held these beliefs. Participants were also asked to describe recent classroom experiences and motivation strategies they had observed. Finally, participants were asked to examine 14 statements describing motivation strategies and reach group consensus on whether the strategies would be likely to enhance student motivation or not. These statements reflected educational practices including offering extrinsic rewards, enhancing intrinsic motivation, using constructivist teaching strategies, designing relevant tasks, and offering choice.

Seminar 2: Motivation challenges. Seminar 2 focused on the challenges of motivation and provided an opportunity for in-depth examination of challenges between participants. Prior to the seminar, participants were sent an email asking them to bring a "photograph or photographs (maximum of 3) to answer the following question – *What do you believe to be the main challenge (or challenges) regarding student*

motivation in classrooms?" In the seminar participants shared and explained their images and the challenge(s) shown. Group discussion focused on understanding the challenges and considering how these may be addressed. Participants had opportunities to link the proposed strategies to their conceptual understanding of classroom motivation.

Seminar 3: Group problem solving. Seminar 3 enabled 'authentic' problem solving. Participants collaborated to design a solution to a realistic classroom motivation issue presented by a colleague with a student who resists challenge and tasks requiring higher level cognitive skills. Firstly, the group needed to offer advice to this colleague. Once the advice was determined, the group was informed that their advice had worked well with high achieving students, but had been less successful with lower achieving students. The second task involved the group devising a follow-up plan for working with lower ability students. The final task involved planning a 10 minute presentation for the staff on the topic "strategies for enhancing all students' motivation for challenging learning tasks", focusing on 5 main ideas, which reflected their integrated and collective understanding of best practices to enhance classroom motivation.

Final interview

At the conclusion of the seminars all participated in an informal individual interview. They were invited to explain the degree to which they thought involvement in the seminars might have influenced their learning about classroom motivation.

Data analysis

Participants' beliefs about classroom motivation elicited in the questionnaires were firstly analysed for themes using key ideas from the motivation literature and coded according to the idea units represented. Next, themes were organised in groups according to whether they represented ideas about motivation focusing on individual cognitions, or ideas regarding educational practices. Where comments reflected scales used in the quantitative analysis, they were coded as such. NVivo9 was used to code and organise the data. All quantitative analyses were carried out using PASWStatistics 18.0 software. The interview data was analysed using a thematic approach (Braun and Clarke 2006).

Results

The results show participation in the study had some success in consolidating particular beliefs about classroom motivation aligned with those promoted in the educational psychology course and in decreasing beliefs that were not supported by the classroom motivation literature. Three unique sets of data are presented in this section, one set of quantitative data (survey) and two sets of qualitative data (survey and interview). Each of these data sets offer a distinctive perspective on the development of these pre-service teachers beliefs about classroom motivation.

Quantitative results: matched surveys

The quantitative analyses of change in pre-service teachers' beliefs provided support for the effectiveness of the seminars and show an overall shift from a sole emphasis on individual cognitions to a dual emphasis on individual cognitions and educational practices. As expected, the ratings related to the provision of extrinsic rewards to

enhance motivation to learn were significantly lower after participation, and those related to feeling superior or enjoying competitiveness showed a similar trend.

The two individual cognitions expected to become more important (perceived value of learning and sense of self-confidence to succeed) did not change significantly but the initial ratings were already high at the start and the trends were in the expected direction. Most importantly and as expected, all three educational practices aimed at enhancing motivation to learn were rated significantly higher at the end as shown by the significantly higher ratings in pre-service teachers' beliefs about the motivating influence of educational practices, especially in regard to activities promoting self-regulated, social constructivist learning.

Of particular interest was the finding that the relative importance of the eight motivating factors did not change from beginning to end. As shown in Table 2 (ranking columns), the first most important motivational factors remained experiencing good relationship with teachers and participating in activities that made learning fun, the next two a perception of the value of learning and a self-confidence to succeed, the next two activities that promoted self-regulated, social constructivist learning and allowed working with peers, and the last two feeling of superiority/enjoying competitiveness and provision of extrinsic rewards.

