

**Influences on the science teaching self efficacy beliefs of
Australian primary school teachers**

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by

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Declaration

This thesis is an original work. None of the work has been previously submitted for the purpose of obtaining a degree or diploma in any university or other tertiary education institution. To the best of my knowledge, this thesis does not contain material previously published by another person, except where due reference is made in the text.

Merryn C McKinnon

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Abstract

The science teaching self-efficacy beliefs of primary school teachers are influential on teaching practice. The purpose of this research was to determine if informal education institutions, such as science centres, could provide professional development that influenced the self-efficacy of pre-service and in-service primary school teachers, and to what extent this was influenced by their science background, years of teaching experience and external, environmental factors. Participants were also asked if places such as science centres had a role to play with, and for, teachers.

A cohort of eight final year pre-service teachers and 13 in-service teachers (six from one New South Wales (NSW) school and seven from one Australian Capital Territory (ACT) school) completed a series of four one-hour workshops and were surveyed immediately before, immediately after, four months after and 11 months after the workshops. Surveys and semi-structured interviews were used in the data collection.

The results of this research showed that four hours of science centre produced, professional development workshops were capable of increasing the science teaching self-efficacy of all but three participants, with observable results for at least 11 months after the completion of the workshops. The ACT in-service cohort showed the greatest overall gains in self-efficacy. The pre-service cohort showed greatest gains in confidence in, and enjoyment of, science teaching. The school environment of the in-service participant cohorts was a major determining factor of how their increased self-efficacy influenced their teaching practice, with positive and negative consequences.

This thesis clearly demonstrated that the science education experienced by teachers in this study was highly influential in their own development of perceptions and beliefs about science that they, in turn, take to the classroom. This was just as applicable to newly graduated teachers as it was to those who have been teaching for over 20 years. Participants identified a role for science centres as a source of inspiration, support and training for teachers in order to help them teach science more effectively.

This project showed that the informal education sector could enact positive reforms within science education, but only if the context in which teachers must operate is taken into account and reform efforts adapted accordingly. The informal science education sector could be the key to achieving long lasting reform in science education where other, formal measures have failed.

Table of Contents

Declaration	iii
Abstract	v
Table of Contents	vi
List of Figures	ix
List of Tables	xi
List of Tables	xi
1. Introduction	1
1.1 Background to the study	1
1.2 The research problem.....	5
1.3 The aim of this study.....	6
1.4 Overview of the thesis.....	6
Chapter 2: The role of science education, teachers and teaching self-efficacy	8
2.0 Science teaching and education in Australia.....	8
2.1 The status of science teaching in Australian schools.....	8
2.2 Primary school teachers' science training and self-efficacy.....	21
2.3 The development of the concept of self-efficacy and its application to teaching.	29
2.4 Implications arising from the literature.....	40
2.5 How these implications are addressed in the current project.....	41
Chapter 3: Formal and informal education and the role of professional development for teachers	43
3.0 Different educational environments and their influences	43
3.1 Professional development for teachers	43
3.2 Formal versus informal education.....	57
3.3 Formal and informal education for teacher development	65
3.4 Implications arising from the literature.....	70
3.5 Development of research questions used in the current study	73
Chapter 4: Research Design	78
4.0 Development and rationale of research design	78
4.1 Development of method used to address the research questions	78
4.2 Pilot study	94
4.3 Study design.....	100
4.4 Data analysis	109
4.5 Ethical considerations	113
4.6 Summary	113
Chapter 5: Results	115

5.0 Presentation of findings from the current study	115
5.1 The study population — demographics, career choice influences and fears	115
5.2 Research question 1: Did the workshops influence science teaching self-efficacy?	123
5.3 Research question 2: Differences between pre-service and in-service teachers .	139
5.4 Research question 3: Do the number of years of teaching experience cause differing effects and impacts?	151
5.5 Research question 4: The influence of previous science experiences.....	156
5.6 Research question 5: The influence of the school environment	159
5.7 Research question 6: Is there a role for informal science education?	174
5.8 Summary of main findings.....	180
Chapter 6: Discussion and Conclusions	184
6.0 Putting the results in context.....	184
6.1 Do science centre produced, short professional development workshops have any effect on teachers’ science teaching self-efficacy?	185
6.2 Do science centre produced, short professional development workshops affect pre-service teachers differently from in-service teachers?.....	191
6.3 Do science centre produced, short professional development workshops have differing effects and impacts depending on a teachers’ teaching experience?	193
6.4 Does an individual’s previous experience with science influence how they feel about science teaching?.....	195
6.5 Does the environment of the school influence the science teaching self-efficacy of the teacher, or how likely they are to teach science?	198
6.6 Do teachers perceive that there a role for informal science education with teachers?.....	202
6.7 Limitations, recommendations for further research and overall conclusions	207
References	213
Appendix A: Modified Research Instruments.....	234
Science Teaching Efficacy Belief Instrument A (STEBI A) for in-service teachers	234
Science Teaching Efficacy Belief Instrument B (STEBI B) for pre-service teachers	236
Science Curriculum Implementation Questionnaire (SCIQ)	238
Appendix B: Interviews - indicative areas of questioning.....	241
Appendix B: Example of interview transcript.....	243
Appendix C: Workshop activities.....	248
Appendix D: Participant information and certificate	253
Email to Prospective Participants (pre-service)	253
Information Sheet for Participants	255
Certificate.....	258

