The Evaluation of the

Global Learning and International Classroom Project
Anderson High School, Shetland

FINAL REPORT
August 2006

Fran Payne
Margaret Gooday
Norman Coutts
Allan Duncan
Alan Wolfe
Helen Balme

Acknowledgements

The Global Learning and International Classroom Project is an exciting and innovative initiative undertaken by a number of teachers and senior pupils at Brae High School, and Anderson High School, Lerwick, Shetland Isles, together with teachers and pupils from schools overseas.

We would like to thank the staff and pupils from all the participating schools, the local authority and all personnel involved in the project, for allowing us to share their experiences, and hope that others planning similar developments elsewhere will learn from their experiences.

August 2006

CONTENTS

EXECUTIVE SUMMARY

SECTION 1
THE AIMS OF THE PROJECT, THE REMIT OF THE EVALUATION AND METHODOLOGY

The Aims of the Project

The Global Learning and International Classroom (GLIC) Project commenced at Anderson High School (AHS) in the session 2003-04. It focussed on the use of ICT, specifically videoconferencing, for learning and teaching purposes. Videoconferencing was introduced at AHS in three subjects at Higher and Advanced Higher Level with schools overseas: German with Germany; Mathematics with Japan; and History with South Africa. In the second year of the project, a fourth subject, Modern Studies, was introduced with the South African schools. The GLIC Project is only one aspect of a much wider initiative in which the school is involved, the 'Global Classroom Partnership', an association of schools across several continents (see Section 2.2). The aims of the GLIC Project identified by AHS are to:

- identify future changes to the curriculum, both in the nature and format of the schools learning programmes and the way students learn;
- share best practices in learning and teaching internationally through the use and development of ICT;
- build on the increasingly transnational nature of education systems and curricular developments through exploring collaborative learning and teaching, initially in a limited number of curricular areas, across national boundaries within the partnership schools;
- enable teachers and students to acquire expertise of working within a networked curriculum through international team working;
- raise the profile of the importance of sharing best practice internationally to raise overall standards and achievements of students and schools.

Evaluation of the GLIC Project

The evaluation of the project commenced in October 2004, the second year of the project, and concluded in October 2005. It has four main aims outlined below.

Aim 1

To assess the overall impact of the Global Learning and International Classroom Project on the teachers and pupils in the participating schools**.**

Aim 2

To identify what, if any, impact it has had on teaching and learning, and the sharing of strategies and resources.

Aim 3

To explore the impact of ICT within the project: Has it helped to develop and deliver a more varied and enriched curriculum? What benefits/difficulties has this method of learning and teaching created?

Aim 4

To identify what, if any, improvement participation in the project has had on pupil attitudes, motivation, self-esteem, achievement and attainment levels.

Methodology

The data were collected from the following respondents and sources: interviews with Local Authority personnel, AHS Headteacher, project manager and coordinator; interviews with and questionnaires to the secondary teachers of German, history and mathematics from Shetland and their counterparts in the partner schools; pupil questionnaires and AHS pupil interviews; Shetland teacher and pupil diaries; scrutiny of project documentation, SQA examination results; and videoconference observations. The observations were conducted on a minimum of two videoconference sessions in each subject area with one researcher present at AHS and the other researcher present in the videoconference suite at Aberdeen University (AU). A link from AU to AHS and the partner school was enabled via an internet (IP) connection with the assistance of Learning and Teaching Scotland (LTS).

SECTION 2
THE CONTEXTS OF THE PROJECT PARTNER SCHOOLS; INTRODUCING AND IMPLEMENTING THE PROJECT; AND BACKGROUND INFORMATION ON THE VIDEOCONFERENCES

The Context and Schools Involved

- AHS already had well-established links with schools in Germany, Japan and South Africa as part of its focus on activities relating to international education for its pupils. The GLIC Project emerged as an extension activity to enable both teachers and pupils to share learning and teaching opportunities via the use of videoconferencing.
- Graf Friedrich Schule in Diepholz, Germany is a 'Gymnasium', an academically selective high school. The school uses the videoconferencing facilities of a local chemical company twelve miles away.
- Nara Womens' University Secondary School in Japan, is a fee-paying school, as are all high schools in Japan. It enjoys a reputation as a high achieving school. The school has videoconference facilities and uses a room fully equipped with laptops for the videoconference sessions.
- The two schools in Cape Town, Langa and South Peninsula, have catchment areas of very different socio-economic circumstances. Langa High School's pupils come from township communities and South Peninsula High School's pupils come from largely working class backgrounds, from the formerly so called 'coloured' communities. The two schools are relatively less well funded than the other project partner schools, and hence have less well-developed ICT infrastructure and equipment.