What changed over time, however, was the consolidation of pre-service teachers' motivational beliefs. This is demonstrated by comparing the spread of ratings at the beginning, from 2.60 to 3.55 (difference between extremes of .95) and the end from 2.26 to 3.80 (difference of 1.54). This is further revealed through evidence of systematically smaller standard deviations in ratings over time – except one. In combination, these two findings suggests that pre-service teachers' beliefs

17

about classroom motivation had developed, and they were now more aware of the range of factors which contribute to motivating students in classrooms.

TABLE 2 ABOUT HERE

Qualitative results: matched surveys

Comparing the three beliefs about classroom motivation that participants had been asked to write prior to undertaking the rating task in survey 1 and in survey 2 provided converging evidence of development. The findings were consistent with the quantitative data, showing that pre-service teachers' beliefs about classroom motivation had shifted from a sole focus on individual cognitions, to a dual focus on individual cognitions and educational practices (see Figure 2).

FIGURE 2 ABOUT HERE

Table 3 below shows the breakdown of results from the qualitative data according to idea units. Categories that reflect those in the quantitative data are shown in the left hand column and sample statements emerging from participants' spontaneous comments shown in the second column (including participants' research ID). The third and fourth columns show the number of statements for each category

made in survey 1 and 2's spontaneous expressions related to classroom motivation. Differences between the two surveys are shown in the fifth column.

TABLE 3 ABOUT HERE

In comparing the qualitative data in survey 1 and 2 a number of key findings emerge. First there was less support for the view that motivation is related to teacher qualities (-11) and more about teachers creating a positive, safe learning environment (+16) and where there are positive relationships between teachers and students (+3). There was also increased support for the view that motivation is related to students actively participating in learning and activities promoting self-regulated, social constructivist learning (+20). Interestingly, appreciating the value of learning remained the most frequently mentioned in both surveys. Ideas about provision of extrinsic rewards were also consistent.

In summary, the qualitative survey data supported the quantitative findings, yet contributed further by unveiling additional pre-service teacher beliefs about student motivation in classrooms.

Qualitative results: Final interview

The final interviews provided valuable insight into pre-service teachers' own subjective views of the extent to which they thought participation in the seminars had influenced their beliefs about classroom motivation. Forty-three (43) participants

declared it had influenced their beliefs and ten (10) reported minimal influence. A number of key themes emerged.

Developing views about motivation

Sixteen (16) participants directly described how participation in the study influenced their beliefs about motivation. *"For me it really kind of changed my viewpoints around motivation and learning to very much, I guess, a social cognitive learning and socio-cultural learning" (ID10).* Some indicated, *"before I came I didn't know much about motivation" (ID16),* and *"it contributes to a deeper understanding of a lot of the concepts" (ID36).* Another participant noted that the study *"helped me to understand and highlight the role of motivation and, I guess, the pivotal role that it plays in the classroom environment ... previously, I hadn't really thought of it ... I knew that motivation was important in the learning process but I didn't really see it as the centre, which I do now."* (ID46)

Appreciating other's perspectives and thinking about new ideas.

Thirty-two (32) participants described how participation in the study groups and in particular the interactions with others, enabled them develop an increased awareness of other perspectives about classroom motivation. For example, one participant noted, *"it really helped shape my thinking, talking back and forth and listening to other people, and then to reply and watching those ideas develop" (ID39).*

Alternative perspectives were also helpful for participants who had been educated in other cultural contexts as reflected in the comment below.

> *"With my Asian background ... I was educated in Singapore ... where students are streamed according to end of the year results ... the group research enables me to I think*

20

have a broader perspective to consider that every child is different … it gives me a broader perspective of what actually motivates a child and what actually helps to motivate a child." (ID3)

Hearing other views also created some useful cognitive conflict for some participants as explained by one participant.

