

Case Study 1

Sandwood Primary School Glasgow City Council

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Introduction

On the 9th of June 2016, Sandwood Primary School in Glasgow was visited to investigate student and teacher experiences using Sumdog.

The school visit was undertaken by Andrew Gallacher who has eight years experience as Mathematics Education Coordinator at the University of Glasgow. He has much experience with all aspects of both primary and secondary education by involvement in Initial Teacher Education but also through policy development at a National Level with Education Scotland, Scottish Survey of Literacy and Numeracy and the Scottish Qualifications Authority.

The format of this visit was a structured one hour discussion with pupils. Initially the visit was to involve a group of six pupils, but due to the pupils' enthusiasm to discuss Sumdog, it was quickly agreed with the class teacher that the discussion would involve all 30 pupils in the Primary 4 class.

After the class discussion there was a 30 minute discussion with the class teacher, Mrs. Lynne Scott, to gather her ideas and thoughts on the following pre-prepared themes:

- What experience do pupils have in using computers for learning?
- What is liked about Sumdog?
- Do pupils enjoy learning maths? Were attitudes changed?
- Do pupils use Sumdog outside the classroom? If so are there any issues?
- What could be improved?

School Demographics

Sandwood Primary School serves the area of Hillington in Glasgow and has a pupil population of 280, with 17 full-time teachers.

70-75% of students at the school live in the 20% most deprived datazones in Scotland and 5-10% of students are from minority ethnic groups (Scottish Index of Multiple Deprivation, 2012).

Mrs. Scott had been a computer programmer before retraining as a primary teacher. This gave her a unique perspective on digital skills and the use of computers in learning.

Experience of Learning with Computers

One of the first questions asked was whether the use of Sumdog had required any changes to practice or classroom arrangement? The answer was that using Sumdog had not resulted in any change to classroom layout as pupils were familiar with using the trolley of laptops in other curricular areas. It had been straight forward to allocate pupils to accessing Sumdog as required.

In terms of learning and teaching there was a blended approach which involved direct teaching, individual work and use of laptops. It was strongly felt that the information provided through Sumdog helped inform the teacher about each individual pupil's progress and understanding of skills covered in class. This allowed the teacher to adapt their teaching to support pupil's learning.

Pupils were keen to highlight several programs they had tried. These were mainly from BBC and GLOW websites and included titles from different curricular areas.

Pupils' experience of these titles was not very positive as they thought that they were boring or lacked progression. The only exception was with coding where the pupils liked the interface and the tasks they were given.

School laptops were very regularly used, when available, for all curricular areas and pupils were confident in their use.

The class teacher was very keen to develop ICT skills across the curriculum for her pupils. This was reflected in their developing skills and confidence in using the laptops as well as various other websites and programs. She also observed that pupils were very confident in helping each other when they encountered problems and they enjoyed sharing experiences about the site.

Sumdog Usage

Overwhelmingly pupils thought that Sumdog was better than any other maths or numeracy program they had used.

The ability to develop a character, or avatar, was very exciting for pupils and they would like to see further features to allow this to become an even more creative undertaking. This was also linked to the reward system of coins. Pupils liked earning coins and gave suggestions as to how they spent them.

“Pupils thought that Sumdog was better than any other maths or numeracy program that they had used”

The option to play against their classmates was also a very positive aspect of Sumdog. Most pupils had used this feature.

Around half of the pupils had been involved in a Sumdog contest where pupils compete against others from Glasgow or around the country. They enjoyed this aspect of the game although not all pupils had realised that it had existed when they had played.

The attitude of parents and carers was very positive and pupils enjoyed discussing progress and what they were learning after spending time on Sumdog. It was also possible to demonstrate the work to adults, which was well received.

The class teacher endorsed the pupil comments and added that the game format was very encouraging for pupils to engage with.

Training

There was a training session organised for teachers at the start of the program and it was the teacher’s opinion that this was very informative.

Pupils had been shown the program by the class teacher. She then demonstrated the features to the class and ensured that all laptops had software updates.

After this initial stage, pupils confirmed they had been very comfortable progressing with Sumdog as they felt it was easy to use. When they did encounter issues this was because initially they were not familiar with the game format. However, pupils confirmed that if they got stuck a classmate or friend would give them advice. Pupils enjoyed this opportunity to help and support each other.