The Curricular Areas of Focus and Collaboration

- AHS sought to involve schools that already had, or could ensure they had access to the technical capability to enable the videoconference sessions to take place.
- The project focused on German, history and mathematics as AHS already had links with teachers in the partner schools.
- A facilitating factor in the development of the collaborative programmes was the visit of the teachers from the partner schools to AHS. This enabled face-to-face meetings to take place for discussion and planning of the programmes of work for the videoconference sessions.
- The launch of the project website in September 2004 enabled teachers from each of the participating countries to share resources and lesson materials prior to the videoconference sessions.
- Constraining factors in the development of programmes were specific to the different subjects. For history, the programme had to accommodate the different academic school year structures of AHS and South Africa. As language was a barrier with Japan, topics

were selected in mathematics that required the minimum use of language. For German there appeared to be few constraints with regard to planning the programmes.

The Videoconference Sessions

- At AHS the videoconference sessions were originally held in a small room, the project manager's room. From January 2005 onwards all the sessions were held in a much larger dedicated videoconference room. Both rooms had an interactive whiteboard.
- Videoconference sessions were attended by a varying number of pupils from the partner schools. This was due to their participation on a voluntary basis.
- The videoconference equipment is set up differently in each location which has an impact on the image each partner school receives. The image was also determined by whoever was operating the camera in the partner school.
- Technical support for the project was provided by the project coordinator who planned the programmes and the timings of videoconference sessions for each subject with the agreement of each partner school. The coordinator was also responsible for making arrangements with LTS and the partner school, with regard to setting up the connection and testing it out beforehand.
- No specific training arrangements had been made for the Shetland teachers or pupils in preparation for taking part in the programme of videoconferences. Observation of the early videoconference sessions identified that the pupils were often not sure how to conduct themselves when speaking to pupils in the partner school. For example, some Shetland pupils tended to look down to read from their notes when speaking, instead of holding their head up and looking directly at the screen or camera.

SECTION 3
THE IMPACT OF THE TECHNOLOGY

The Teachers' Expectations

- Teachers expressed expectations of the project for their pupils as learners, and themselves as teachers: increased pupil awareness of other cultures and enhanced learning experiences; the sharing of good practice with colleagues globally.

The Sharing of Teaching Strategies and Resources

- The project provided an opportunity for teachers and pupils to share different teaching strategies and resources that otherwise would not have been available to them. For example, the South African teachers invited guest speakers who had been active participants during the period of South African history being studied. The Japanese teacher demonstrated a different way of solving mathematical problems using a computer.

The Impact on Teaching

- A variety of teaching styles were used by the teachers in the three different subject areas. The teachers adopted relevant teaching styles to suit the subject in order to maximise the learning experience for their pupils. For example, in German the teachers acted principally as facilitators.

- A DVD recording of the majority of each videoconference session was made and then selected video clips were uploaded onto the website. This provided a permanent record for teachers to view and reflect on their practice and also as an aid for pupils. This resource was used to a greater extent in some subject areas than others.

- Whilst there was considerable collaboration between the Shetland teachers and their counterparts in the partner schools, the four Shetland teachers met together on only one

occasion to share their teaching methodologies and experiences of the project. Some of the teachers expressed a wish that there could have been more opportunities to do this.

The Impact on Learning

- The teachers reported that the project had impacted positively on pupils in a number of ways: it enabled pupils to share and learn from others' perspectives; the pupils' awareness of different cultures and alternative strategies of learning had increased. Pupil motivation, self-esteem and confidence had improved, as had their presentation skills. From these outcomes the teachers judged that pupil learning had been enhanced.

