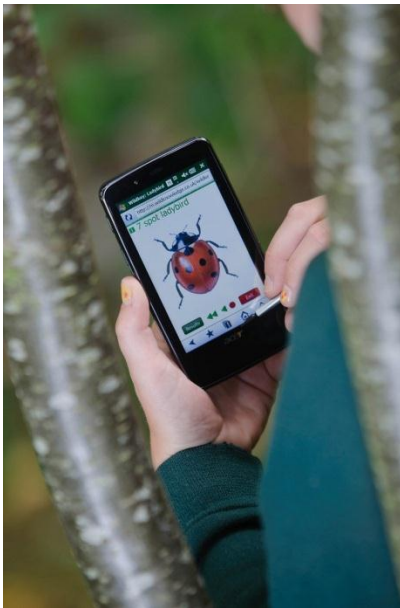


Aim of the digital learning challenge

The partnership of Wolverhampton LA Learning Technologies Team and WildKnowledge sought to enable a centrally managed city wide 'authentic' digital learning challenge bringing together a number of innovative technologies through the learning platform. As Wolverhampton schools work towards embedding their learning platforms into teaching and learning programmes the Learning Technologies Team attempted their first city-wide collaboration project (possibly the first project of its kind anywhere in the country!) During the months of June and July 2010 schools were invited to take part in a Ladybird survey using their learning platform, a branching database, pupil devices and mobile GPS enabled technologies to contribute to the National Harlequin Ladybird Survey. Put quite simply; *could learners across the city be mobilised using technology to monitor the spread of the dreaded Harlequin Ladybird?*



Background



WildKnowledge and Wolverhampton LA have a proven track record in delivering innovative mobile learning solutions which have had significant impact on the education community. Past collaboration has included the ground-breaking use of GPS enabled mobile devices to deliver technology rich field trip experiences such as the location based learning of the 'Tenby Project'. This work was highlighted in Ministerial and National Agency keynote speeches as exemplary use of technology.

The award-winning Wolverhampton LA Learning Technologies Team has been recognised as an innovator in the development of learning platform technologies with over 98% of the city primary schools using a learning platform, compared to the National Picture of 67% (BESA review 2009). The Wolverhampton Learning2Go initiative has received national and international recognition for the lead it has given to the development of mobile learning in the schools' sector. It is currently the largest initiative of its type with over six years of proven delivery of innovation. Wolverhampton's current e-Strategy sets out a clear vision to place learners *"At the heart of an e-enabled system."* With *"ICT integrated into everything we do, both in and out of the classroom."* The city-wide digital learning challenge seeks to make real that vision.

WildKnowledge is a leading specialist in educational, location-based software for mobile devices. Since WildKnowledge's inception six years ago as a research project at Oxford Brookes University, its mission has been to create software which maximises the potential of using mobile technologies in data collation. Their suite of applications (*WildKey*, *WildMap*, *WildForm* and *WildImage*) provide a unique digital toolkit for fieldwork and outdoor learning - facilitating multimedia data collection and resource creation. The applications are used by, amongst others, schools, universities, geographers, museums, ecologists and environmental organisations.

Definition

“Mobile Learning is a term used to define the type of learning that takes place when the learner has some kind of mobile computer and can make use of the device, its connectivity, location awareness tools and content to learn at a time and place of the learner’s choosing, having available the full range of resources and capability that ICT offers in the best classroom – at all times and in all places.” Wolverhampton Learning2go (Perry) www.learning2go.org.uk

Learning Challenge Key Questions

The challenge sought to answer the following key pedagogical, organisational and technological questions over the summer term of 2010:

- Can the common learning platform that exists across primary schools in Wolverhampton be used to provide a ‘city wide’ collaborative learning experience encouraging the participation of up to 50% of primary schools?
- How easily can a ‘city wide’ collaboration page be produced and rolled out to all schools?
- How can existing CPD frameworks be used to train staff for an integrated technology challenge?
- Can a ‘real and authentic’ task encourage the uptake of the database aspect of ICT capability?
- Could the challenge be used to engage schools in the use of learning platform tools such as Blogs?
- Can the use of GPS and the facility to record finds on Google Maps be used to develop learners understanding of the spatial representation of data?
- Does the use of mobile device technology – and the WildKey software - support (non-specialist) teachers and pupils in participating in scientific fieldwork?
- Can learners be encouraged, in their own time, to be part an extended learning challenge independent of school?
- Does the provision of a ‘class set’ of mobile devices facilitate greater participation in mobile learning?
- Could the following learning outcomes be delivered?
 - ◆ To be able to use a branching database to make decisions in order to identify insect species
 - ◆ To be able to use the features of an online collaborative learning space
 - ◆ To understand the differences between beetle species
 - ◆ To understand the relationship between beetle species and different habitats
 - ◆ To understand the concept of location on a map
 - ◆ To understand that GPS is able to pinpoint their location
 - ◆ To understand the value of their contribution within a national community



