



SERVICES to SCHOOLS

ATHENA Videoconference Service

MATHS CHALLENGES

This article provides information about the ATHENA Cross-curricular Maths Challenges.

These challenges have a strong mathematical bias, but also include cross-curricular links to other core and foundation curriculum areas. For instance, each challenge includes a Literacy activity, a Design Technology extension and ICT components.

As well as the videoconference element, all sessions include extensive use of, and materials for, the Interactive Whiteboard, the internet, ICT applications, prepared worksheets, direct teaching and lesson plans.

Between videoconference sessions, pupils are set extension activities and tasks to complete in preparation for the next connection.

These materials have been extensively trailed on students and schools and have been the basis for showcase lessons at BETT for the past three years, as well as a number of international conferences.

The Challenges

ATHENA currently offers three Extended Maths Challenges

1) The Milton Mansion Mystery

2) The Worm Eater

3) Mrs Beatnik

Each challenge consists of 2 videoconference links lasting 45 minutes each and are designed to be appropriate for pupils aged between 9 and 14 . The videoconference link involves characters in role setting the context for the mathematical challenges, engaging the students and adding some humour and fun to the activities. Alongside the leading character is our experienced Advanced Skills maths teacher who talks the students through the problems, interacts with the students and makes the learning objectives explicit. She also sets the timescale and expectations for the group.

A further videoconference session is supplied which is a planning and orientation session for teaching staff. This half hour session happens before any of the programs are rolled out.

Each session uses additional materials designed for the program. These include Web based background material, Interactive Whiteboard materials, electronic worksheets as well as the direct teaching taking place over the videoconference.

In between session, students are given additional challenges and content to explore.

These materials have been extensively trailed on students and schools and have been the basis for showcase lessons at BETT for the past three years, as well as a number of international conferences.

The curriculum content of the Maths challenges

The Milton Mansion Mystery

Real life context:- A precious diamond has been stolen from the famous Milton Mansion. There are six suspects, a number of alibis, a number of red herrings and the thief is allowed to lie. Pupils meet the renowned (but slightly hapless) detective Sherbert Holmes who enlists their help in solving the mystery. The pupils are invited to tackle a number of challenges in order to whittle down the suspect list to one. In the second videoconference, working in groups, pupils take on the character of the suspects and prepare a defence for each suspect.

Curriculum content:- Data Handling - graphing and sorting data. Metric Measure, Scale and Time. The pupils are involved in developing their deduction, reasoning and communication skills. Extension activities include writing a newspaper report, exploring motives and a design technology challenge.

The Worm Eater

Real life context:- A parcel unexpectedly arrives in the ATHENA office. The pupils persuade the ATHENA staff to open the parcel. Inside is a dishevelled crow with a message in his beak..... The pupils race against the clock to find solutions to the challenge of finding the correct number of worms to feed the crow, while at the same time trying to track down Professor Dribble who has left the crow in their care while he travels to a conference for scientific boffins in Brazil. In the second videoconference, working in groups, pupils enter 'The Crows Den' in order to persuade a panel of successful business entrepreneurs to back the making and marketing of their own invention.

Curriculum content:- Two and three step calculations. Area, Multiplication, compound shapes, perimeter and percentages. Skimming and scanning reading development and communication skills. Extension activities include formal letter writing and a design technology challenge.

Mrs Beatnik

Real life context:- Pupils are introduced the celebrity chef, Mrs Beatnik. While being a world renowned cook, Mrs B admits to being a bit stuck when it comes to maths. So she quickly enlists the help of the pupils to help her prepare the ingredients for the Greatest Lasagne in the World. In the second videoconference, working in groups, pupils prepare their own

nutritious school meal complete with costing and strategies for ensuring pupils the length and breadth of the country choose to eat it.

Curriculum content:- Money calculations, ration and proportion, liquid measures and mass. The Balance of Healthy Eating, nutritional standards, communication and marketing skill development. Extension activities include instructional writing and a design technology challenge.

