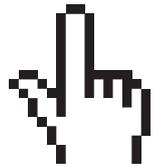


Using The Learning Federation's learning objects in the classroom



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draw upon the experiences of teachers using learning objects for the first time to demonstrate their potential for enhancing the quality of our teaching and student learning.

During Term 3 2004, 19 teachers and more than 400 students in six Catholic parish primary schools in the Archdiocese of Melbourne trialled the new mathematics and numeracy “learning objects” from The Learning Federation (TLF). Learning objects are small, reusable digital resources that can be used with a web browser. Teachers in the trial used learning objects related to fractions, addition, subtraction and area.

TLF is a project jointly funded by the Australian Government, the states and territories and New Zealand with the aim of producing high quality, interactive multimedia curriculum content that supports student learning. The online content is being made freely available to all state, independent and catholic schools in Australia and New Zealand. Based on the latest research in mathematics education and pedagogy, the resources focus on the parts of mathematics that are often the most difficult for students to learn and for teachers to teach.

The teachers' perspective

The following vignette is drawn from the experiences of the teachers in the trial who used learning objects from the Design briefs series. The Design briefs learning objects focus on providing a context for understanding fractions: common, decimal and percentage.

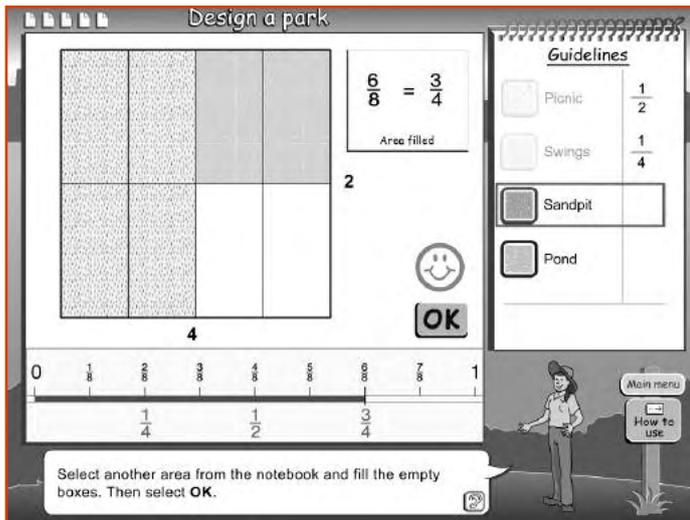


Figure 1. Design a park.

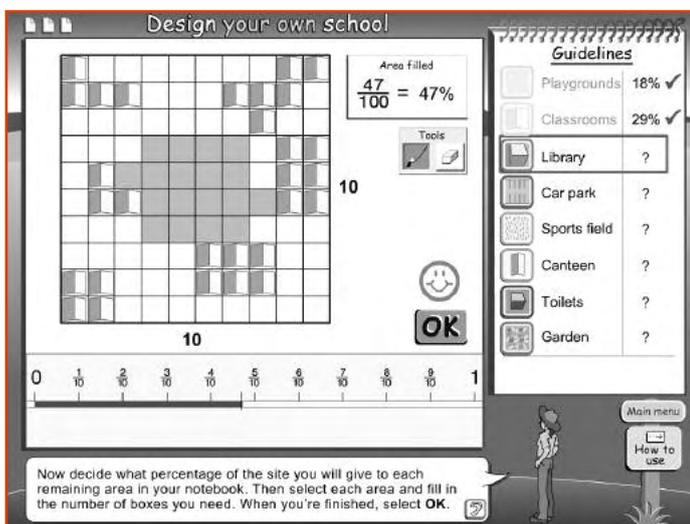


Figure 2. Design your own school.

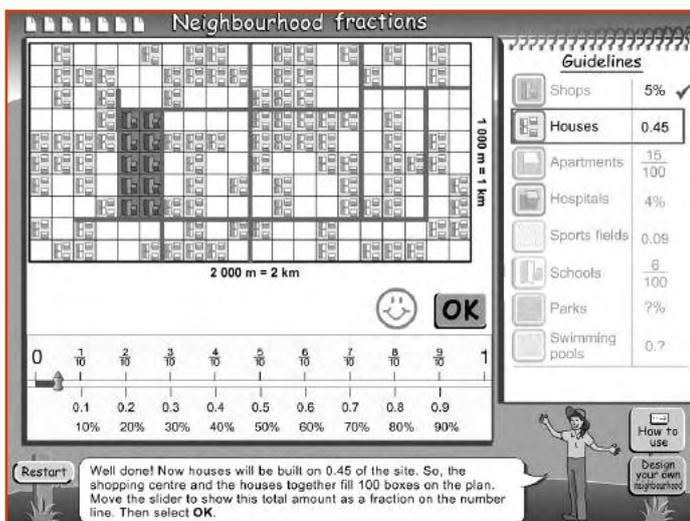


Figure 3. Neighbourhood fractions.

