New ways of “training” in primary school music education: Results and implications of a longitudinal research study

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ABSTRACT

This paper will report on current results in a longitudinal study that investigated the music teaching efficacy of students participating in the core two-year methodology component of an elementary (primary) teacher education program. The study specifically focused on the context of music teaching by generalist teachers in elementary (primary) classrooms, which is an area of teaching where many otherwise confident and competent teachers often express a reluctance to teach. It investigated the factors that affect the initial formation of music teaching efficacy and whether those same factors affect music teaching efficacy developmentally throughout teacher “training”. The aim of this paper is to discuss the results in a framework of reflection on the pedagogical approaches taken in teacher “training” of generalist teachers for music education in NSW schools.

Music is one strand of the Creative Arts in which many student teachers display a low level of teaching efficacy, i.e. their belief in their ability to teach music, even after concentrated periods of study. This reluctance to teach music often carries over into their permanent teaching careers and indeed, many very competent teachers still express a lack of confidence in their ability to teach music in primary schools. This is of particular concern in New South Wales primary schools where generalist teachers are required to teach music as part of their overall curriculum.

In New South Wales, many curriculum areas become elective during the secondary years of schooling. The Creative Arts has been one such area which has been marginalised over the past decade from a growing emphasis on literacy and numeracy and career-focused school curriculum. This trend has been evident in many countries and has resulted in a decline in the status of arts education and its relegation to the periphery of curriculum importance (Eisner, 1989). Music education, as one key strand of the overall Creative Arts curriculum, has suffered from this lack of support and subsequent lower levels of student participation. Specific background knowledge and training is a pre-
requisite for preparedness to teach music in elementary schools (Cameron, Wiggins, Wiggins & Bartel, 2002). Yet, despite the many opportunities that exist for broad societal exposure to varied forms of music, particularly popular music, many students enter teacher education programs with a belief that they have limited abilities and content knowledge in this area. Their formal education in music has often been confined to the compulsory education undertaken at school, which in NSW does not extend beyond the junior secondary years. Therefore, it may be that the factors identified in studies of teaching self-efficacy and teaching anxiety in other curriculum areas, some of which have a much more comprehensive school educational base, may be even more relevant in relation to music education.

Teacher efficacy is a powerful construct which can influence student learning and teacher behaviour in the classroom. Whilst much educational research has been undertaken related to teaching anxiety and lack of teaching self-efficacy in curriculum areas such as mathematics and science, (Riggs & Enochs, 1989) little has been developed in relation to the Creative Arts. In studies related to other curriculum areas key factors such as lack of content knowledge and lack of prior experience have emerged as barriers to developing high levels of teaching self-efficacy. Studies by Sloboda (1999) and others in relation to music have also identified lack of confidence in performance as a critical factor in relation to participation and teaching. This study was focused on the development of teaching efficacy specifically related to the skills and competencies required by preservice generalist teachers to teach music in mainstream classrooms. It also investigated the factors in their background and their experience both prior to and throughout their preservice development which may affect their belief in their ability to competently put into practice those skills and competencies. It focused on the initial formation of music teaching efficacy and whether and any changes which occurred over time.

**The Construct of Self-Efficacy**

The interaction between perception of capability and execution of actions is the essence of self-efficacy as defined by Bandura (1977, 1986). He proposed that there was a connection between the individual’s assessment, not only of their capability to perform a task, but also their anticipation of the steps or actions required to perform that task successfully to achieve desired results. Bandura (1986) situated his construct of self-efficacy within a social cognitive theory of human behaviour. Social Cognitive Theory as proposed by Bandura (1986) involved a self-system in which individuals have the capability to influence their thoughts, feelings and behaviour. He proposed that individuals are capable of human agency. In this way, they interact with their environment and the messages and influences received from it, to regulate their thoughts, feelings and perceptions of competence to approach tasks and intentionally pursue the courses of action required to bring about successful outcomes. This connection was further expanded by Wood and Bandura (1989), when they referred to self-efficacy as the “beliefs in one’s capabilities to mobilise the motivation, cognitive resources, and courses of action needed to meet situational demands” (p. 408). People with strong self-efficacy
are more likely to undertake a challenging task, to persist longer and to perform more
successfully than those with low self-efficacy (Wood & Bandura, 1989). Those who are
confident in their capability also often display a strong level of engagement and genuine
interest in the task at hand (Pajares, 2000a) and are predisposed to try harder and persist
longer with those factors beyond their immediate control.