Communication outside the Videoconference Sessions

- The main communication activities outwith the videoconference sessions were email messages sent between the subject teachers in the partner schools. The general purpose of the messages was to agree the content of the sessions and which resources to place on the website for pupils to access prior to the videoconference.
- Although the technology was in place for pupils to communicate personally with each other via email this had not happened. This was an aspect of the project which teachers thought could be developed further in the future.

The Benefits of Videoconferencing for Teaching and Learning

The main benefits of videoconferencing reported by the teachers for themselves and their pupils are:

For Teachers

- The sharing of best practice with teachers globally;
- the provision of a more varied curriculum;
- reflection on the teaching process, facilitated via a recording of the videoconference;
- the provision and availability of new resources;
- the opportunity to compare and contrast teacher roles and techniques to support learning.

For Pupils

- The provision of a more varied curriculum;
- sharing and learning from others' perspectives;
- raising awareness of cultural differences by sharing of experiences;
- raising awareness of alternative strategies of learning;
- improved confidence, motivation and self esteem;
- improved communication and presentation skills.

The Difficulties of Videoconferencing for Teaching and Learning

The main difficulties of the use of videoconferencing perceived by the pupils and teachers in each of the subjects related to the technology:

- failure to establish a connection between AHS and the partner school, and loss of the connection during the videoconference;
- problems with the technology during the videoconference, for example, quality of the picture; failure of the audio and visual signals to synchronise;
- inadequate equipment, for example, capacity of the microphone for the size of room;
- increased likelihood of technical difficulties when there is more than a two-way link between schools.

Adapting to New Behaviours

- The use of videoconferencing requires both teachers and pupils to adapt to changing behaviours to optimise the teaching and learning. For example, during the videoconference session there is a need to follow the protocols of use with regard to taking turns and waiting to speak etc., and speaking clearly in order to be heard and understood.

SECTION 4
THE IMPACT OF THE PROJECT ON PUPIL ATTITUDES, MOTIVATION, SELF ESTEEM, ACHIEVEMENT AND ATTAINMENT – THE TEACHERS' PERSPECTIVES

- Overall, the use of videoconferencing was considered by all participating teachers to have had a positive effect on the participating pupils' confidence, motivation, self-esteem and awareness of other cultures in all three subject areas.
- Participating in the project had made pupils more interested and enthusiastic about the subject they were studying.
- The pupils from the partner schools participated outwith school hours and were thus already motivated. However, the project was considered by all the teachers to have had a positive impact on the pupils' motivation in all subject areas. The teachers judged that videoconferencing had made the learning environment more fun and exciting.
- Self-esteem and confidence were raised in pupils as a result of taking part in the videoconference sessions, particularly in those who were shy and nervous.
- The teachers were equally divided about whether there was evidence of improved pupil attainment.
- In all subjects the teachers reported that meeting and interacting with pupils from other countries and cultures through the videoconference sessions had made their pupils more open minded and more aware of cultures other than their own.

SECTION 5
THE PUPILS' PERSPECTIVES OF THE PROJECT

- There was a variation in the number of pupils participating from each country. Of the forty pupils, Shetland (N=11), Germany (N=5), Japan (N=9), and South Africa (N=15).
- The pupils' expectations about the project were specific to their subject, and reiterated their teachers' expectations. For German and English they were to hear the native language spoken and to speak with native speakers. For history, pupils highlighted learning about South Africa from each others' perspective, and for mathematics the Shetland and Japanese pupils hoped to gain an insight into the different ways mathematics problems were solved in the two countries.
- The pupils shared broader aspirations about the project that were common to all subject areas: meeting and communicating with pupils of a similar age from other countries and cultures; and learning from, and sharing ideas with each other.
- Nearly all the pupils (N=31) viewed the videoconference sessions as having helped them have a better understanding of their subject.
- The pupils viewed the videoconference sessions as having a positive impact on the learning of their subject. The majority (N=38) *'strongly agreed/agreed'* that it had been helpful to speak to, and listen to the native speakers/ work on mathematics problems/or, talk about the history of South Africa; and share ideas and information about their subject with pupils from another country (N=37).
- Thirty pupils *'strongly agreed/agreed*' that the videoconference sessions were fun; and working with the pupils from the partner school was very exciting (N=34); taking part in the videoconference sessions had made them a more confident person (N=24); and learning via videoconferencing had made them more interested in learning about their subject (N=29).
- Approximately one third of the pupils (N=14), *'strongly agreed/agreed'* that they had been anxious contributing to the videoconference sessions, in contrast to the twenty five pupils who *strongly disagreed/disagreed'* with this statement. Twenty seven pupils indicated their confidence had increased over the number of sessions. Thirty four of the

forty pupils '*strongly disagreed/disagreed'* with the statement 'I do not enjoy this way of learning my subject'.