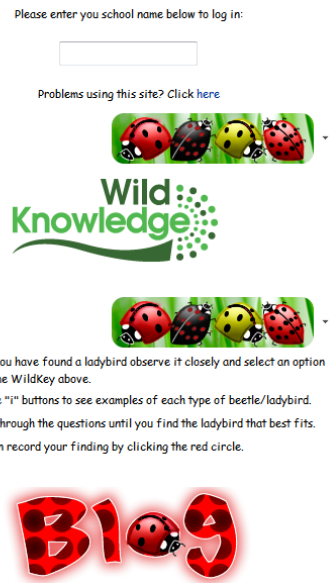
Building Blocks for the Challenge



Learning Platform Collaboration Site



As all Wolverhampton primary schools share a common Microsoft SharePoint based learning platform, this has many advantages in terms of cross-school, city-wide collaboration. Due to the shared architecture it is possible to enable permissions to be set for all learners and teachers from across the entire school estate to have access to a centrally hosted learning platform page and associated resources. Firstly a 'funky' ladybird based graphical theme was created which would motivate learners to return to the site. Then bespoke document libraries were created which contained 'How to' guides, information on mobile devices and information on the ladybirds found in the WildKey. Added onto the page were custom built 'Web parts' which enabled learners to select their school from a pre-populated list and then work on the WildKey 'live' within the site. Online blog tools were also integrated into the project. Learners could view the progress of the ladybird "finds" via an embedded Google Map with 'find' locations generated automatically by the WildKnowledge software.



Integrating WildKnowledge Software

WildKey, the WildKnowledge application used in this digital learning challenge, is a set of branching databases that enable users to compare the species they find with a potential 'match' (the term 'key' refers to the scientific use of the term which denotes a systematic tabular grouping of a set of organisms to facilitate identification). The 'ladybirds and other colourful beetles' title was used in this digital learning challenge. If the user decides the ladybird they have found matches

the ladybird picture on the screen, they can then record their finding. In addition to standard recording details (such as name, date, species), WildKey allows the user (depending on device functionality) to record details such as a GPS position and photograph of the species. Such information has, in the past, been collected via pen, paper and numerous devices such as camera and GPS unit but, via WildKey, all this data is immediately assimilated for upload to a central, secure, web-based portal. Via the portal and its Google Maps API, students and teachers are able to view the exact location of their findings.

WildKnowledge software operates via web browsers and was readily incorporated into the learning platform. This allowed participating schools that did not have mobile devices but had PCs or laptops to use the key. Guidance about ladybird care was given to teachers during the CPD sessions.



Web browsers ordinarily require constant internet connection to function and this could potentially be a problem for users with mobile devices who may not, for example, have SIM cards for data-roaming, or who may be working in areas outside a 3G signal. However, WildKnowledge software incorporates Google technology that allows the applications to be stored 'offline'. A wireless connection is necessary, initially to download the applications and finally to upload collected data, but in the interim the applications can be used wherever required. The Windows Mobile devices used in this project were set up for offline function and data was uploaded when the devices were back in range of the wireless.

There are over 40 native ladybird species in the UK. In 2004, a new ladybird, the harlequin (*Harmonia axyridis*) arrived in the southeast of England and has since been spreading rapidly north and west. Harlequins eat the eggs and larvae of other ladybird species and out compete them for food. Over the past few years, scientists have involved the public in recording sightings of harlequin ladybirds in order to monitor populations. This provides an excellent opportunity for young people to get involved in 'real' scientific research. The 'Ladybirds and other common beetles' WildKey application includes the harlequin ladybird and was therefore ideal to be used to engage learners in identifying and recording this species.