The Factors Affecting Self-Efficacy

The factors affecting the levels of self-efficacy vary as the particular contexts or tasks
vary. In his theoretical framework of self-efficacy, Bandura (1986, 1994) proposed a
number of factors which have an influence on the development of self-efficacy and its
refinement. He proposed four key factors as being influential in the development of
initial and ongoing self-efficacy. Those factors are enactive mastery experiences,
vicarious experiences, social persuasion and physiological and emotional arousal.
Additionally, the general level of self-efficacy of the individual, the level of self-
regulation the individual brings to specific tasks, the task itself and the context in which
the task is formed are important elements which affect self-efficacy.

Enactive Mastery Experiences
Individual perceptions of competence are developed from interpretations of personal
performance and the outcomes of attempted tasks or activities. Therefore, it is important
to develop relevant knowledge and skills and to work towards mastery to enable stronger
performance and better results. Self-efficacy builds on perceived success and positive
outcomes. The perceived level of success raises efficacy beliefs and the expectations of

Vicarious Experiences
Another major influence on the development of self-efficacy proposed by Bandura
(1986) is the impact of social modelling in the form of vicarious experiences. The
strength of this impact is dependent upon the individual’s perceptions of their similarity
to the models. Actions taken by another person of significance, such as a teacher, can
instil a ‘life changing’ sense of self-belief Pajares (2000a). In contrast, a lack of realistic
models to follow can result in a lack of belief in both musical and general performance
abilities (Sloboda, 1999).

Social Persuasion
Social persuasion is a means by which the appraisals or assessment of others can
influence an individual’s beliefs in their ability to succeed on specific tasks. Social
persuasion works in conjunction with vicarious experiences to build self-efficacy
expressed in the form of ‘confidence in ability’ (Pajares (2000a). This confidence is
developed because of the combination of the feedback received from others, along with
the effects of observation of the actions of others. This is particularly influential if those
others are significant to the receiver of the feedback, for example a teacher, a parent or
the members of a peer group (Pajares (2000b).
Physical and Emotional States
Self-efficacy is also influenced by the value or level of interest placed on the task or activity itself and the emotional and physical reactions that are aroused by that specific task or activity. People often judge their capabilities and personal efficacy in relation to their emotional responses and moods. These reactions such as stress, anxiety and mood therefore provide information about the levels of self-efficacy related to tasks and can be predictors of accomplishment (Pajares, 2000b). They not only reflect self-efficacy beliefs, but can also influence them. Anxiety related to a task can sometimes cause a poorer performance outcome than the individual’s actual ability or capability should produce.

Other Relevant Factors
A further factor proposed by Bandura (1997) to affect the approach taken to a situation or task is the general self-efficacy of an individual. General self-efficacy may be affected by a number of key factors including the knowledge, skills and expertise that the person brings to the task, along with their background experience of success or failure and the expectations of themselves, peers and others. Different aspects of a task may also be more important at different times and an individual must not only decide what needs to be done to complete the task, but also the correct sequence and degree of importance of each aspect. Bandura (2001) contended that this self-regulation is a key element in persistence with a task. The perception of the level of complexity of the task is also an important factor influencing the self-efficacy with which the task is approached. Indeed, perceptions of the complexity of the task can be more influential on levels of self-efficacy than expectations or predictions of likely outcomes. This is due to the outcomes being more susceptible to the influence of other external factors and the behaviours or actions being more in the control of the individual (Harrison, Rainer, Hochwarter & Thompson, 1997). For example in studies related to academic self-efficacy, students were found to engage in tasks in which they feel competent and they tended to avoid those tasks in which they did not have the same levels of competency beliefs (Pajares, 2000b).