Attitude towards learning maths

Pupils were keen to share that they had been fairly positive about learning maths before using Sumdog. Overwhelming opinion was that maths was more fun using Sumdog than before when most of the work was from textbooks. Some pupils were very vocal that they felt the textbook was boring.

During the visit, pupils decided to have a vote on their favourite subject. This came about as several pupils mentioned that maths had been enjoyable before, but now it had become even more enjoyable due to Sumdog. By show of hands all pupils rated maths as one of their top two favourite subjects to learn and this was regardless of their ability level.

“Overwhelming opinion was that maths was more fun using Sumdog than before when most of the work was from textbooks”

When asked to explain why they enjoyed using Sumdog, the main response was that pupils felt they were progressing with maths and they could see that in the program.

Some pupils liked the competitive element Sumdog offered as they had competition from classmates. The class also had the opportunity to compete as a team in a Glasgow contest which inspired all of the pupils.

During the visit Andrew witnessed the enthusiasm of all the pupils to do well for the class team. They enthusiastically celebrated after checking the class average to find they had been promoted to the contest leaders on the day of the visit.

The class teacher noted that several pupils had been up early in the morning to complete their quota of questions as participating in a school show had reduced their usual Sumdog time in school.

Pupils made it clear that they understood the importance of answering questions correctly on Sumdog in order to progress rather than guessing answers.

The contests are set by Sumdog on a regular basis to help engage pupils. However, challenges can also be set by the class teachers. This was a feature that the class teacher had used but pupils had preferred the centrally organised events.

Pupils can answer up to a thousand questions during the week long Sumdog contests which are open to all classes in the region that use Sumdog. A class average of the correct scores is calculated and then displayed in a contest leader board. This is what the Sandwood pupils were very keen to reach the top of.

At the end of the allotted time the contest winners are determined and prizes awarded for classes and students with the highest scores.

Challenges set by the teacher were seen as a positive idea by pupils, but they wanted a new set of questions and hoped that the rewards could be set differently for this type of challenge.

Sumdog use outwith the classroom

There were a small number of issues getting online outwith the classroom. The main issue was with home wifi connection, which by pupil accounts were not always great. The second issue was with pupils using older technology at home and not having updated the software that was suited for purpose such as Internet Explorer.

Some pupils had used the Sumdog app, but would like it to offer more features. App usage was mainly on smartphones or tablet devices.

“Sumdog is a great website it helps my learning. Games are a great opportunity to help and make learning more fun”

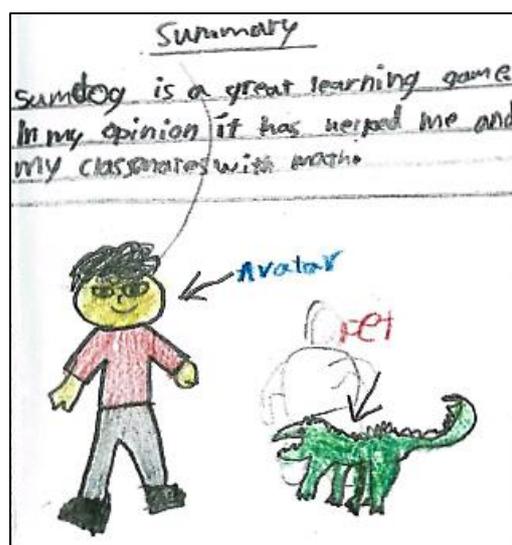
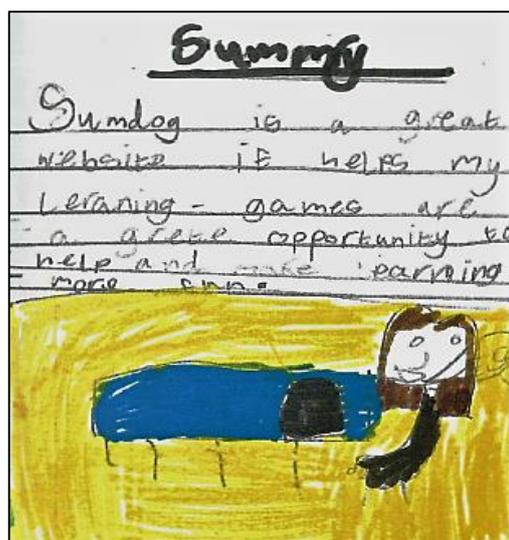
- Abbie, P4, Sandwood Primary

It also came across very clearly from pupils that they felt able to help fellow pupils to rectify some of the access problems. This came about through usage in class and by organised discussion where pupils were able to share knowledge and experience.