CPD and Challenge Launch

The challenge was launched during the summer term 2010 via an announcement on 'Engage' which is the common portal for all schools in Wolverhampton LA.



What is "Ladybird Spotting"?

Experts need your school to help find and locate a new troublesome ladybird called the Harlequin.

The Harlequin Ladybird first arrived in the UK in summer 2004. Since arriving here the Harlequin has spread from the south-east towards Wolverhampton and may be found around your school grounds and in your gardens.

We need your school to find, identify and record ladybirds in the locality so the experts can see where the Harlequin Ladybirds are living.

Schools were then encouraged to join in the challenge via the Wolverhampton e-CPD sessions. For over five years Wolverhampton LA has offered a personalised approach to CPD for teaching and support staff to enable them to embed

technology into teaching and learning in their schools. Grown out of the 'Hands on Support' initiative, the Wolverhampton e-CPD offers six face to face half day development sessions for a selected member of staff during the academic year. This approach builds up a level of technological capability amongst staff at a school level. The ladybird project was introduced during session six in the last session of academic year 2009-10. In this way lead members of staff in 64 schools were individually introduced to the project this resulted in 34 of those schools taking part. Schools were asked to complete a request form so that the LA mobile learning consultant and senior technical expert could organise an effective system for distributing the devices and enabling all who wanted to take part to engage during their preferred time. A loan agreement was completed by each school to comply with insurance requirements. A three way set of agreed principles was also outlined.

Wolverhampton City Council will

- Provide devices, software, basic training and support to the learning establishment.

School will

- Provide training in the use of the devices for learners.
- Ensure that quality learning opportunities are provided for learners associated with the ladybird project.
- Monitor the use and effectiveness of the devices as an enhancement to learning.

Learners will:

- Use their devices responsibly.
- Report any faults or problems to the school.
- Follow the safety rules within our Internet policy.
- Take great care with the devices.
- Give opinions on what works well and what needs improving.

How can I get involved?

Your school can request to loan 5 Acer Smartphones for one week to take part in the survey.

The mobility of the device, combined with the Wild Knowledge software allows your pupils to identify and record ladybirds around your school grounds in real-time.

To book a set of Acer Smartphones simply fill this form in and return it to xxxxxxxx@wolverhampton.gov.uk



Week commencing required (please tick one only):

21st June [] 28th June [] 05th July [] 12th July [] Don't Mind []

School Name: _____ Contact Name: _____

Signed: _____ Date: _____

*Please note; by loaning these devices you agree to the reverse terms and conditions.

Mobile Devices

Following six years of experience with the Learning2Go project, our preferred device in 2010 is the Acer F900 Windows Mobile Smartphone. The Acer F900 was chosen as it supports GPS and WiFi, as well as encompassing a good quality camera - it has also proven to be very robust in the hands of learners. Most of the devices involved in the Learning2Go project are owned and managed by established project schools as part of their mobile learning provision. In order to promote mobile learning to a wider number of schools the LA team procured a set of 30 loan devices to stimulate interest and allow schools to sample the benefits and excitement of mobile learning for the first time. It is this loan set which was used for the ladybird challenge. A key part of the successful implementation of Wolverhampton's mobile learning initiative has been thorough preparation of the technical aspects of the devices so that teachers and learners can get straight on to the activities. To manage the installation of the software on all devices a single device was built to specification and tested extensively. Once it was proven to be fit for purpose the remaining devices were cloned – a technique which means devices can be built relatively simply and quickly. Cloning removes the need to install software packages and change settings separately on every single device. The 30 imaged devices were then divided into clusters of 6 and these were loaned to schools for a one week period. The project held 4 devices back centrally which were used as 'spares' in the unlikely event of device-based issues. This precaution ensured continuity of the learning experience, given high level of learner engagement and enthusiasm generated during a mobile learning activity.

How the Challenge Worked

The challenge provided learners with the opportunity to participate in an authentic, nationwide survey that is of high ecological significance. It also provided the learners with the chance to work collaboratively with others on a city wide platform. The promotion of the challenge through the authority's e-CPD sessions enabled the booking of the devices to

take place in a convenient way that ensured staff were prepared and fully trained to use the devices and software, particularly the GPS facility.