"Just hearing someone else's viewpoint on the same topic makes me think of it in a different way – which would cause some kind of, … chaos because it's a way that I haven't thought about it, … it's building on my learning because it's making me think of things … from a different perspective… helping me understand it more." (ID29)

Challenging, reflecting on and justifying own views and existing beliefs

Twelve participants described how the social interaction required in the seminars prompted them to reflect and justify their views. For example, *"I had to explain my position and what my position on it was … it made me confront my own ideas and it made me also then have a look and take into more consideration what other people see"* (ID18).

Six participants stressed how the seminar experience had challenged their beliefs in a constructive way, inducing deep-level metacognitive reflection on beliefs, with positive outcomes. The seminars *"helped me to become a decent learner because if I hadn't been involved … I wouldn't have had to look into things and really think about what I thought. So it challenged me to think well, what do I think and why do I think that?"* (ID45).

Consolidating existing beliefs

Even for participants who reported consistent beliefs throughout the study, the seminars offered a positive experience as shown below.

> *"It hasn't necessarily changed my fundamental beliefs but that's okay, I'm pleased I have been involved ... certainly it opened my mind to perhaps listening a little better, a little bit more, not assuming I'm right." (ID39)*

Discussion

The main aim of this study was to examine how participation in a study offering semi-structured small group seminars to complement learning about classroom motivation in an educational psychology course may influence pre-service teachers' beliefs about classroom motivation and in particular increase their awareness of the importance of both individual cognitions and educational practices in the classroom motivation process. The seminars provided intentionally designed semi-structured group activities aimed at enabling in-depth reflection, examination of own and peers' beliefs, and collective problem-solving of an authentic situation related to classroom motivation.

Results showed participation in this study did influence pre-service teacher beliefs. Specifically, participants' beliefs about classroom motivation as shown in the surveys, shifted from a sole emphasis on individual cognitions (such as feeling superior/enjoying competitiveness, appreciating the value of learning, feeling confident to succeed and having good relationships with teachers) to also acknowledging the importance of educational practices (such as activities promoting self-regulated social constructivist learning, activities allowing working with peers and activities making learning fun, provision of extrinsic rewards). This finding was evident in both qualitative and quantitative data and indicates a growing belief that

22

motivation is less a trait-like quality (as described by Patrick and Pintrich 2001), but part of a process in which teacher behaviour and instruction play a significant role. These beliefs were consistent with the motivational ideas and concepts presented in the educational psychology course, which reflected current research on classroom motivation and the importance of teacher practices. As noted also by Peterson, Schreiber, and Moss (2011) the finding that pre-service teachers' beliefs were influenced by those promoted in an educational psychology course supports benefits of "providing pre-service teachers with opportunities to reveal, examine and challenge their beliefs" about classroom motivation and "develop more theoretically sound beliefs" (p. 35).

The major change over time, however, was the consolidation of pre-service teachers' motivational beliefs. This was demonstrated by the greater spread of ratings and evidence of systematically smaller standard deviations in the second survey at the end of the seminars, – which demonstrated greater consistency in beliefs. In combination, these two findings contribute to the growing body of research which has investigated how beliefs may be consolidated and strengthened through teacher education experiences (Anderman, Andrzejewski, and Allen 2011, Perry, Turner, and Meyer 2006, Turner 2010) especially when initial beliefs are aligned with those promoted in university learning (Peterson, Schreiber, and Moss 2011). Like the Peterson, Schreiber and Moss (2011) study, and our earlier work (Mansfield and Volet, 2010), beliefs in this study were examined over a semester. The extent to which opportunities to examine and question beliefs over a semester, may contribute to development of stronger, more developed and sustained beliefs, is important for future research.

The findings from this study contribute to the literature showing that pre-service teacher beliefs can be developed (Peterson, Schreiber, and Moss 2008, Shalter Bruening 2010) through carefully constructed collaborative learning activities enabling examination of beliefs, consideration of alternative and multiple points of view, in an environment that allows sharing of thinking and interaction between peers (Peterson, Schreiber, and Moss 2008, Shalter Bruening 2010). The majority (81%) of these participants reported some degree of change in their beliefs depending on prior knowledge.