Various definitions of self-efficacy that refer to beliefs and judgements about capabilities in particular domains and specific situations imply “a relatively situational or domain-specific construct, rather than a global personality trait” (Kennedy, 1990 as cited in Welch, 1995 p. 844). The field of action or thought which surrounds a task has an impact on the self-efficacy related to the behaviour required to complete the task (Abusabha and Achterberg, 1997). Therefore, context is an important element in relation to the levels of self-efficacy an individual may bring to and maintain throughout tasks to be undertaken. Further, as contexts vary so too the perceived self-efficacy may vary in accordance with the factors that pertain to the particular context. Some factors may seem relevant in one context but unclear and ambiguous in another, whilst other factors may be generalised across a number of situations.
Self-Efficacy and Teaching

Teachers’ perceptions of efficacy related to their work have long been regarded as an important element in the investigation of teaching effectiveness. The study of teachers’ perceptions of efficacy has developed along two conceptual lines. Initially it was conceptualised by the RAND researchers (Armor, Conroy-Oseguera, Cox, King, McDonnell, Pascal, Pauly & Zellman, 1976) to have an external and internal component which reflected teachers’ belief in the control they had in the reinforcement of their actions. This two-dimensional model formed the basis for the development of the construct of ‘teacher efficacy’ which has influenced the majority of the research in this area (Tschannen-Moran and Woolfolk Hoy, 2001). Later researcher developed a second strand related to the concept of self-efficacy proposed by Bandura’s Social Cognitive Theory. Bandura (1997) proposed that teacher efficacy was more complex than the two-factor model commonly identified in the established teacher efficacy scales. Teachers’ perceptions of efficacy need to be assessed “across the wide range of activities and tasks they are asked to perform” (Tschannen-Moran et al., p. 219).

One of the key elements identified as important in the study of teacher efficacy is its contextual nature. The factors that contribute to the initial and ongoing development of teachers’ perceptions of efficacy are contextually linked, and context is an important influence (Moore & Esselman, 1994). Social Cognitive Theory recognises that there can be “some co-variation even across distinct domains of functioning” (Bandura, 2001 p. 1) when different activities are underpinned by similar sub-skills. Therefore, whilst perceptions of efficacy may be specific to particular contexts of teaching, there may also be an underlying level of perceived efficacy related to the generic skills and competencies of teaching which influence the contextually specific perceptions of efficacy.

In a number of curriculum contexts within teaching such as science, mathematics and music, teachers often display low levels of perceived teaching efficacy which is in contrast to their efficacy beliefs related to the generic skills and competencies of classroom teaching. The levels of efficacy beliefs which reflect perceptions of general teaching competencies do not always properly reflect perceived efficacy in specific subject contexts. For example, teachers who are highly efficacious in relation to general teaching skills may display low levels of perceived efficacy related to science teaching (De Laat & Watters, 1995).

Low levels of teaching efficacy related to specific curriculum contexts may also reflect low perceptions of individual ability in those curriculum areas. The perceptions of individual abilities have been found to have an impact on teaching self-efficacy in both pre-service and in-service teachers (Bobis & Cusworth, 1994). They found that a number of teachers who had gained confidence to teach science and mathematics during a teacher preparation program, still nominated negative feelings related to their natural abilities in these subject areas. Similar results were found in studies related to the creative arts (Bartel & Cameron, 2002; Cameron et al. 2002; Welch, 1995). A study of teachers’ perceptions of efficacy in art education found that many teachers view the arts as
curriculum areas which are “intuitive” and require innate skills and abilities. Therefore, if teachers perceive themselves as not having that intuitive ability they often exhibit low levels of teaching efficacy (Welch, 1995). In music education, similar results have been found. Teachers with low levels of perceived efficacy related to music teaching have been shown to be less confident to teach music (Bartel & Cameron, 2002; Cameron et al. 2002). They are also more inclined to believe that achievement in music is due to inherent ability and not able to be changed or controlled.

The low profile of art education in comparison to other subjects has also been identified as a contextual factor that could act as a barrier to teaching self-efficacy (Welch, 1995). In music education, the external factors which impact upon teachers perceived ability to teach effectively include a lack of preparation time and resources and the low priority and status given to music as a curriculum area. Internal factors such as a lack of confidence and perceived competence by general classroom teachers to teach music (Temmerman, 1997) have emerged as having an impact on the development of efficacy beliefs. Music specialists are more confident about their talent than their teaching, whereas generalist teachers align the two elements closely together (Bartels and Cameron, 2002; Cameron et al., 2002).