For convenience, the 30 devices were divided into 6 lidded boxes and at the start of each week schools received a box complete with devices, chargers, waterproof cases (just in case) and a 'quick start' guide. Schools then undertook their research over the course of the week. The schools then returned their boxes to a central place ready for distribution the following week. It was agreed with the schools that they would ensure that devices were returned fully charged so that they were ready for the following week. Support was provided by the LA Consultant who provided direct class based support to teachers if requested to do so. This level of support was more frequently asked for by less technically confident teachers. In terms of the support requested, teachers were grouped according to their confidence with the least confident asking for help with the challenge and the more confident happy to undertake the challenge without LA support. Where support was used it was provided in a way that supported the teacher to deliver the challenge themselves (as outlined below).

A typical start to the challenge (In a school) began with an explanation to learners and staff about the authentic importance of the project nationally and their part in it. Learners were then given instructions on how to collect their finds without damaging them and how to care for them once found. Many learners asked if the Harlequin should be killed if they found one! They were given an understanding of the adaption of the food chain that had taken place since the appearance of the Harlequin and that as a result, such action was unnecessary.

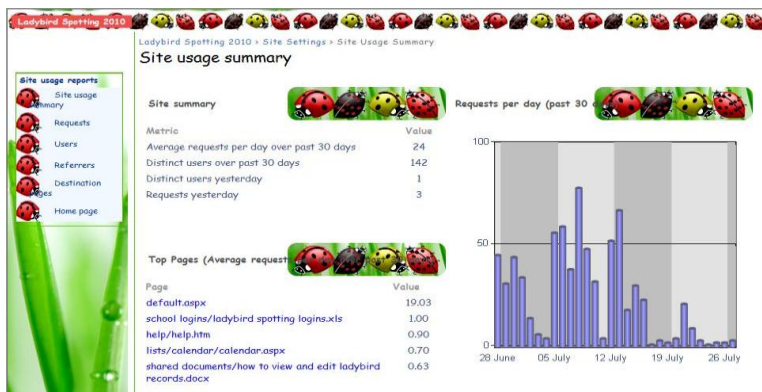
Staff and pupils were then given a working understanding of the use of the mobile device, its features and the WildKnowledge software. Learners then undertook a practice activity to ensure they were familiar with the major features and functions. The learners then went out into the field and searched for ladybirds and other beetles, which they then either used the identification key on the handheld to classify and identify, or took the "finds" back to the classroom to enter in on their laptops.

Once the discovery part of the challenge was complete, the learners returned to the classroom and either uploaded their finds directly from the device or entered them in through the learning platform collaboration page. The whole class was then able to look at their results on the Wild Knowledge website and find their locations on the Google Map. This use of a visual representation of their work was extremely motivational. It contributed in no small part to the subsequent tremendous enthusiasm of the learners and staff to upload their finds independently from home and from holiday locations around the UK outside the school day.

Evaluation and outcomes

This evaluation is by no means a full scale academic study but is a series of reflections from participating LA staff and a collection of available statistics from the monitoring system of the learning platform. The evaluation statements and evidence have been directly mapped to the "Learning Challenge Key Questions" detailed earlier in this document.

- *Can the common learning platform that exists across primary schools in Wolverhampton be used to provide a 'city wide' collaborative learning experience encouraging the participation of up to 50% of primary schools?*



Out of 64 schools that received an in depth introduction to the challenge; 34 schools took part with over 185 'finds' registered (representing 53%). This can be regarded as a major uptake considering that this was the first whole city collaboration of its kind and it included the perceived complexity of using mobile devices (the majority of which had to be loaned from the LA stock)

- *How easily can a “City Wide” collaboration page be produced and rolled out to all schools?*

As all of the Wolverhampton Primary schools are on the same Microsoft SharePoint platform, this proved to be relatively easy. A shared collaboration page was set up and links were placed on each schools’ pupil shared area. This would have been much more difficult (if not impossible) if schools were on a multitude of individual platform types. The main overhead was the setup and design work which was carried out by the Learning Platform Support officer (member of the e-Services Learning Technologies team). This took the equivalent of two days’ work. Wild Knowledge worked in partnership to customise their software to run within the site.

