

# Assisting teachers to implement a design approach to problem solving; using online tools.

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## Abstract

Post primary education in Ireland is currently undergoing reform. The Action Plan for Education 2017 aims to develop students' 21st century learning skills such as enquiry based learning, critical thinking and creative innovative problem-solving. However, these skills are mainly in relation to STEM subjects. Design, and more specifically design thinking, is a missing link in the strategy which would provide a more holistic approach to problem solving across the curriculum. When embedded within teaching practice, design thinking may aid the development of students' teamwork, collaboration, leadership and empathic skills which are required attributes for students (and consequently teachers) to have, as they progress through their educational and professional lives.

A review of the literature has identified a disconnect between proposed national education strategies and the reality of teachers' experience putting the strategies into place on a practical level. This research seeks to understand how teachers can be supported to develop design thinking in their classroom, in order to be able to transfer their own knowledge and experience of design to their students.

The research focuses on a sample of four schools in the Carlow/Kilkenny Educational Training Board (ETB) area. It uses an Action Research (AR) methodology, which aims to make change happen. Through collaborative need finding workshops, stakeholders and participants engaged to understand and inform each other. This in itself is a strategic innovative way to help answer the research question 'how can teachers be supported', and also to provide a means for teachers and designers to interrogate what 'design' means to them. It was found that teachers want to be able to collaborate with each other and designers, to develop their professional practice and to share knowledge. Due to constraints on teachers' time, an online platform where teachers can reflect, share and comment on each other's action research was developed. The workshops were followed by a series of open-ended interviews with six individual teachers and nine students in response to identified needs. Using AR cycles, teachers made plans for design interventions in their classroom. Adopting a critical theory perspective to drive the Action Research enabled the researcher to question system constraints and teachers' own interpretations of their reality.

This approach served to highlight the epistemological beliefs of teachers, which findings to date seem to suggest may fundamentally influence teachers' own success or failure when introducing design thinking in their classroom.

This Action Research is an important step in assisting teachers to bridge a gap in their own teaching practice in schools. As a compliment to workshops, the online collaborative environment allows teachers to develop design thinking in a supportive continuous professional development capacity. Online collaboration may also serve to provide teachers with a space to continually explore design thinking as pedagogical practice. This research is timely in light of the recent inclusion of collaborative problem solving to the OECD's Programme for International Student Assessment (PISA), which measures 15-year-old school students' performance in maths, reading and science. This new category of assessment is likely to influence future Irish education strategies.