Background knowledge and experiences are also important elements of efficacy building. However, perceptions of musical ability were found to be a stronger influence than formal learning in music (Cameron et al. 2002; Bartel & Cameron 2002). A lack of belief in capability even when formal learning had been undertaken was consistent with research in other curriculum areas such as visual arts, science and mathematics (Welch, 1995; De Laat & Watters, 1995; Bobis & Cusworth, 1994). Therefore, the factors that influence efficacy building are not limited to formal background learning and experiences but, rather, are more complex. The four key factors which Bandura (1986) identified as affecting efficacy, i.e. enactive mastery, vicarious experiences, social persuasion and physical and emotional states provide a comprehensive framework through which the development of teachers’ efficacy beliefs can be examined.

**Measurement of Teaching Efficacy in Curriculum Contexts**

The measurement of teachers’ perceptions of efficacy has been extensively researched and developed not only in general theoretical terms, but also in relation to the influence of context. Many measures have been based on the Gibson and Dembo (1984) scale which measured a two-factor model. However, in more recent years, a strong case has been established, for measurement on a more multi-dimensional basis. Additionally, whilst teachers’ efficacy beliefs have been shown to be relatively stable once they are formed, there is a need to look at possible changes that may occur over time. In relation to pre-service teachers particularly, there has been a lack of longitudinal studies which have followed training teachers in their teacher education programs to examine the initial formation of perceptions of teaching efficacy and changes which may occur across that period and into their early years of teaching.
AIM

In the light of the issues raised in the above discussion, the current longitudinal investigation of pre-service teachers was focused on the initial development of perceptions of efficacy related to music teaching in primary schools and on changes which may have occurred over time. In keeping with the more recent emphasis on the multi-dimensional nature of teacher efficacy, a number of different aspects that may influence the development of music teaching efficacy were measured as separate variables in a four-part questionnaire. The purpose of the study was to determine the inter-relationships between the key factors being examined and their effects on the development music teaching efficacy both initially and over time. In order to examine these issues the following research questions were addressed:

Do the factors of general teaching efficacy; background (including knowledge, previous learning and experience); perceptions of musical abilities and feelings about teaching; affect levels of music teaching efficacy both initially and over time?

What are the inter-relationships between music teaching efficacy and the factors of general and creative arts teaching efficacy; background and experience; perceptions of musical abilities and feelings about teaching?

Do those inter-relationships change over time?

METHOD

Research Design

The study had two data gathering components. The first component involved the gathering of quantitative data through the administration of a survey instrument in a pre-test/post-test pattern, involving three cohorts of subjects across a three year longitudinal design. Two cohorts were measured at the beginning and end of their two-year teacher education program of study whilst the third group was measured in the middle and at the end of their period of study. The research design was later refined to focus on the data from the two longitudinal groups with the data from the third cohort being used for comparison purposes if needed. The second component involved qualitative data being gathered through a small number of in-depth interviews. It was decided to undertake the interviews to elucidate issues raised in the questionnaire data. This data will not be reported upon in this paper.

A longitudinal research design was used, with data collected across two years from the two cohorts. The first cohort commenced their teacher education program in the year 2000 and the second in the year 2001. For each cohort, data was collected at the beginning and the end of their two-year sequence of compulsory methodology units (Table 1).
Table 1: Research Design

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort 1</td>
<td>Time 1 Questionnaire (Early semester 1)</td>
<td>Time 2 Questionnaire (Late semester 2)</td>
<td>Time 2 Questionnaire (Late semester 2)</td>
</tr>
<tr>
<td>Cohort 2</td>
<td>Time 1 Questionnaire (Early semester 1)</td>
<td>Time 2 Questionnaire (Late semester 2)</td>
<td>In-depth interviews</td>
</tr>
</tbody>
</table>

The Sample

The target population of this study were two cohorts of pre-service teacher education students at a metropolitan NSW University. Within each cohort, students were enrolled in either a Bachelor of Arts Diploma of Education degree or a Bachelor of Education (graduate entry) degree but all were undertaking the same core methodology units of study and participating in the same University classes and practicum program. The program of study in these units remained the same across the two cohorts over time. At Time 1 a total sample of 243 subjects participated, 118 from Cohort 1 and 125 from Cohort 2. Over the two-year longitudinal period of the study, however, there was an attrition of some 64 participants resulting in 179 complete cases. The high overall attrition rate at Time 2 of 26.3% was due to the form of administration of the questionnaire in that only those participants present in class on the day of the administration completed the second questionnaire.