- *How can existing CPD frameworks be used to train staff for such an integrated technology challenge?*

This first ‘City Wide’ challenge was launched during the last of six sessions of e-CPD during the 2009 -2010 academic year. The delivery of the LA e-CPD sessions is by one member of the LA Learning Technologies Team and by this time in the term an effective and trusting working relationship had been built up with lead teachers in each participating school. It is felt that this personal approach to encouraging involvement in the project was crucial. This is borne out by the fact that there was no participation from primary schools that did not attend e-CPD. The main LA central portal ‘Engage’ was also used to publicise the challenge. This mainly had the effect of reminding schools that it was happening, there were no enquiries from non e-CPD schools via this route.

- *Can a “Real and Authentic” task encourage the uptake of the database aspect of ICT capability?*

The authenticity of this project (aligning Wolverhampton finds to a National survey) ensured that schools embraced the activity and could clearly see the application and relevance of database software to a ‘real life’ situation. This demonstrates that where a project has authenticity schools and learners feel that their contribution is valued.

- *Could the challenge be used to engage schools in the use of Learning Platform Tools such as Blogs?*

The dearth of ladybirds meant that some schools did not experience the enjoyment of contributing to a real and authentic task. As a result the ‘Ladyblog’ was introduced. The blogging aspect of the challenge proved popular with schools, particularly those who found a dearth of ladybirds. Were this project to be replicated, a blog should be included from the beginning to allow all participants to contribute as useful data can be collected even when the subject of the research is absent. Indeed the absence of the native ladybird was as important to the research as the presence of the harlequin ladybird.

- *Can the use of GPS and the facility to record finds on Google Maps be used to develop learners understanding of the Spatial representation of data*

A popular aspect of the software was the way that it used GPS to pinpoint finds. The visual representation of ‘finds’ reinforced the collaboration aspect of the challenge. Learners took great pleasure from seeing their finds on a map and would regularly add finds when they were at home and on holiday. Learners saw the number of ‘finds’ grow over the period of the challenge.

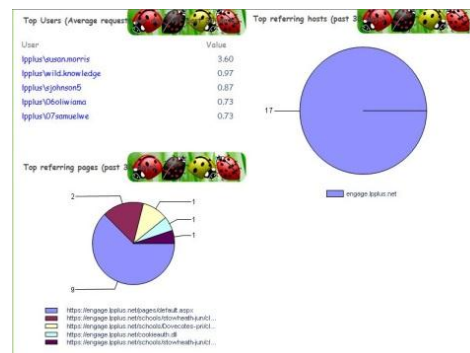


- *Does the use of mobile device technology – and the WildKey software - support (non-specialist) teachers and pupils in participating in scientific fieldwork?*

In practice, the Acer devices, Wild Knowledge software and the GPS connectivity proved to be extremely robust, easy to use and very reliable. Some schools asked for 'in school' support with the challenge and this generally reflected the school's overall e-confidence. Even 'novice' teachers found the Windows Mobile devices easy to use and the WildKnowledge software intuitive to use. Learners and staff reflected that they were able to engage with database work without really realising it! Organising the challenge through e-CPD ensured that schools were able to maximise their engagement in this scientific fieldwork.

- *Can learners be encouraged, in their own time, to be part of an extended learning challenge independent of school?*

The project very successfully demonstrated that learners will enthusiastically contribute to a challenge outside the normal learning day. Indeed many learners continued to contribute long after the project had come to an end. Learners and staff demonstrated enthusiasm by uploading their finds independently from home and from holiday locations around the UK outside the school day (This is evidenced in the site usage statistics). All participating schools received a certificate for their participation and the most successful schools were nominated for a Wolverhampton Oscar in the annual Wolverhampton Digital Work Celebration event: The WOSCARS.



- *Does the provision of a "Class set" of mobile devices facilitate greater participation in mobile learning?*

16 new schools were introduced to Mobile Learning through their participation in the challenge. This equates to 50% of the schools that took part. The collaboration activity also consolidated the use of devices in the schools that are regular users of mobile technology. The enthusiasm generated amongst learners and staff has meant that follow up requests for extended use of mobile devices have been received. Two 'new' schools are currently purchasing their own devices.



