



AN CHOMHAIRLE MHÚINTEOIREACHTA
The Teaching Council

Science Teachers' Use of Whole Class Instruction and Cooperative Learning Methodologies in a Girls' Voluntary Secondary School.

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Overview of Research

This research investigated Science teachers' rationale for selection of a teaching methodology and it sought to evaluate the barriers experienced by teachers in embracing change in their teaching approaches. It also examined the role of Continuous Professional Development (CPD) provision in facilitating change. It thirdly explored the role of the teachers' 'self'.

Rationale and Aims

The rationale for the study stemmed from the concern of the researcher with what she perceived as teachers' over-reliance on traditional teaching methodologies, particularly in the light of a substantial body of international research supporting the benefits of alternative methodologies. The National Council for Curriculum and Assessment (NCCA) and Whole School Evaluation (WSE) reports also support the use of alternative teaching approaches.

She also found a gap in the research around teacher perspectives on teaching and learning. The research focussed on Science teachers due to the continuing decline in the numbers of students choosing Science at senior level. The perspective of the school principal and the laboratory technician were also included. The researcher aimed to provide alternative perspectives for all teachers in the development of their pedagogical approach.

Research Topic

This research focuses on the teaching methodologies employed by Science teachers in second level education in Ireland. It examines the rationale for teachers' choice of methodology, exploring attitudes to and preferences for two contrasting teaching approaches – traditional whole class teaching and cooperative learning (CL). It explores the relationship between CPD and teachers' choice of methodology with reference to the teachers' 'self'; and also the dichotomy between policy rhetoric and teaching practice. A final theme deepens the examination of CL and traditional whole class teaching with particular reference to Science teaching.

The 'self' of the teacher was examined from a number of points of view:

- the relationship between self-esteem and the variety of teaching approaches used
- the relationship between teacher's level of commitment, and the policy, institutional and personal contexts

- the relationship between student achievement and the emotional commitment of the teacher;
- the relationship between the teacher's CPD and his or her choice of teaching approach.

Design and Methodology

The research was qualitative in nature using a case study design. A multi-method approach was taken employing open-ended questionnaire, focus group, one-to-one interviews and observations. The school principal, seven Science teachers and a laboratory technician were the research participants. A research diary was also kept by the researcher.

Self-administered questionnaires with a small number of open-ended questions were used to provide insight into teacher attitudes towards the research and facilitate effective interviewing. This was piloted on a different group of teachers. The focus group interviews were exploratory and were followed by one-on-one interviews with a number of participants. The researcher then observed teachers in their classrooms to substantiate or question the information provided in the interviews.

The data was analysed using manual coding with highlighting of texts. The data was categorised into themes with interlinking subthemes. All findings were independently audited.

Findings and Recommendations

The personality of the teachers was found to be hugely influential in their choice to adopt CL or to remain with traditional teaching. The teachers' values and beliefs were a stronger influence than any research studies in influencing their choice of methodology. Younger teachers were found to be more likely to adopt newer methodologies in the Science classroom as older teachers were more content with tried and tested methods. Limited access to in-service provision was found to constrain the development of young teachers employed on a temporary basis.

Many constraints prevented teachers from adopting newer methods. The researcher found that a supportive environment could be immensely helpful to young teachers developing their teaching style. This could be helped by forging greater links between teacher education institutions and schools. Teachers' openness to, or fear of, change is also a considerable influence on their choice of teaching methodology. Exam pressure was found to be a factor in influencing teachers towards traditional methods. A head of department arrangement could encourage methodological development.

Although WSE inspections favoured a more varied approach, there seemed to be a paradox as the principal found them more concerned with examination results than the quality of teaching. Teachers found that inspections created an artificial environment where teachers put on a show for the day. They did not find inspections to be supportive or valuable. More regular, less formal, inspections could enhance methodological development.

Finally the researcher concludes that a scarcity of time and resources and a lack of remuneration may reduce many teachers to a 'self' embedded in low morale and self-esteem. She notes that educational authorities are very quick to detail what is required of teachers but can fail to support these initiatives. She recommends that the diversity of teaching approaches being requested of teachers need to be supported.