- All the activities are interactive, with students developing their thinking, presentation and communication skills.
- All the activities present 'real life' two and three step challenges for the students to investigate and respond to.
- All the activities combine internet, interactive whiteboard, worksheets and direct teaching content ensuring the experience is immersive. The activities enable students to participate at a number of levels, appropriate to their ability, motivation and previous knowledge.
- All the activities are presented by educationalists supplemented by other teachers or actors in role.

Cost

The total cost for the 6 videoconference sessions, the planning session, coloured worksheet packs for pupils, is £1000, or £170 per individual videoconference session.

Availability

The ATHENA videoconference sessions are in great demand. Along with other programs and services that Athena provides, availability is at a premium. Please check availability and book well in advance.

Technical information:-

ATHENA is able to offer a degree of remote technical support via our dedicated technician.

The remote school (you) will need to have a VC facility

It is recommended that the VC system is registered with the JVCS (JANET Video Conference Service) – ATHENA personnel can assist with this if the school is not registered.

We are able to offer two fall-back positions for connectivity:-

- 1) A four-way bridge facility (your school would connect direct to ATHENA)
- 2) A full ISDN facility (two dedicated lines)

The initial VC session involves some technical quality of service testing

Successful videoconferencing

This article outlines a number of suggestions that will maximise the impact of a videoconference and minimise potential technical and logistical problems.

‘The key to successful Video Conferencing is in the planning ‘

Like most educational activity, the same criteria for effective practice apply. Starting with the planning.

- Ensure the purpose of the Video Conference link/project is clear.
- Be clear what you, the children and the remote location expect the learning outcomes to be.
- Decide how many Video Conference sessions are needed.
- Decide how long each Video Conference session will be.
- Decide what content is planned for each session, and agree what work will take place between sessions.
- Have a pre-conference conference. Meet the key professionals involved. Develop a dialogue and partnership with them. Plan the Video Conference lessons together. Agree the exact timing of the lesson – for far away locations ensure the time difference is taken into account.

Well before the conference session:-

- Let the pupil’s parents know what the school is doing and encourage their involvement.
- Across the sites, share the lesson plans and any handouts or computer files being used in the lesson.
- If pupils are presenting during the conference, rehearse them in front of the camera, in the relevant location and position. Note timings, speech clarity and lighting. Ensure any research to be completed by the children before the session has been done thoroughly and is understood.
- Have an alternative lesson ready – just in case the technology goes on strike.
- Make sure a list is available that contains:-
 - The names of the schools involved and their telephone and fax numbers
 - The names of the people involved and a list of pupils taking part
 - Any mobile phone numbers that will be available on the conference day

- Develop a technical ‘trouble-shooting’ check list. It may include a step-by-step, what to check if:-
 - There is no sound at the local site
 - There is no sound at the remote site
 - There is sound but no picture at the local site
 - There is sound but no picture at the remote site
 - Feedback from the speakers occurs
 - No connection takes place
 - Poor picture and sound quality occurs
- If it is an international conference, learn something about the locality and some opening and closing phrases in the country’s language.
- If it is a multipoint conference (with more than two sites connecting at once), clarify who will lead the session and establish a protocol for interaction between the sites and for any discussions across the conference.

Just before the conference session:-

- Check any battery requirements (particularly if using a radio microphone). In many remote controls, when the battery is close to exhausted, the remote will work if it is closer to the equipment. This may give the impression the battery has plenty of charge left.
- Check all equipment is working and connected correctly (this may involve making a connection with a ‘test site’). This could take as little as three or four minutes.
- If using a camera with pre-set position capability, set the presets before the session.
- Check the camera picture. Minimise reflective surfaces (polished floors etc). Avoid sunlight. Reduce clutter or distracting objects in the background. Check the camera is in the best position to capture everything that will happen during the session.
- Check your clothing on screen for colour and pattern clashes.
- Have some spare A4 pieces of paper, a pencil and a large black marker available (the latter being useful if initial sound problems are encountered and the local site resorts to writing messages to the remote site).
- When the pupils are in situ, prepare them for the conference. Settle them down, explain again what will happen and how the session will be structured and conducted.
- Make sure you are familiar with the ‘mute’ button on the videoconference remote control handset.
- Check volume levels and ensure the volume is not too loud or that the speakers are not too near the microphone.