The unique feature of this study, however, is that the process of examining and unpacking beliefs was conceptually grounded in a social constructivist perspective. These pre-service teachers did not only examine their own beliefs in light of their teacher education experiences, but had opportunities to explain, justify and develop beliefs in a small group context prompted by activities encouraging sharing, problem solving and collaboration. Throughout the group seminars they were encouraged to appreciate each other's perspectives, consider new ideas and connect university learning to teacher classroom practice. This approach to exploring pre-service teacher beliefs differs from other that of other studies (for example, Anderson et al. 1995, Woolfolk Hoy and Murphy 2001), which have relied on individual reflection through journal entries and written belief statements. We do not contend that one practice is better than another, however, exploring how interaction with peers may influence and co-regulate an individual's views and influence developing emphases on particular ideas over others is important to consider, especially in light of participants comments about the value of such interactions. Interestingly, in their recent study regarding changing teacher beliefs through professional development, Vaino, Holbrook, and

Rannikmäe (2013) report the success of an approach involving teacher collaborative action research where collegial support and teacher group reflections had a positive impact in terms of strengthening teacher beliefs in the desired direction. The significance of simultaneous self- and co-regulation of cognitions in collaborative learning situations has attracted attention in recent years (Volet, Vauras and Salonen, 2009), yet the influence of social interactions to facilitate the examination and development of beliefs has not featured in the literature. The relevance of investigating both individual and social processes to understand pre-service teachers' initial and developing beliefs about classroom motivation is an important direction for future research.

In addition, there was some indication in this study that cultural background could play a role in beliefs about classroom motivation. Participant ID3 acknowledged that having been educated in Singapore, she perhaps had views about classroom motivation that were somewhat different from those of peers who had been educated in Australia. The important role of cultural contexts has been stressed in research on achievement motivation (for example, McInerney and Liem 2009) but less is known about their impact on beliefs about classroom motivation. This raises a number of important questions for future research regarding the extent to which beliefs about classroom motivation are culturally embedded and how this translates to multi-cultural classrooms.

Although it is not possible to claim that participation in the semi-structured collaborative activities alone were responsible for change in beliefs, beyond participants' self report data, the qualitative data suggests that from participants' perspectives the opportunity provided for reflecting on and applying understandings

about classroom motivation with peers was valuable. The fact that some participants were prepared to share that their beliefs had not changed dramatically is indicative of their genuine responses.

On a broader level, this study enables further consideration of how teacher educators may endeavour to foster pre-service teachers' examination of their existing beliefs about cognitions relevant to a particular domain of study, and the value of intentionally designed activities requiring in-depth reflection in interaction with peers. Participants' comments from the final interview indicate that such an experience was unique and that it provided a learning experience beyond the bounds of typical learning at university. The results from this study suggest that a useful direction for future research on pre-service teacher beliefs about classroom motivation may lie in considering the potential of shared belief development in authentic learning situations.

Conclusion

This study has a number of implications. For teacher educators, the findings demonstrate that learning activities requiring pre-service teachers to share and justify their beliefs to peers, and appreciate others' perspectives, are greatly beneficial for their professional development. They also revealed that collaborative activities that involve problems solving of realistic classroom scenarios have the potential to further develop beliefs, alongside collaborative skills that may be useful in future professional practice. For educational researchers, the findings of this study support the notion that pre-service teacher beliefs about classroom motivation can be developed through structured activities grounded in a social constructivist approach to teaching and learning. The extent to which carefully designed social interactions have

the potential to promote other aspects of pre-service teachers' development should be explored in future research.