Sumdog use outwith the classroom also increased parent and adult awareness of Sumdog. A few of the adults had tried the games and many had mentioned to the class teacher about what they felt were the positive effects of their children using Sumdog. This included seeing the progress pupils were making and that they were enjoying maths.

Some adults were concerned about the length of time spent on computers, but felt this could be moderated. They also preferred that the activity was educational rather than just a gaming format.

The teacher indicated that they would like a greater number of laptops to share within the school. She also indicated that the number of access issues amongst her pupils were very small and she was confident that they had been overcome.



Extracts from student reports on Sumdog produced by Primary 4 students at Sandwood Primary School, Glasgow.

“Our class have been using Sumdog regularly over the last 6 months and I notice an increase in the speed, accuracy and motivation of the mental maths”

- Mrs L. Scott, Sandwood Primary

Suggestions for improvement

Comments from pupils were very imaginative and at times corresponded to the type of game play or characterisation that is prevalent in commercial games on home consoles. This would include more characterisation features as well as an expansion of the playing area to include streets, blocks of flats or houses.

Additional games and adventures were also heavily discussed and although there was no clear consensus the likes of Basketball and Dodgeball were mentioned as possibilities that pupils felt they would enjoy.

Having listened to the pupil comments, their teacher Mrs Scott added that the existing games and format were very popular with pupils.

She was very pleased with the curricular content but had noted there were a couple of gaps relating to geometry and angles as well as coordinates and would like to see this developed to give full curricular coverage. Since this visit Sumdog has added these suggested skills and worked to ensure all relevant primary school level skills are covered on Sumdog.

Advice to new users

Pupils

The advice of pupils to new Sumdog users was that they really need to try the questions and games as they would enjoy them.

They felt that the format was easy to understand and any questions could be supported by classmates.

There were several comments about persevering with the initial diagnostic test which may include some hard questions as the pupils understood this was the program trying to identify their ability level.

Teachers

The class teacher felt very much the same as the pupils in that the format was easy to use. She also thought that new pupils would enjoy using Sumdog after an initial explanation regarding the variety of questions asked during the diagnostic test.

There was no need to rearrange classrooms. Instead it was very possible to incorporate the information on pupil progress across the different topics to inform the teacher about their own teaching and planning.

“Sumdog is a great learning game, in my opinion it has helped me and my classmates with maths”

- Alex, P4, Sandwood Primary

Summary

Pupils were very keen to use computers to learn mathematics.

The classroom teacher liked the additional information on progress and support on topics that Sumdog offered. She also used this information to inform her planning and teaching.

Pupils enjoyed the variety of questions, the ability to track their progress, and ability to share this with classmates as well as parents and carers.

Pupils would like to see even more scenarios to challenge them and further personalisation of their online characters.

Most pupils were already positive about maths but the use of Sumdog had promoted this attitude so that it was now rated as either first or second favourite subject.

Outwith the classroom pupils were very keen to use Sumdog whether it was for homework or the contests.

There were minor issues relating to internet access via home wifi and software updates that collectively pupils managed to overcome by sharing advice.

“I think Sumdog is a fantastic tool for me as a teacher to track student progress. I love to set up assessments prior to beginning a new numeracy topic to assess what the students already know to inform my planning. In addition, during and at the end to ensure my teaching is effective and my students are progressing. The children enjoy participating in contests at class, city and national levels.”

- Mrs L. Scott, Sandwood Primary

References

Scottish Index of Multiple Deprivation, 2012, full dataset available here: <http://www.gov.scot/Topics/Statistics/Browse/School-Education/Datasets/contactdetails>