Use of gaming technologies to enhance learning

CASE STUDY REPORT

Use of gaming technologies to enhance learning

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This study was originally published in 2009 as part of the 'What Works Well' initiative, part of the National Strategies for Education in England.

Abstract

Background: The purpose of the study was to identify if students would improve attainment and become more engaged if learning was directed to an aspect of students' interest, where they were more familiar with the environment.

Aims: The main aim was to identify if students would improve attainment and become more engaged if learning was directed to an aspect of their interest.

Methods: The participants in this development work were students, teachers, a head of department, a subject leader, a local ICT consultant, a National Strategies consultant, parents, and a senior leadership team. Methods used included teacher-led demonstrations, video files, help sheets, lesson observations, and CPD materials, research, and expertise. These methods ensured all students' learning styles were addressed.

Findings: The main findings are that the unit has had a positive impact on pupil learning, with students becoming more engaged, motivated, and independent. They have also achieved higher levels of attainment than in the previous control unit.

Implications: The findings suggest that students are more engaged and motivated when learning is relevant to their own lives, and that they are more likely to take responsibility for their own learning and work collaboratively. This has led to improved attainment and behaviour in the classroom.

This abstract was generated by Camtree using a large language model (LLM) and added to the original report in 2023.

Keywords: Secondary education; Information and Communication Technology

Introduction

What were your reasons for doing this type of development work?

To identify if students would improve attainment and become more engaged if learning was directed to an aspect of students' interest, where they were more familiar with the environment. The questions which were asked were if students would want to develop more understanding and how this would affect the level of achievement and behaviour in the classroom.

From this study I wanted to find out if students would be more encouraged with their learning and would want to take learning outside the classroom environment in order to support the 'anytime, anywhere' learning theories, both within the school and outside. Also I wanted to monitor the effects this would have on attainment, progression and behaviour.

The local ICT consultant approached the subject leader to pilot a gaming unit, for the area. At first the unit was developed for a year 7 unit. The enthusiasm within the year group made the subject leader look at how this could be developed further in order to enhance the learning in year 9. It was agreed that the ICT department would pilot the use of the gaming unit for both years 7 and 9, within the authority.

After the unit had been delivered the head of department was in no doubt that the students had become more engaged with the learning taking place within the class. Many students had gone home and downloaded the free software in order to take the learning forward and stated to become more independent learners by completing games outside the classroom environment.

All students were engaged within the lessons, which encouraged improved behaviour, and students became more focused on learning activities. It was felt that the more new technologies introduced within the class environment that were student related, the better engagement and learning would become, which is the start of educating students for the 21st century.

Who might find this case study useful?

- Carer
- Head of school improvement
- Headteacher
- Middle leader
- National Strategies consultant
- Parent
- Senior leadership team (SLT)
- Subject leader
- Teacher

Description

What specific curriculum area, subject or aspect did you intend to have impact on?

- Information and Communication Technology

How did you intend to impact on pupil learning?

The impact on pupils' learning would be that they would be able to solve a problem by being able to design a game that would be suitable for a particular age group and understand how the sections of the game would be completed. Students would be able to play each other's games to be able to identify suitability, playability, interest within the game and suggest improvements in order to make the game more suitable. Through the

development of the unit students would want to access learning outside the classroom by working on the projects at home and develop their skills. The unit would be able to get students to think about the look, layout and suitability of games produced. Overall the aim would be that students would become more engaged with learning and start to find the subject interesting. This unit would address areas of the new key stage 3 curriculum in relation to sequencing of events, link it into the real world and make learning more student orientated.

What were your success criteria?

- To improve attainment by developing skills to produce a game that would be suitable and fit for purpose;
- To relate learning to students' own experience;
- Students to become more independent learners in order to solve problems and improve own work;
- Students to continue work outside the classroom environment.

What information or data did you use to measure progress towards your success criteria?

- Observation outcomes
- Periodic teacher assessment
- Pupils' work

Describe the CPD approaches you used

Students started off with a pre-determined mini-game in order to develop their skills in using the software. This was aided through the use of teacher-led demonstrations to the whole class and additional video files demonstrating how to perform tasks. Help sheets were also made available for reference purposes. The use of all these techniques ensured that all students learning styles were taken into account and addressed. Lesson observations were used in order to question students to demonstrate their underpinning knowledge in relation to the suitability of the game and refinements that could be included to aid improvement.

What CPD materials, research or expertise have you drawn on?

Materials that were used were help files and sheets provided with Game Maker and from a supporting book along with materials from the Local Authority. Some materials were produced by one of the PGCE students, as well as example games produced by a second PGCE student to demonstrate additional capabilities of the program.

Book information - The Game Maker Apprentice by Jacob Habgood and Mark Overmars, ISBN 1-59059-615-3.

Who provided you with support?

- Local authority staff

How were you supported?

Support in relation to the development of the unit in connection to the first stages of the games development was supported by the ICT consultant for the area. Resources for the first stages were completed and training was made available at one of the subject leader development meeting.

Impact

What has been the overall impact on pupil learning?