- *Could the following learning outcomes be delivered?*
 - *To be able to use a branching database to make decisions in order to identify insect species*
 - *To be able to use the features of an online collaborative learning space*
 - *To understand the differences between beetle species*
 - *To understand the relationship between beetle species and different habitats*
 - *To understand the concept of location on a map*
 - *To understand that GPS is able to pinpoint their location*
 - *To understand the value of their contribution within a national community*

Feedback from visiting schools during the project would indicate that the majority of learners were able articulate their understanding of the learning outcomes detailed above. Of particular note was the ease with which the learners used the branching database given that with traditional ICT teaching that this is often regarded as a difficult concept to teach. The learners' knowledge of habitats and species was greatly enhanced, with some encouraged to complete further research and 'log' other beetle finds.

Wild Knowledge

Welcome **castlecroft** My Ac

WildKey WildMap WildForm Wildimage Commu

Ladybirds and Colourful Beetles results

Map (Google) Map Excel (CSV) Export Search Search Chart Chart << previous 1 2 3 4 5

	User	Verified	What	When	Where	Grid.Ref	Quantity	Who
<input type="checkbox"/>	oakm	No	Harlequin ladybird	21/07/2010	Oak Meadow	52.493792, -3.002786	1	M...
<input type="checkbox"/>	stjps	No	Harlequin melanic ladybird	21/07/2010	stjjudes	52.588585, -2.154565	1	dy...
<input type="checkbox"/>	stjps	No	Harlequin melanic ladybird	21/07/2010	stjjudes	52.588585, -2.154565	1	dy...
<input type="checkbox"/>	gps2	No	2 spot ladybird	19/07/2010	wv14 6eh	52.575505, -2.088783	1	jo...
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Future developments

The successful outcomes of the 'Challenge' have led to requests from schools to develop more opportunities to collaborate in similar projects which combine the use of the learning platform, mobile devices and location based activities. There are a number of such collaboration projects under consideration by the Wolverhampton learning technologies team. One such project is 'The Reading Cloud' which combines the learning platform and mobile elements. There is also an intended project in association with WildKnowledge, which involves learning in the tracking and monitoring of wild birds. Discussions will need to take place to determine the sustainability models of such collaboration projects, with realistic costs being shared between schools.



Conclusions

This first 'City Wide' digital learning challenge has proved to be very successful and will lead to the further development of similar challenges. One of the core ingredients of the success has been the partnership between a Local Authority team (Wolverhampton- Learning Technologies) and a key commercial software provider (WildKnowledge). This partnership has been essential in order to overcome technical innovations and to make the complex technology easy to use from a teaching and learning perspective.

The project has been able to integrate three innovative technologies: the learning platform, mobile devices and GPS enabled software. This had been done in such a way as to encourage cross school collaboration on an authentic project.

Schools and learners have reflected on the increased motivation and enthusiasm to engage in learning with technology both in and beyond school hours. The following quotes from a variety of participants provide a testimony to the success of this exciting collaborative project.

'Although we didn't find any ladybirds, we enjoyed the hunt. Mrs Thomas said if it was down to how much we'd tried, then we'd win the prize. Even though we didn't find any ladybirds, we enjoyed finding earwigs, spiders, a caterpillar and woodlice! Some creatures were just too fast for us to catch them! If we have some better weather, then we'll have a look in our gardens at home.' Years 3 and 4 St Bartholomew's School.

We thought we would never find a ladybird even though we looked and looked really carefully. At last we found one! BUT, it was a Harlequin! We also found a spider and a snail. We had fun. We recorded our findings on a little computer called a PDA. We thought it was amazing to use the little computer. Year 2 Edward the Elder School.

The afternoon nursery learners at Hill Avenue were excited to find out what was in the big silver case that arrived today! When the devices were produced one child said it was a 'phone like dads!' We took to the 'big playground' like Dora the Explorer, with pots and nets! Then looked and looked and found.... nothing! But the interest shown and language used made this a wonderful experience! Especially when one little boy (with EAL) said 'I think they all gone shopping!' We returned to the nursery playground and managed to find a 'big eyed ground beetle'. Then we saw the school on the IWB! Let's hope the ladybirds have returned from their shopping trip for the morning nursery tomorrow! Nursery Learners Hill Avenue School

Year 1 went out into the wooded area and - guess what? There was not a single ladybird! We did find that they had lots and lots of Ermine Moths. These insects are fascinating. They are very small and white, but they spin huge webs to catch their prey. I think that's where all the ladybirds might have gone! We wrote about our findings on the Lady Blog. Bantock Primary School



Wolverhampton Learning Technologies Team Autumn 2010