- There were differences in the number of videoconference sessions the pupils participated in. Because of this, and the numbers of pupils involved in each subject being small (German/English N=10, history N=17 and mathematics N=13), it was not possible to link differences in pupil attitude to the gender of pupils, the particular curricular area studied or their cultural background.
- All the German and Shetland pupils perceived they had gained some insights into the life of the pupils and of cultural differences in the partner country. This in contrast to over half of the Japanese and South African pupils who *strongly agreed/agreed'* with the statement 'I think it is difficult working with the partner school students/to understand what it is like, in the partner country.' This is perhaps not surprising since in neither the history nor the mathematics videoconferences did the Japanese and South African pupils have an opportunity to find out about life in Shetland.
- Positive aspects of pupil participation were the use of technology which provided pupils opportunities to meet and communicate with others from a different culture, and the different way of learning compared to their traditional classroom experiences.
- Negative aspects of pupil participation included anxiety about speaking, technical difficulties, difficulty in understanding or hearing clearly some pupils' accents, and lack of spontaneity.
- The majority of pupils thought their expectations of the project had been met. Where they were not the reasons given were specific to the subject studied. In German/English, pupils expressed disappointment that they had less opportunity to talk in the native language than expected. Pupils expressed a wish for more freedom to choose topics instead of them always being teacher-led. There was a wider age range amongst the Japanese pupils than in other countries and the younger pupils indicated they found the level of mathematics problems too difficult. The South African and Shetland pupils' expectations studying history were broadly met.

SECTION 6
THE LOCAL AUTHORITY AND ANDERSON HIGH SCHOOL SENIOR MANAGEMENT TEAM'S PERSPECTIVES OF THE PROJECT

From the Shetland Islands Council's perspective establishing links via videoconferences with schools overseas had led to:

- increased interest both internationally and nationally from schools and or local authorities in joining the project;
- interest both internationally and nationally in learning from Shetland's experience of setting up the project;
- interest in the project locally from the public and business;
- the opportunity for the school to present information about the project at national and international conferences generating interest from other schools and other countries;
- the opportunity for staff development, both for Anderson High School and for other schools in the Shetland Islands Council, resulting from Anderson High School staff's experiences of taking part in the project.

The project had delivered an enriched and extended curriculum. It had:

- extended pupil learning by, for example, giving pupils the opportunity to learn new perspectives on issues and debate these;
- raised pupil motivation and confidence;
- stimulated interest in pupils in other schools who indicated a wish to be involved.

The success of the project at Anderson High School was facilitated by:

- the establishment of good working relationships between the authority and school;
- the investment in time for regular project meetings between the Authority staff and the project manager to share ideas, review and monitor progress;
- the commitment of the local authority in providing funding to the school to allow the project's continuation and, in particular; support being given for resources for example, ICT support staff, and the necessary ICT infrastructure;
- the importance of purchasing the best quality equipment and also ensuring that the partner schools had the appropriate equipment to be able to link together;
- beginning with just a few subject departments in the senior school and then expanding gradually.

SECTION 7
CONCLUSION AND RECOMMENDATIONS

Conclusions

- The teachers in Shetland and the partner schools are positive about their involvement in the project, both for themselves and their pupils.
- The teachers have welcomed the opportunity to be involved in new and innovative teaching practices, and to share their experiences and practice internationally.
- The teachers see gains in pupil motivation, confidence, self esteem, a greater understanding of other cultures, and hence the enhancement of pupil learning.
- Learning benefits can only be sustained when the technological equipment is robust and reliable.
- In the short period of the evaluation and particularly when the project is in the early stages of development, it is not possible from the evidence gathered to make any substantive claims of increased attainment and achievement other than in the 'soft skills' mentioned above.