Focus on common fractions

- Design a park
- Design your own park
- Park fractions

Focus on common fractions and percentages

- Design a school
- Design your own school
- Playground percentages

Focus on common fractions, decimal fractions, percentages

- Design a neighbourhood
- Design a city
- Design a farm
- Neighbourhood fractions

My task for the trial was to use The Learning Federation “Design briefs” learning objects to assist my Year 5 students in their learning of fractions. During our weekly professional learning team (PLT) meeting our e-learning coordinator had shown us how to access the objects from myclasses. This was OK as I used my myclasses portal page everyday with students. At the meeting I discovered that there were 10 learning objects available in the set to choose from and that they covered Years 5–8. Was I supposed to use them all? How would I choose? What would I do with them? How would I use them with all the other learning tasks we have designed for teaching fractions? How will I know whether the students have learned anything using the learning objects?

First I had to understand what these learning objects were and how to use them myself. I know my students love to use computers and these things might be really helpful. As I am teaching Year 5, I decided to explore the common fractions set first. This set comprised three learning objects: Design a park, Design your own park and Park fractions.

I opened *Design a park*. It seemed simple enough, I just had to follow the instructions and it guided me through a selection of different fractions. The objects use a pictorial representation, written fractions and a number line and I had to represent a fraction in all three ways (I thought this might be especially good for John and Peter who both have trouble seeing fractions on a number line). I was a bit concerned with the amount of text involved in the instructions. Would my

students all be able to read the instructions? The main thing I learned was to follow the Guidelines in the Notebook. I really liked how hints are given if mistakes are made and that students know when they are correct.

Next I tried Design your own park. I discovered that, whereas in Design a park only one scenario is given, in Design your own park I could put in my own numbers and this time there were several different design options. Perhaps I could use the digital projector to demonstrate the simple version to the whole class first and let them work on Design your own park in pairs during rotational activities? Because of the different options the students could work at their own pace. I also noticed there is help for the weaker students with the option to go to the Times Tables Chart. Gold stars are allocated when equivalent fractions are identified — this is a clever motivational idea. There is so much in these, I am glad I practised before using them with the kids. I later found out that Park Fractions is an aggregated learning object containing both Design a park and Design your own park.

Susan, the other Year 5 teacher, and I had a planning meeting after school to discuss how we might use the learning objects. Luckily, where I had looked at the Park set, Susan had explored the School set. We both agreed that the first object in both sets could be used as a teaching object. Susan also pointed out the ear-shaped button that produced a voice recording of

the text boxes. This would be excellent for those children who had difficulty reading the instructions. Why had I not seen that?

We then planned how we were going to integrate the learning objects into our work on fractions, decimals and percentages. We normally use a range of activities to teach these concepts and we agreed that the learning object would complement them. These other activities included:

- using blocks or other construction materials to build schools, parks, farms, etc.;
- using worksheets on which children coloured different parts of the whole;
- making clay representations of the fractions/decimals/percentages;
- fraction/decimal concentration;
- fraction blocks;
- fraction/decimal dominoes.

We had some students who already understood percentages as fractions quite well, so we viewed the Neighbourhood fractions series of learning objects. We quickly realised the extra complexity (decimals) built into these learning objects would challenge our more advanced students.

It was great to be able to work with Susan as we sorted out how to use the new resources. Susan suggested we ask students to use the Print option to print out their completed designs. These printouts would be really valuable when they talked about what they had learned in the whole class discussions. As each student's print out would be different there would be many opportunities to reinforce the concepts with lots of mathematical language.

So what happened in the classroom when we introduced the learning objects? The demonstration sessions went well. Students really liked the colourful graphics and the ability to visualise fractions in different ways. However, when the students used the objects on the computers, sometimes in pairs, sometimes individually, we could not really tell what they were actually getting out of it. Most were enjoying the activities, were very engaged and on task, but some seemed to be just following the steps and working out the items as needed. We wanted more evidence of learning.

In our PLT meeting another Year 5 teacher showed

us a worksheet he had prepared which led students through the object and required them to write down their observations progressively. Another teacher suggested the students complete a visual organiser DWI (Discoveries, Wonderings, Ideas) to show what they had gained from the learning object. This proved to be fantastic in my class. I had students who I thought knew concepts but listed them as “discoveries”; I had some very interesting “wonderings” come from a range of abilities and also some great “ideas” for how we could use these activities in our classroom. I also found student’s metacognitive reflection on learning and being able to link the concepts explored in all the activities: on the computer and offline the hands-on that comes with whole class discussion was so important.

Would I use these learning objects again? Most certainly, I did not realise how good they were until I saw students actually using them. However, I have learned that to get the most out of them, like any resource, I really have to know what they can do. It is important to match the level of difficulty in a learning object with the students’ abilities and I need to carefully structure other activities to ensure learning. Leaving the kids alone on the computer does not necessarily do this!

Overall, I found the experience of using the learning objects an enriching one. The students loved them. These two comments are representative of what the students had to say:

I think this learning object [Design a neighbourhood] was a good idea because it helped me work out fractions. I like how it told you if the answer was right or wrong.

I think this learning procedure was a really good experience for me because i [sic] enjoyed the pictures a lot and when i [sic] got the answer wrong it helped me to get it right and i [sic] found it good to have a friend beside me!

The full report of the trial Learning by Design: TLF Mathematics and numeracy learning objects in classroom contexts in the Catholic Archdiocese of Melbourne can be accessed at

http://www.thelearningfederation.edu.au/tlf2/sitefiles/images/brochures/learning_by_design.pdf

For further information about The Learning Federation initiative, descriptions of the online content available for mathematics and numeracy and how to access the digital resources, visit the website: www.thelearningfederation.edu.au.

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