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February ——— March ——— April ——— May ——— June ——— June

Small group seminars

| Questionnaire 1 | Seminar 1 *(unpacking prior beliefs)* | Seminar 2 *(motivation challenges)* | Seminar 3 *(problem solving)* | Questionnaire 2 | Individual interview |

Matched

Figure 1: Overview of the study

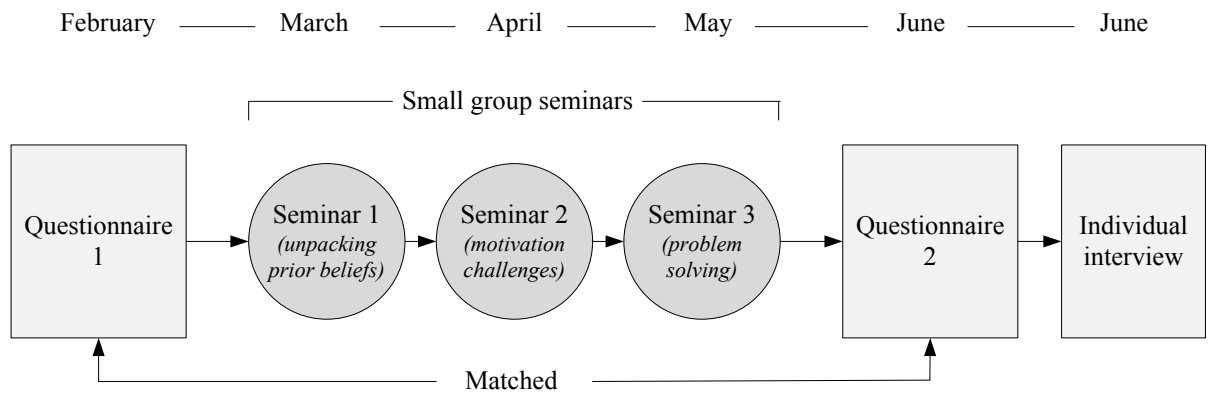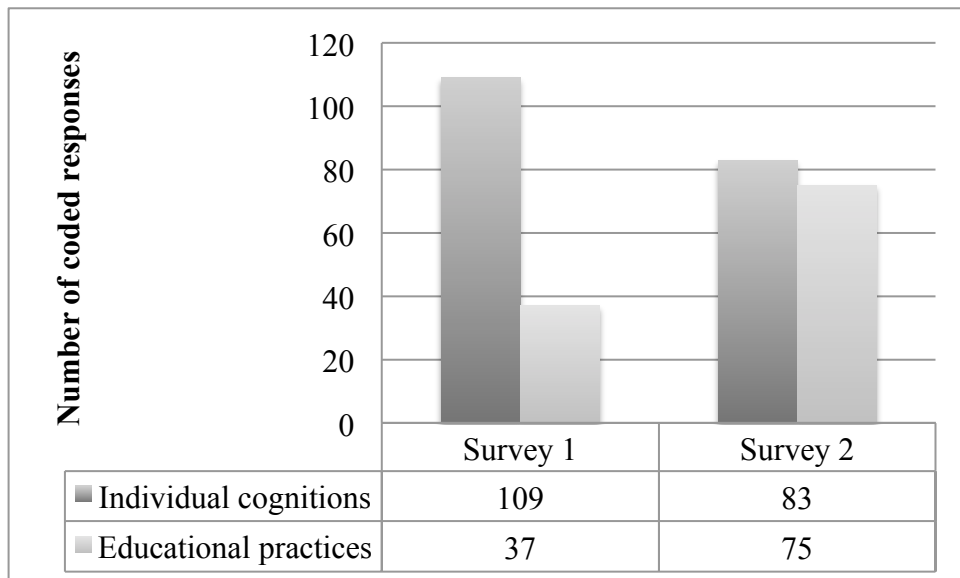|	Survey 1	Survey 2
■ Individual cognitions	109	83
■ Educational practices	37	75

Figure 2: Shift in individual cognitions and educational practices

Table 1: Measuring pre-service teachers' beliefs about what motivates students to engage in learning

