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EARLY CHILDHOOD SCIENCE EDUCATION

THE STUDY OF

YOUNG CHILDREN'S UNDERSTANDINGS OF FORCES

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B.Ed.

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Preface

I would like to acknowledge the contributions made by others to this study. In particular, I would like to thank my supervisor, Dr. Marilyn Fleer for her positive support and encouragement. Her willingness to peruse the preliminary writing during maternity leave, sick leave, holidays and a busy semester time was much appreciated. I would also like to thank Dr. Tim Hardy for his interest and practical support in the progression of this thesis.

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Finally I would like to thank my partner Michael McFadden and children Brendan and Hannah for the many instances of practical and emotional support that they willingly provided during the long period of writing this thesis. This is very much appreciated and this thesis would not have been completed without it.

Abstract

This study sought to investigate young children's understandings of the science concept forces. A government preschool in the A.C.T. was the setting for the study.

The research methodology consisted of pre and post interviews conducted before and after a teaching sequence using an interactive approach to teaching science (Biddulph and Osborne 1984). Interviews were audio taped, work samples were kept and lessons and discussions were audio taped during the teaching sequence.

This study examined three factors associated with young children's understandings of the science concept forces. First, it documented young children's understandings prior to any formal teaching in this area. It was found that most children did hold views about the areas of forces such as pushes and pulls, inertia, friction and gravity. Some of these views are generally recognised by the scientific community as being scientifically correct answers.

Second, this study sought to reveal if these prior views were changed or reached a higher conceptual level after the experience of a three week interactive teaching sequence on forces. It was found that in all cases changes in language indicating higher level understandings, the use of scientific terms and more detailed responses indicated that it was possible and relevant at the early childhood level to teach the concepts of forces.

A third aspect of this study sought to identify teaching strategies which would effectively teach forces to very young children.

It became clear in this study that as young children already have views about the concepts of forces it is possible to build on these views with correct scientific knowledge and thus empower the young child in an area of science which research has indicated may cause problems for older learners.

It is therefore proposed that early childhood is a crucial time for teaching correct science concepts in the area of forces.

This thesis has shown that young children, particularly those 4-5 years old, have already formed views of forces, some scientifically correct and it is proposed that building on this existing knowledge will empower the child in later learning in the areas of physics and mechanics.

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Publications Related to this Thesis

Humffray, J., (1997) 'An Investigation of Young Children's Understandings of Forces'. Journal of Australian Research in Early Childhood Education, Vol. 2, pp 48-57.

An account of the pilot study conducted prior to this thesis

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