Research Instrument

The survey questionnaire was constructed around five sections consisting of the following sections:

Section 1:
This section contained demographic information including age and gender.

Section 2:
To investigate the influence of efficacy building information, especially the influence of Bandura’s (1986, 1997) four main factors, a section was developed which examined background, knowledge and experiences related to both generalist teaching, teaching in music, learning in music, experience of performance and perceptions of musical skills and talents and learning needs.

Section 3:
To investigate levels of teaching efficacy related to generalist teaching and music teaching in particular, a ‘Teaching Self-Efficacy’ scale based on Bandura’s model of a 0 to 10 point scale was developed. It comprised 27 survey items related to general teaching, teaching in the creative arts other than music, teaching in music and performance aspects of music and general teaching. It required subjects to analyse specific teaching tasks and assess personal teaching competence related to those tasks.
Section 4:
To investigate the perceptions of individual musical abilities and their influence on perceptions of efficacy related to music teaching, a ‘Musical Perceptions’ scale adapted from the Vispoel ‘Music Self-Perception Inventory’ scale was developed. It was based on a 1 to 8 point scale comprising: 11 survey items focused on perceptions about individual musical abilities and performance.

Section 5:
To investigate the possible influence of both positive and negative feelings about teaching a ‘Feelings About Teaching’ scale adapted from the Spielberger STAI {State Trait Anxiety} Inventory was developed. It was based on a 1 to 4 point scale comprising 19 survey items focused on feelings about general teaching and classroom competence.

RESULTS

Demographic Data

The characteristics of the sample group were as follows:

Table 2: Total Sample x Gender x Program x Age x Time 1

<table>
<thead>
<tr>
<th>Cohort</th>
<th>N</th>
<th>Female %</th>
<th>Male%</th>
<th>Age % (20-24 yrs)</th>
<th>BADipEd Ed Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>118</td>
<td>92.4</td>
<td>7.6</td>
<td>68.6</td>
<td>71.2</td>
</tr>
<tr>
<td>2</td>
<td>125</td>
<td>91.2</td>
<td>8.8</td>
<td>68</td>
<td>78.4</td>
</tr>
<tr>
<td>Total</td>
<td>243</td>
<td>91.8</td>
<td>8.2</td>
<td>68.3</td>
<td>74.9</td>
</tr>
</tbody>
</table>

Results revealed that at Time 1 the overall the sample were very similar in characteristics related to gender, age and program of study. The characteristics of the participants were predominately female (91.8%), enrolled in a BADipEd degree (74.9%) and in the 20 to 24 years age bracket (68.3%).

Background and Experience – Descriptive Statistics

The sample group entered the research study with varied backgrounds and experience in teaching and learning in the creative arts and in teaching generally. Many participants had experience across a number of background areas whilst others were more limited. Questions in this section of the survey had a yes/no component followed by a descriptive statement. The following results are derived from the yes/no answers.

Table 3: Overall Teaching Experience

<table>
<thead>
<tr>
<th></th>
<th>Cohort 1 N</th>
<th>Cohort 2 N</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Classroom Teaching</td>
<td>26</td>
<td>23</td>
<td>49</td>
</tr>
<tr>
<td>Informal Teaching</td>
<td>96</td>
<td>91</td>
<td>187</td>
</tr>
<tr>
<td>Other Classroom Experience</td>
<td>73</td>
<td>60</td>
<td>133</td>
</tr>
</tbody>
</table>

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Results indicated that only a small number of the total sample had actually undertaken any formal teaching in a classroom. However, in both cohorts a large percentage of participants indicated they had been involved in informal teaching in areas such as tutoring and out-of-school care etc. Also approximately half of the sample had been involved with other forms of classroom activities such as teacher’s aide and voluntary work.