Recommendations

- All the AHS teachers involved would benefit from having the opportunity to meet together to share their experiences.
- Teachers in each subject area would find it helpful to find time to talk via videoconference, with the teacher in the partner school, to discuss teaching methodologies and learning strategies.
- The use of email communications between pupils could help to establish and sustain relationships between pupils from the partner schools.
- The use of the DVD recordings of videoconference sessions as a teaching and learning resource could be exploited further.
- The pupils' use of discussion forums on the website could be further developed.
- Participants of future videoconference sessions would benefit from being given advice and training on how best to promote effective interaction between themselves and their counterparts in the partner schools.
- The provision of high quality technical facility and capability is essential.

General Advice to Schools Considering Implementing Videoconferencing

The specific recommendations above given to assist AHS in the development of the project could serve as useful pointers/guidelines for other schools considering implementing videoconferencing for teaching and learning purposes. On the basis of our evaluation of the GLIC Project we suggest the following advice for each group of stakeholders for the successful use of videoconferencing in schools.

The Local Authority
Should:

- develop a good working partnership with the school;
- contribute to effective project management;
- provide good technical and financial support, and resources to the school;
- regularly monitor and review the process.

The School Senior Management Team
Should provide:

- good support to the staff and pupils;
- an effective ICT infra-structure to support videoconferencing;
- reliable equipment which is fit for purpose;
- funding for up-dating/renewing equipment as necessary;
- sufficient, and on-going, technical support;
- opportunities for the demonstration of good practice and the potential of videoconferencing to teachers, and how it can be used to enhance pupil learning;
- training for staff and pupils to maximise the potential of videoconferencing and other forms of ICT e.g. interactive whiteboard;
- on-going encouragement and support for teachers and pupils to build up confidence and expertise for taking part in the videoconferences, and for maximising the potential teaching and learning benefits;
- encouragement to staff to adapt their teaching styles to exploit the technologies fully.

The Teachers
Need:

- the ICT equipment to be reliable and fit for purpose, e.g. camera and microphones;
- a videoconference suite which allows teachers and pupils to clearly see and understand what pupils and teachers in the partner schools are doing and saying;
- the training and support essential for understanding the full potential of videoconferencing and for maximising the potential teaching and learning benefits;
- technical support to be available to teachers generally, and during videoconference sessions if required e.g. in initiating the link with partner school, or when there is a breakdown in the link with the partner school;
- staff development which focuses on how to integrate videoconferencing/ICT into practice;
- to be encouraged to share with colleagues their experiences, ideas and expertise;
- to share professional and pedagogical practices to maximise the potential of videoconferencing;
- to ensure that the number of pupils taking part in the videoconferences should be managed, such that pupils are not intimidated and/or reluctant to take part in the sessions.

The Pupils
Need:

- training and support in how to maximise the learning and other benefits for them in taking part in the videoconferencing session e.g. to follow protocols in turn taking, looking at the camera and speaking clearly;
- help to build up confidence for taking part in the videoconferences;
- encouragement to share their experiences, ideas and expertise in taking part in videoconferences.

DETAILED INDEX

SECTION 1
THE AIMS OF THE PROJECT, THE REMIT OF THE EVALUATION AND METHODOLOGY

1.1 The Global Learning and International Classroom Project

The Global Learning and International Classroom (GLIC) Project initiated by Anderson High School (AHS) was an ambitious and innovative enterprise supported through the Scottish Executive Education Department's Future Learning and Teaching (FLaT) Programme. The aim of the FLaT Programme is to *'support and encourage pilot projects that challenge the current concepts of schools and explore new ways of learning and teaching'*. Specific objectives of the Programme encourage the use of ICT to assist learning and teaching:

> *To pioneer the use of innovative learning and teaching methods to assist pupils' preparation for participation in the knowledge economy and a global environment.*
>
> *To investigate teaching and learning taking place that could not otherwise do so e.g. due to geographical remoteness etc.*

The GLIC Project focussed on the use of ICT, specifically videoconferencing, for learning and teaching purposes. Videoconferencing enables synchronous communication using moving images and sound between people in different locations and opens up opportunities for new ways of learning and teaching for both teachers and pupils.