Appendix E: Individual PSTE and STOE scores for each participant.....260

List of Figures

Figure 1: Model depicting theoretical relationship between professional development and student achievement (after Supovitz & Turner, 2000:965).....	45
Figure 2: Expanded model depicting theoretical relationship between professional development and student achievement (after Supovitz & Turner, 2000:965)	46
Figure 3: Flow chart showing evolution of study design in response to recruitment difficulties	103
Figure 4: Comparison of PSTE scores (range 13 - 65) of ACT in-service participants across the study period.....	125
Figure 5: Comparison of STOE scores (range 10 - 50) of ACT in-service participants across the study period.....	126
Figure 6: Graph showing most extreme cases of fluctuating PSTE and STOE scores in ACT in-service cohort.....	127
Figure 7: Comparison of PSTE scores (range 13 - 65) of NSW in-service participants across the study period.....	128
Figure 8: Comparison of STOE scores (range 10 - 50) of NSW in-service participants across the study period.....	129
Figure 9: Comparison of PSTE scores (range 13 - 65) of pre-service participants across the study period.....	130
Figure 10: Comparison of STOE scores (range 10 - 50 periods 1 - 4, due to omission of two items in STEBI A STOE) of pre-service participants across the study period.	131
Figure 11: Comparison of confidence levels pre- and post-workshop of individuals in ACT in-service cohort.....	143
Figure 12: Comparison of confidence levels pre- and post-workshop of individuals in NSW in-service cohort.....	143
Figure 13: Comparison of confidence levels pre- and post-workshop of individuals in the pre-service cohort.....	144
Figure 14: Comparison of enjoyment levels pre- and post-workshop of individuals in the ACT in-service cohort.....	145
Figure 15: Comparison of enjoyment levels pre- and post-workshop of individuals in the NSW in-service cohort.....	146
Figure 16: Comparison of enjoyment levels pre- and post-workshop of individuals in the pre-service cohort.....	146
Figure 17: Comparison of mean scores of confidence and enjoyment immediately pre and post workshops for each participant group. 1 = not at all and 5 = extremely/ really.	147
Figure 18: Comparison of overall mean PSTE and STOE scores for each 'experience cohort' for the entire study period. PSTE scale range 13 - 65; STOE scale range 10 - 50.	152
Figure 19: Comparison of PSTE scores of participants with 20+ years teaching experience across all sample periods. Score range 13 - 65.....	153
Figure 20: Comparison of STOE scores of participants with 20+ years teaching experience across all sample periods. Score range 10 - 50.....	153

Figure 21: Comparison of mean scores returned for professional support scale of the
SCIQ by NSW in-service participants throughout study period, demonstrating high
levels of variation in responses at an individual level. 169

Figure 22: Comparison of mean scores returned for resource adequacy scale of the
SCIQ by ACT in-service participants throughout study period, demonstrating
consistency of responses at an individual level. 170

List of Tables

Table 1: Different stages of teacher progression according to level of experience, using discipline as an example of proficiency (Burry-Stock and Oxford, 1994)	24
Table 2: Five models of staff development for teachers (Peixotto and Palmer, 1994) after Sparks and Loucks-Horsley (1989)	53
Table 3: Summary of types of science centre impacts according to Garnett (2002).	68
Table 4: Scales, item numbers and amendments made to the Science Curriculum Implementation Questionnaire (SCIQ) used in this study	88
Table 5: An overview of the indicative timings for each component of the study fieldwork, and the instruments used for each cohort. (STEBI = Science Teaching Efficacy Belief Instrument: STEBI A = for in-service teachers; STEBI B = for pre-service teachers; SCIQ = Science Curriculum Implementation Questionnaire).....	109
Table 6: Overview of items included in efficacy belief and outcome expectancy scales, and reversed score items in the STEBI A and B instruments	110
Table 7: Demographics of study population	117
Table 8: Comparison of mean PSTE and STOE scores for each cohort at each sample period and as a mean for the entire study.....	139
Table 9: Comparison of PSTE and STOE ranges, means and standard deviations from the STEBI A surveys using the in-service study cohort only, and then including the STEBI A data collected from the pre-service cohort at the final sample period (Period 4).	140
Table 10: Overview of participants' responses at the first interview (4 months after workshop completion) and final interview (10 months after workshop) of what aspects of teaching they felt most and least confident (conf) about. Numbers indicate total of participants choosing each factor.	148
Table 11 Comparison of PSTE and STOE scores of participants with 15 - 20 and 4 - 6 years teaching experience across all sample periods.	154
Table 12: Comparison of overall change in mean PSTE and STOE scores for each teaching experience cohort.....	155
Table 13: Factors identified by participants as most and least positive influences on their teaching career/training.....	159
Table 14: Comparison of means and standard deviations for each scale in the SCIQ from ACT in-service cohort across whole study period.	163
Table 15: Comparison of means and standard deviations for each scale in the SCIQ from NSW in-service cohort across whole study period.	165
Table 16: Means and standard deviations for each scale in the SCIQ from the pre-service cohort at the final sample period of the study.....	168