Table 4: Teaching in the Creative Arts

<table>
<thead>
<tr>
<th></th>
<th>Cohort 1 N</th>
<th>%</th>
<th>Cohort 2 N</th>
<th>%</th>
<th>Total N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Arts Teaching</td>
<td>34</td>
<td>28.8</td>
<td>34</td>
<td>27.2</td>
<td>68</td>
<td>24.7</td>
</tr>
<tr>
<td>Music Teaching</td>
<td>19</td>
<td>16.1</td>
<td>22</td>
<td>17.6</td>
<td>37</td>
<td>15.2</td>
</tr>
</tbody>
</table>

Even though the percentages were low in both cohorts, results showed that a number of participants had gained some form of experience related to teaching in the creative arts. However, only a small percentage had experienced teaching in the creative arts strand of music.

Table 5: Learning in Music

<table>
<thead>
<tr>
<th></th>
<th>Cohort 1 N</th>
<th>%</th>
<th>Cohort 2 N</th>
<th>%</th>
<th>Total N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Music Learning</td>
<td>94</td>
<td>79.7</td>
<td>76</td>
<td>60.8</td>
<td>170</td>
<td>70.0</td>
</tr>
<tr>
<td>Informal Music Learning</td>
<td>53</td>
<td>44.9</td>
<td>47</td>
<td>37.6</td>
<td>100</td>
<td>41.2</td>
</tr>
</tbody>
</table>

Results revealed that a majority of participants had experienced some formal learning in music whilst just under half had undertaken informal learning. The formal learning in music was often identified as instrumental tuition whilst informal learning included self-tuition, taught by a friend and learning in a hobby group.

Table 6: Experience of Performance

<table>
<thead>
<tr>
<th></th>
<th>Cohort 1 N</th>
<th>%</th>
<th>Cohort 2 N</th>
<th>%</th>
<th>Total N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Experience</td>
<td>101</td>
<td>85.6</td>
<td>91</td>
<td>72.8</td>
<td>192</td>
<td>79.0</td>
</tr>
</tbody>
</table>

A high percentage of both cohorts had some form of experience in performance or presentation including school, amateur or professional work or productions. The nature of this performance experience varied greatly from small informal performances to formal productions and individual presentations.

**Questionnaire Survey Results**

Overall, between the two cohorts there was a significant effect for time but no group effect and no group by time interactions. The time effect was highly significant (p<.001) on all variables except the Perceptions of Musical Abilities variables and indicated changes to higher levels on each of the variables. As there was no group effect over time, the detailed results below will be reported for the whole sample group.
Teaching Efficacy Measure

Mean statistics were analysed for each cohort on the scale range (0=Certain I cannot do; 5=Moderately Certain I can do; 10=Certain I can do). Initial analysis of results has revealed that there was a significant time difference on the following sub-scales:

Table 7: Teaching Efficacy by Time

<table>
<thead>
<tr>
<th>Scale</th>
<th>Time 1 Mean</th>
<th>Time 2 Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Teaching</td>
<td>6.46 (.13)</td>
<td>8.83 (.07)</td>
</tr>
<tr>
<td>Creative Arts Teaching</td>
<td>5.87 (.14)</td>
<td>7.93 (.10)</td>
</tr>
<tr>
<td>Music Teaching</td>
<td>4.72 (.18)</td>
<td>6.56 (.16)</td>
</tr>
</tbody>
</table>

(Standard error is reported in brackets in this table)

Results reveal that teaching efficacy increased over time for general teaching, creative arts teaching and music teaching. However, the levels of efficacy related to music teaching started just below the mid-point of the scale and only increased marginally over time. Whereas, mean results for general teaching and creative arts teaching all began above the mid-point and increased to the upper range of the scale.

Perceptions of Musical Abilities Measure

Mean statistics were analysed for the sample group on the scale range (1=Definitely False; 4=More False than True; 8=Definitely True). All negatively worded items were reversed for analysis.