At the beginning of the session:-

- Introduce yourself and the pupils at the appropriate time.
- Exchange brief information about your location, describe the room, the time, the weather, how many and who the pupils and teachers are.
- Introduce the lesson focus and any procedural information.
- If it is a multipoint conference, establish any suitable protocols. Many multi-point conferences use sound levels to determine which site is viewed across the conference. In this instance it may be appropriate to reinforce the importance of each site switching on their mute facility to allow a broadcast to take place.

During the session:-

- Talk naturally, at an even pace, with expression and clarity (emphasise pitch, tone, volume pausing and pacing).
- Keep instructions clear; check all participants understand what is expected of them.
- Remember that an animated, energetic, enthusiastic presence is critical when motivating, holding attention and emphasising teaching points.
- Look at the camera, not the screen.
- Involve the remote site and the local site equally. Think of the camera as another pupil.
- Share work across the sites and encourage participation. Encourage contributions from teachers and support staff as well as pupils.
- Do not talk for more than ten minutes without a break
- Keep changing the pace. Use a variety of teaching styles and methods. Utilise direct teaching, display materials, kinaesthetic activities, tasks and teaching.
- Be sensitive to the 'public' dimension of the camera. Some pupils do not enjoy this potential exposure and regard the camera as akin to a live television broadcast. Enable these pupils to participate indirectly until they feel ready to take centre stage.
- Manage the 'mute' button. Many multi-point conferences are automatically managed by giving the 'floor' to the site making the most noise. If all the sites connected are sending a lot of noise across the videoconference network there will be confusion. Wherever possible get used to switching your videoconference system to mute whenever your location is not directly contributing anything. Only take off the 'mute' when someone at your location wished to speak.

At the end of the session:-

- Summaries the lesson and its key teaching points and features
- Take time to thank the participants and close
- Switch everything off

After the session

- Phone, e-mail or Video Conference with the remote site. Thank them for their participation. Share opinions, discuss technical and pedagogical issues. Seek to improve further the learning experience, the teaching experience and the management of the Video Conference session
- Critically evaluate the session and the additionality contributed by the use of Video Conferencing and an assessment of the impact the session has had on learning. This may involve e-mailing an evaluation form to the participating sites.

Useful tips:-

- Be aware of child protection issues that may cause the system to be open to abuse. Do not leave the Video Conference system on 'auto-answer'. Do not leave it in conference and unattended. Make sure parents are informed when a Video Conference session is to take place and that they are happy for their child to take part.
- Make sure audio and visual displays are clear. Interactive whiteboard displays, Overhead Projectors, posters and objects can all be used to enhance the learning experience. It is important to check that print can be clearly read at the remote site. Displays of this kind should be created with increased contrast between backgrounds and foregrounds, and with bold outlines.
- Consider a screen switch. During a VC session, seeing the other site on a screen will often fixate pupils. This can result in them becoming distracted from the work in hand. Consider having two screens with a screen switch between them, or a screen that can be easily swivelled so that it can be viewed by the teacher and away from the pupils when needed.
- Place a viewing screen below the Video Conference camera. It is much easier and natural to conference when the camera is placed just above of below the viewing screen. This enables the participants to both view the remote sites reactions while at the same time appearing to look directly into the camera.
- Place written information below the camera. Again, this enables the teacher to easily view lesson notes, key pointers and lists, while at the same time maintaining visual and facial contact with the remote site.
- As in any good lesson, vary the pace, involve the participants, and give shape and clarity to the lesson with a clear beginning, middle and end.

- Cameras. Pan and tilt cameras/ preset cameras offer valuable variations, which can add interest to the viewing. If possible, have another adult in the room to control the zoom and panning of the camera.
- Consider at least one session that brings everyone together from both the localities e.g. a tour or special presentation
- Be aware of what the viewer is seeing and prepare beforehand for minimum distractions. If the background is fussy or cluttered, change the view or provide a plain cloth backdrop.
- Avoid leaving the camera in a static position for too long. If using pre-sets on the camera, have some that zoom in on a pupil or the presenter from time to time.

