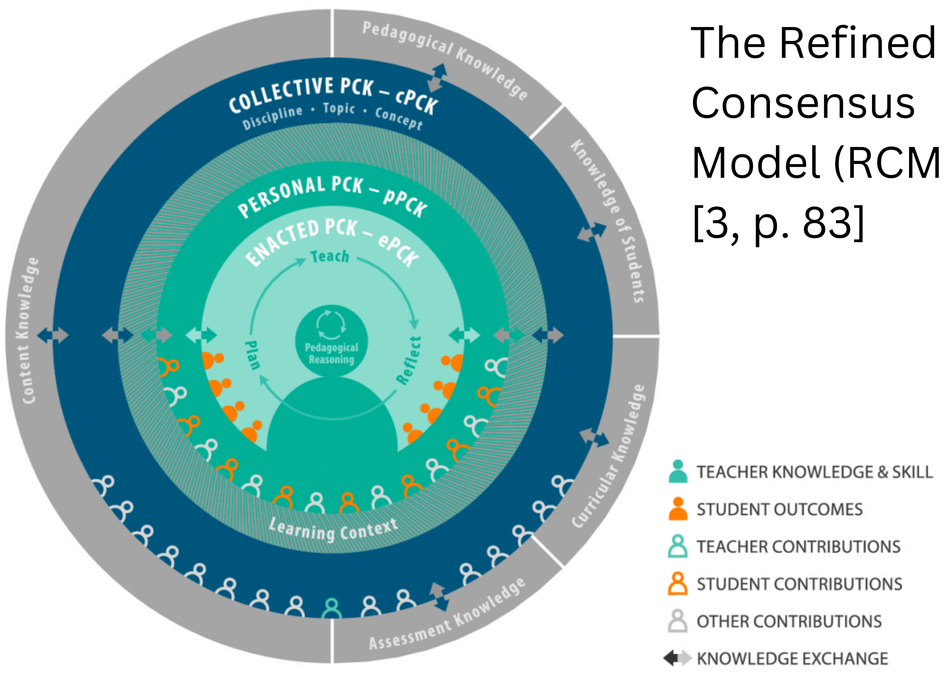
How are commercial video games used by teachers to support primary aged children's learning of programming concepts?

Introduction

To support pupils learning programming, carefully selected commercial, off-the-shelf (COTS) video games developed for entertainment purposes, such as PacMan or Frogger, can be used in lessons to teach concepts embedded within them [4]. Pedagogical approaches involving the use of COTS video games can enable pupils to develop their understanding of programming concepts and use them within their own programs [6].

Theoretical Perspectives

Pedagogical content knowledge (PCK) [8] is a combination of content and pedagogy required to teach a subject effectively. My research is particularly interested in enacted PCK (ePCK), which is evident when teachers plan, teach and reflect on lessons [2]. The Refined Consensus Model (RCM) [3] will be used to examine PCK.



The Refined Consensus Model (RCM) [3, p. 83]

Self-determination theory (SDT) [5] posits how individuals fulfilling their basic psychological needs for autonomy, competence and relatedness leads to better motivation and wellness. The benefits of autonomously motivated pupils in terms of engagement and academic achievement are widely reported, with teachers using COTS video games to increase pupil motivation [1].

This work was supported by the London Interdisciplinary Social Science DTP [grant number ES/P000703/1].

Research Questions

RQ1 - How is pedagogical content knowledge evident through pedagogical reasoning within participant teachers' lessons that use COTS video games to support pupils' learning of programming concepts?

RQ2a - How do participant teachers perceive the motivation for learning provided by COTS video games when they are used to support pupils' learning of programming concepts?

RQ2b - How do participant pupils perceive the motivation for learning provided by COTS video games when they are used to support their learning of programming concepts?

Methodology and Contribution

This research is exploratory in nature and uses a qualitative, multiple case study approach. Approximately six schools will be visited when a teacher is delivering a lesson using COTS video games to support primary aged children's learning of programming concepts.

A Content Representation (CoRe) [7] and semi-structured interview will be used to enable teachers to articulate their ePCK for the planned lesson. To provide further evidence of ePCK, the lesson will be video recorded and discussed with the teacher. The views of teachers and pupils on motivation for learning will be sought using semi-structured interviews.

The report will contain a discussion of findings and a cross-case analysis. The views of teachers and pupils will be compared. The results can be used to develop our understanding of pedagogy, to improve teachers' practice and when developing resources. It is anticipated future studies will evaluate the approaches identified.

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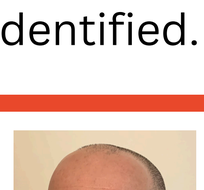

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