Table 8: Perceptions of Musical Abilities by Time

<table>
<thead>
<tr>
<th>Scale</th>
<th>Time 1 Mean</th>
<th>Time 2 Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptions of Musical Abilities</td>
<td>4.47 (.12)</td>
<td>4.73 (.12)</td>
</tr>
</tbody>
</table>

(Standard error is reported in brackets in this table)

No significant difference was revealed over time for either cohort on the Perceptions of Musical Abilities scale with mean scores at Time 1 and Time 2 remaining in the mid-range respectively. Cross tab analysis revealed that, the majority of students had not undertaken any formal or informal learning in music between the Time 1 and Time 2 measures. In addition, the majority of students did not indicate any change to their perceptions of their individual musical skills and talents over time.

Feelings About Teaching Measure

Mean statistics were analysed for the sample group on the scale range (1=Not at all; 2=Somewhat; 3=Moderately So; 4=Very Much So). All negatively worded items were reversed for analysis.
Table 9: Feelings About Teaching by Time by Group

<table>
<thead>
<tr>
<th>Scale</th>
<th>Time 1 Mean</th>
<th>Time 2 Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings about Teaching</td>
<td>2.86 (.03)</td>
<td>3.46 (.03)</td>
</tr>
<tr>
<td>Anxiety about Teaching</td>
<td>2.76 (.03)</td>
<td>3.19 (.03)</td>
</tr>
</tbody>
</table>

(Standard error is reported in brackets in this table)

Results reveal a consistency of scores for both positive feelings about teaching and feelings of anxiety about teaching. Each measure increased significantly over time however the subjects indicated a greater increase in positive feelings than in feelings of anxiety.

Analysis of the Influence of Background and Experience

In order to gain insight into the influences on the initial formation of teaching efficacy, the second component of the questions related to background and experience was analysed. This component comprised open-ended questions and descriptive statements to illustrate the yes/no answers noted above. Scales were formed and refined and multiple regression analysis was undertaken to identify background variables that were acting as predictors for the results revealed at Time 1 in the survey analysis. On the variable of General Teaching Efficacy, Informal Teaching Experience was significant (p<.01). There were two significant predictors of Creative Arts Efficacy – Perceived Musical Skills and Talents (p<.001) and Teaching Experience in the Creative Arts (p<.01). The two background variables of Perceptions of the Negative Influence of Musical Background and Perceived Musical Skills and Talents were predictors of Music Teaching Efficacy both highly significant at (p<.000)

Results revealed that a number of the significant background variables were acting as predictors for several of the survey variables. As well as the links noted above, Perceptions of the Negative Influence of Musical Background was also linked to Perceptions of Musical Abilities (p<.000). Perceived Musical Skills and Talents was also linked Perceptions of Musical Abilities (p<.000). Informal Teaching Experience was also linked to Perceptions of Musical Abilities (p<.001) and Anxiety about Teaching (p<.01).

In order to gain further insight into the factors which influence music teaching efficacy a further series of regression analyses was undertaken to identify any significant relationships between Music Teaching Efficacy and the above identified significant background variables as well as the other survey scales (Table 10).

Table 10: Significant Background Variables at Time 1

<table>
<thead>
<tr>
<th>Survey Scale</th>
<th>Survey and Background Variables</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music Teaching Efficacy</td>
<td>General Teaching Efficacy</td>
<td>.006</td>
</tr>
<tr>
<td></td>
<td>Creative Arts Teaching Efficacy</td>
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<td>Perceptions of Musical Abilities</td>
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<td></td>
<td>Perceived musical skills and talents</td>
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Results revealed that Creative Arts and General Teaching Efficacy along with subjects’ perceptions of their general musical abilities and their skills and talents in music were predictors for Music Teaching Efficacy. The perceived negative influence of the subjects’ musical background was also significant but to a lesser degree.

Correlation analysis supported these results but also revealed that whilst the Feelings About Teaching and Anxiety About Teaching scales were not significant in regression analysis related to Music Teaching Efficacy, the Feelings About Teaching variable was in fact positively related to General Teaching Efficacy (r = .515, p<0.01) whilst Anxiety about Teaching was not significant.

**DISCUSSION**

This paper has reported on the results of detailed analysis of data obtained at Time 1 and analysis of survey scales as repeated measures over time. More extensive path analysis is currently in progress and will be reported in later publications.

