40 YEARS OF SCIENCE EDUCATION RESEARCH: THE STATE OF PLAY AND ITS APPLICATION TO TEACHING AND LEARNING IN TERTIARY SCIENCE

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ABSTRACT

Since the early days of recognizing that students should play a central role in their own learning in the 1970s a wealth of research has pointed to the importance of student-centred learning approaches in science education and to the increasing complexity of the teacher's role. Our understanding of the place of the teacher in teaching and learning has developed considerably over the last 30 years, particularly through the development of a theory of Pedagogical Content Knowledge, which describes the complex intersection of teacher content knowledge and knowledge of effective ways of teaching this content. The structure of the knowledge we teach has also been explored through research into the nature of scientific concepts and how students engage with these. This work also began some 30 years ago through research into nature of science misconceptions that students bring to the classroom and how these impinge on their capacity to learn new concepts. In all of these areas Australian researchers have played an integral part. Professor Loughran's research has focussed on answering the question, "How do teachers learn how to teach and how do they then put that into practice and develop their knowledge, skills and ability over time?" This is now a question of increasing interest to tertiary teachers of science.

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