ATHENA Videoconference Service - Connectivity

This article outlines the current options for connecting one location with another to create a videoconference.

For schools taking part in the ATHENA videoconference program, the connectivity, booking and system testing described here, are carried out by ATHENA as part of the service provided.

Pre-Guidance for a school Videoconference

There are a number of ways a school can connect to another school or content provider using videoconferencing. Some of these will be influenced by the particular circumstances of the school, the videoconference equipment being used, the Local Authority firewall and the relationship with the Regional Broadband Consortia.

The recommended way:-

The national JANET Video Conference Service (JVCS) has been set up specifically to enable schools to videoconference. This service employs fulltime staffs who are responsible for arranging connections, carrying out quality of service tests, making a call connection between schools and monitoring the call quality while it is in progress.

Making a videoconference call through JVCS:-

Ensure that your videoconference system is registered with the JVCS. This can be done by going to :-

<http://www.jvcs.ja.net/>

If your school is not registered, then you can either register it, or contact your Local Authority videoconference contact, or contact your Regional Broadband Consortium (RBC) contact. RBC information can be found at :-

<http://www.ja.net/community/schools/england/index.html>

Further information about the registration service and making a conference connection can be found at:-

<http://www.ja.net/services/publications/connecting/>

The JVCS is a service that calls school videoconference systems into a conference. Once a videoconference has been booked (see below), the JVCS dials out to your school, and to the school or content provider that you are connecting to. The JVCS then joins the two locations and the videoconference begins

Once the school is registered, it will need to book a videoconference for the chosen date and time. To do this, you will need to go to the JVCS booking system

<http://www.jvcs.ja.net/cgi-bin/vcng/welcome.cgi>

Here you will need to complete an online booking form which states the time, the date and who will be part of the videoconference. Importantly you will need to book the duration of the videoconference. Once the end-time for the videoconference has been reached the JVCS will automatically terminate the videoconference.

Ensure that ALL videoconference dates and times are booked as early as possible. Record the session codes allocated by JVCS and let all participating locations have a copy of this information.

For schools using Polycom PVX software – there is a link to a useful website created for Birmingham schools. While the information is specific to schools within the Birmingham Grid for Learning, much of the information is useful to all users setting up the PVX videoconference system.

<http://www.bgfl.org/services/itconnect/pvxins.htm>

ISDN

Another way of connecting locations over videoconference is through the ISDN telephone system. While this way of connecting is diminishing as many more users adopt IP (Internet) as the favoured way of connecting, there may be times when ISDN is required – particularly when a location does not have IP connectivity, or has historically used ISDN and has not yet transported all of its systems to IP.

ATHENA has 2 ISDN lines installed and a bridging facility. This means that ATHENA is able to connect over ISDN with a location as well as link at the same time to other locations using IP connectivity. Therefore, if a school needs to connect with a location that only has ISDN videoconferencing, then ATHENA can provide the bridge between the school (IP) and the location (ISDN). Contact ATHENA if this facility is required.

ATHENA Videoconference programme

INFORMATION SHEET

<i>Name of school taking part in the videoconference (s)</i>	
Address of school	
School phone number -	
<i>Planning Session/test connection – date and time</i>	
Number of sessions -	
<i>Session dates (s) and times (s) and description</i>	
<i>Name of lead contact teacher at the school</i>	
Mobile phone contact number -	
Email address for lead contact -	
Name of technical contact at the school -	
Mobile phone number for technical contact -	
Number of pupils taking part -	

Class list of participating pupils sent to ATHENA?		YES	NO	
Videoconferences booked?		BOOKED	PENDING	
<i>Session Codes (JVCS)</i>				
Day	Date	session title	time	CODE
Venue description:- athena-office-vsx7000@seaz.bham.org.uk				
JVCS contact information		The JVCS Management Centre is open Mon-Fri 08:00-21:00 & Sat 08:00-17:00 and can be contacted on +44 (0)131 650 4933 or by e-mail to vidconf@jvcs.ja.net .		

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<i>Additional information</i>	