Demographic and background data provides an interesting starting point for this discussion. The gender and age profiles were consistent with the populations who normally access primary teacher education programs in Australian Universities, i.e. mainly female and in the younger age bracket. The high level of informal teaching and other classroom experience would tend to indicate not only a predisposition to teaching, but also a practical basis from which to build and enhance expertise. This was then consistent with the pre-test results related to the General Teaching Self-Efficacy and general Feelings About Teaching scales which all began in the positive range.

Positive teaching efficacy scores at Time 1 for teaching in the creative arts was an interesting finding especially as there was a low percentage of previous teaching experience in this area. Teaching efficacy scores in General and Creative Arts teaching, both increased to the high level of the positive range over time. However, whilst Music Teaching Efficacy increased over time, it began below the mid point of the scale and only increased to the lower range of positive over time. The results related to Perceptions of Musical Abilities also began in the mid range but showed no significant change over time. When the lower mean score of Music Teaching Efficacy is viewed in conjunction with these results, it could be suggested that one of the main barriers affecting confidence and self-belief in music teaching is the perceived lack of musical skills and talents and poor perceptions of ability. The regression analysis supports this point by revealing a direct link between Music Teaching Efficacy and Perceptions of Musical Abilities, Perceived Skills and Talents in Music and the Perceptions of the Negative Influence of Musical Background. This link was further supported through the information contained in the open-ended questions where students consistently identified a lack of knowledge of musical content including terminology and experience as a perceived need. This was
Despite the fact that a high percentage of subjects had actually undertaken some formal learning in music. It would seem that this formal learning had not translated into confidence related to the content knowledge necessary for music teaching.

Also, interestingly, even though all subjects showed positive changes over time in Music Teaching Efficacy, it would seem that the subjects developed more positive levels of results related to the teaching aspects of music but still did not feel that their musical ability had changed. This may be due to the mastery and vicarious experiences that the subjects experienced in their teacher education program, which focused on how to teach music rather than on the development of musical knowledge and experience. In addition, many subjects expressed concern at the lack of effective models of music teaching in their practicum experience. General and Creative Arts Teaching Efficacy were direct predictors of Music Teaching Efficacy which indicated that a co-variation effect might have occurred reflecting a stronger overall belief in ability in general teaching skills and competencies. This may have influenced the increase in efficacy over time.

It was an interesting finding that both the general Feelings About Teaching and Anxiety about Teaching scales increased significantly over time. This may be a reflection of the pre-service teacher training nature of the two cohorts in that they expressed a growth in positive feelings about teaching but this was mixed with some trepidation and fear of their transition into mainstream teaching. It was also of interest that these two variables were not direct predictors of Music Teaching Efficacy but rather were influential through their positive correlation to General Teaching Efficacy.

Further and more complex analysis of statistical data is currently taking place and will be analysed in conjunction with the results of focused student interviews. However, the current results presented in this paper offer important insights for teacher education. Whilst it is clear that results indicate significant increases in levels of General and Creative Arts Teaching Efficacy this is not matched in relation to music teaching. These results support the findings of Temmerman (1997) who found a lack of confidence and perceived competence by general classroom teachers related to music education. Whilst many areas of background and experience were investigated only the perceptions of musical abilities, skills and talent in music and the negative influence of musical background had a direct relationship with the variable of Music Teaching Efficacy. The lack of perceived musical abilities and skills and talents in music, despite high levels of formal music learning, also supports the findings of Bartel & Cameron, (2002) and Cameron et al. (2002) that teachers’ perceptions of their musical abilities have a direct affect on their confidence to teach music. They are more inclined to believe that achievement in music is due to inherent ability and not able to be changed or controlled.

Conclusion

Therefore, as outlined in the above discussion, one of the key factors that may have a significant affect on music teaching efficacy is the amount of content knowledge and practical experience in music teaching which students experience in their teacher training programs. This has important implications for generalist primary teacher education.
programs. It would seem that the limited musical background and knowledge, which many students bring to their teacher education program, remains a key factor that inhibits the development of positive levels of teaching efficacy in music. Therefore, where generalist classroom teachers are required to implement music curriculum, it would seem to be essential that the teacher education programs must include the development of musical content knowledge and practical experience in their course design along with exposure to good models of music teaching. This, when combined with the methodology of how to teach primary school music, would create more positive outcomes for teacher education students, the children they teach and the educational systems within which they work.

REFERENCES