- Overall students were able to improve their attainment by developing skills and produce a game that would be suitable and fit for purpose;
- Students were able to relate their learning to what they were used to and the majority wanted to work on projects created outside the classroom environment. Making them more independent by researching how to add additonal features to their games and improve their work;
- Students were able to complete work if unable to attend school as the software used was a free download to students at home;
- The unit also addresses a number of different objectives within the new KS3 programme of study and enabled students to develop their thinking and problem solving skills.
- The unit also made students more engaged within the lessons therefore addresses behaviour management strategies and students started to want to learn and became more engaged with the topic rather than the old programme of study.
- The overall progression of the students has improved as more students were interested in the topic and became engrossed within their own and other students learning. Students were able to develop skills in relation to independent learning by taking more responsibility for their own learning and not waiting for teacher support. Collaborative working was developed as students wanted to assist and support their peers. More students attended lunchtime and after school clubs in order to develop and improve their game.
- The overall impact on pupil learning was that attainment was significantly higher than the previous control unit; also higher levels within this unit have been achieved in comparison to expected levels.

Thoughts you think are relevant to overall impact on learning

The overall impact on learning was excellent. I felt that it enabled students to become more independent and take control of their own learning. Students became more engaged and produced a greater amount of work within the lesson, rather than what had been experienced in the previously taught control unit.

Quotes you think are relevant to overall impact on learning

"Students were more motivated and engaged"; it was stated that the unit "sparked imagination and inspired creativity". Also students reported that lessons were more in line with the reality world that they were used to outside the school environment. One student stated that the work was more challenging but as he was enjoying it he did not mind and wanted to learn more. It also raised his own expectations of what he could do and achieve.

Students’ opinions were "more fun". They stated that they now understood the importance of designing work before trying to create the product. They quoted that they recognised the processes of the system life cycle.

Quantitative evidence of impact on pupil learning

- Data comparison of cohorts
- Periodic teacher assessment

Qualitative evidence of impact on pupil learning

- Observation outcomes
- Pupils' work

Describe the evidence of impact on pupil learning

The work contained within the unit has impacted on the real progress that students are making in the department. Comparing data from earlier cohorts the department has demonstrated a significant increase of students working towards and achieving a level 5 or above.

Evidence is also available to demonstrate how students' levels have improved from some of their previous units.

From observing the groups it was noted that students were on task and wanted to constantly improve their game. Behaviour was improved due to the relevance of the topic and started to work independently by trying to solve problems they encountered. Also students were more willing to share their knowledge and experience with other thus working collaboratively.

What has been the impact on teaching?

The impact of the unit was that the culture of learning within the classroom improved as the game developed. Students were more engaged and slightly more competitive in relation to wanting their game to be better than others both within the class and the year group. In order to learn new skills students were more likely to research and try to find a solution to their problems, instead of waiting for the answers to be given. There has been a shift towards working on the task outside school time and using other student to assess and evaluate their work in order to refine it.

Quotes you think are relevant to the impact on teaching

"I was surprised how students had become more independent and tried to solve problems for themselves"

"Students took work home and were able to develop and enhance their learning outside the classroom"

One parent was amazed at the quality of work their son had produced and felt that it was nice to see them enjoying learning.

"Students were able to relate their world to that of education"

Evidence of impact on teaching

- Evidence from observation and monitoring
- Evidence from planning
- Teacher perceptions

Describe the evidence of impact on teaching

Observations made during the study has led to the realisation that students are capable of performing at higher levels, working more independently and embracing new technology as if it was just a part of every day life.

Planning was more structured toward the beginning of the unit, but as students' confidence developed less teacher input and step by step guides were required, as students started to research and solve their own problems by looking up questions and not being reliant on teacher input.

What has been the impact on school organisation and leadership?

Not applicable

Evidence of impact on school organisation and leadership

Not applicable

Summary

What is the crucial thing that made the difference?

Students were more focused, interested and could relate to the work being produced as it was part of the world in which the majority was familiar with. To experience making a game instead of just playing it made them realise the thought, development and time that is spent on creating it and that just playing it is only a small part of the process.

What key resources would people who want to learn from your experience need access to?

In order to start to think of delivering a gaming unit resource that would be needed are as follows: -

What CPD session and resources were particularly useful?

The local ICT consultant developed a set of basic lessons and delivered CPD to the ICT subject leaders in order to introduce them to the software and how to create a basic game. The rest was developed through working through tutorials and reading the book.

If another individual or school was attempting to replicate this work, where would they start and what would the essential elements be?

Download the game maker program and do the introduction lesson. Have a go at working through the resources available on the website and buy the book to make more advanced games.

Supplementary Materials

This report is accompanied in the library by the following supplementary material:

- Catch the clown 1
- Catch the clown 2
- Catch the clown 3
- Catch the clown 4
- Student comments
- 06-07 data shows lower levels for 9.1 and control
- 07-08 data shows higher levels achieved and overall level 5+
- Screenshots from a student's own game
- The student created Cheats in order to mimic a true game
- Catch the clown part 1
- Catch the clown part 2
- Catch the clown part 3
- Catch the clown part 4
- The student also created a page of cheats in order to mimic a true game

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About 'What Works Well'

This case study was originally published as part of the 'What Works Well' section of the National Strategies for Education in England. The National Strategies were professional programmes aiming for improvements in the quality of learning and teaching in schools in England. 'What Works Well' involved teaching practitioners from all phases and areas of education sharing accounts of real developments which had improved learning and teaching, and made a difference to pupil progress. 'What Works Well' case studies were designed to support practice transfer and include sufficient detail and resources to enable others to implement the effective practice described. They were reviewed by experts prior to publication as 'User Generated Content' (UGC) under a licence which encouraged reuse and derivative works, but which precluded commercial use.

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