	# of items	Scale reliability Cronbach alpha	Sample items: *'Students are motivated to learn and engage in learning when ...'*
Individual cognitions			
Feeling superior / enjoying competitiveness	2	Beg .69 End .71	*They can impress others with their knowledge and/or skills*
Appreciating the value of learning	3	Beg .68 End .66	*They see the value in learning*
Feeling confident to succeed	4	Beg .40 End .72	*They believe they can be successful*
Having good relationships with teachers	1	N/A	*They have a good relationship with their teacher*
Educational practices			
Provision of extrinsic rewards	3	Beg .80 End .75	*Teachers give tangible items (prizes) to reward students*
Activities promoting self-regulated, social constructivist learning	5	Beg .72 End .70	*They participate in the development of learning activities*
Activities allowing working with peers	1	N/A	*They can work with friends or in groups*
Activities making learning fun	1	N/A	*The learning is fun and enjoyable*

Table 2: Pre-service teachers' beliefs of what motivates students to engage in learning at beginning and end of the study

	Beginning		End		Paired t-tests
	M *(SD)*	Rank	M *(SD)*	Rank	
Individual cognitions					
Feeling superior / enjoying competitiveness	2.63 (.63)	7	2.53 (.58)	7	t(51) 1.08 p=.28 ns
Appreciating the value of learning	3.26 (.54)	3	3.38 (.47)	3	t(50) 1.90 p=.06, ns
Feeling confident to succeed	3.26 (.38)	3	3.34 (.45)	4	t(51) 1.77 p.08, ns
Experiencing good relationships with teachers	3.56 (.60)	1	3.58 (.57)	2	t(51) .19, p=.85, ns
Educational practices					
Provision of extrinsic rewards	2.60 (.73)	8	2.26 (.58	8	t(50) 3.59 p<.001
Activities promoting self-regulated, social constructivist learning	2.92 (.45)	5	3.21 (.41)	5	t(47) 5.71 p<.001
Activities allowing work with peers	2.79(.80)	6	3.14 (.66)	6	t(50) 3.10 p<.01
Activities making learning fun	3.55 (.61)	2	3.80 (.40)	1	t(51) 3.25 p<.01

Table 3: Comparison of survey 1 and survey 2 qualitative data

	Sample statements	Frequency		Difference
		Survey 1	Survey 2	
Individual cognitions		*109*	*83*	*-26*
Superiority and/or competitiveness*	*When they can look impressive in front of their peers* (ID27)	1	1	0
Appreciating the value of learning*	*They can see the value for themselves* (ID9)	40	41	1
Feeling confident to succeed*	*They believe in their ability to achieve success* (ID10)	10	8	-2
Interest	*They are interested in the topic* (ID25)	39	26	-13
Experiencing good relationships with teacher and peers*	*They like and respect the teacher* (ID24)	5	8	3
Have a goal or outcome to achieve	*They have a goal to achieve* (ID5)	8	2	-6
Needs being met	*They feel their needs are being met* (ID32)	5	5	0
Avoid negative consequences	*Fear of punishment* (ID5) *They don't want to let someone down* (ID43)	7	1	-6
Educational practices		*37*	*75*	*38*
Provision of extrinsic rewards*	*Rewards are offered* (ID13)	8	8	0
Activities promoting self-regulated, social constructivist learning*	*They are involved in the process* (ID17) *Learning is interactive* (ID13)	16	36	20

Activities allowing working with peers*	*They have the opportunity for collaborative discussion* (ID24)	2	5	3
Activities making learning fun*	*The subject and teacher are fun and interesting* (ID36)	7	8	1
Teacher creating a positive, safe learning environment	*When the teacher creates a safe, happy and positive environment* (ID53)	6	22	16
Teacher qualities - interest, enthusiasm, passion	*Teacher is motivated, enthusiastic, open and helpful* (ID8) *Teacher is supportive, understanding and non-judgemental* (ID10)	14	3	-11

* denotes scales used in the quantitative data