In the pilot year of the project, videoconferencing was used at AHS in three subjects at Higher and Advanced Higher Level with schools overseas: German with Graf Friedrich Schule, Diepholz, Germany; Mathematics with Nara Womens' University Secondary School, Nara, Japan; and History with Langa High School, South Peninsula High School, and Wittebombe High School in Cape Town, South Africa. Wittebombe High School withdrew in 2004, and an additional school in Cape Town, Rylands, became involved with the history videoconferences after Langa High School withdrew during the second year of the project (2005). The modern studies teacher at AHS expressed an interest in joining the project during its second year, and three videoconference sessions have now taken place between AHS Higher modern studies pupils and the South African pupils.

Since the project's inception in 2003, two pupils and the German teacher from another secondary school in Shetland, Brae High School, joined with AHS in the videoconference sessions with Germany. In February 2005, a school in Northern Ireland, Ballyclare High School, began taking part in the videoconferences with AHS and Graf Friedrich Schule.

The GLIC Project is only one aspect of a much wider initiative in which the school is involved, the 'Global Classroom Partnership', an association of schools across several continents (see Section 2.2). The aims of the GLIC Project are to:

- identify future changes to the curriculum, both in the nature and format of the schools learning programmes and the way students learn;
- share best practices in learning and teaching internationally through the use and development of ICT;
- build on the increasingly transnational nature of education systems and curricular developments through exploring collaborative learning and teaching, initially in a limited number of curricular areas, across national boundaries within the partnership schools;
- enable teachers and students to acquire expertise of working within a networked curriculum through international team working;

- raise the profile of the importance of sharing best practice internationally to raise overall standards and achievements of students and schools.

The GLIC Project commenced at Anderson High School in the session 2003-04 and the evaluation of the project commenced in October 2004, the second year of the project.

1.2 The Remit of the Evaluation Project

The evaluation project has four main aims outlined below.

Aim 1

To assess the overall impact of the Global Learning and International Classroom Project on the teachers and pupils in the participating schools**.**

Aim 2

To identify what, if any, impact it has had on teaching and learning, and the sharing of strategies and resources.

Aim 3

To explore the impact of ICT within the project: Has it helped to develop and deliver a more varied and enriched curriculum? What benefits/difficulties has this method of learning and teaching created?

Aim 4

To identify what, if any, improvement participation in the project has had on pupil attitudes, motivation, self-esteem, achievement and attainment levels.

The evaluation of the project commenced in October 2004 and concluded in October 2005.

1.3 Methodology

Data were collected from the following respondents and sources. Further details of the methodology are also described in the relevant sections.

1.3.1 The Local Authority, Headteacher, Project Manager and Project Coordinator

Informal discussions were conducted with the project manager, who is the history teacher and Deputy Headteacher (DHT) at the beginning of the evaluation to obtain background information about the project, and details of events that had occurred in the pilot first year of the project prior to the evaluation. He was again interviewed in December 2004 and at the end of the evaluation period in October 2005.

Individual interviews were conducted with the Headteacher and Local Authority personnel in April 2005, and the project coordinator in October 2005.

1.3.2 The Teachers

a) Interviews

The seven teachers participating in the project were interviewed individually. Face to face interviews were conducted with the three AHS teachers of mathematics, history and German in December 2004. The teacher of German from Brae High School, Shetland who has been involved in the project since its inception was interviewed via telephone.

Of the three teachers from the partner schools, the history teacher from South Africa was interviewed face to face whilst on a visit to AHS, and the German teacher of English by telephone. The Japanese mathematics teacher was interviewed via videoconference following

a teaching session, with the assistance of a Japanese teacher of English at the school to translate the questions and responses. All the interviews were tape recorded with the permission of the teachers. They were transcribed, coded and analysed using Nvivo software.

b) Questionnaires

A questionnaire was sent electronically to the seven teachers in September 2005 and they were asked to complete and return it electronically. It was translated into the native language for the German and Japanese teacher. Data were obtained from all the teachers except the South African history teacher (N=6).

The aim of the interviews and questionnaires was to gather information on the teachers' perceptions of the project including: their understanding and expectations; the development of the collaborative teaching and learning programmes; the successes of the project and aspects that had not turned out as well as expected; any difficulties or barriers to the implementation; and the impact of the project on teaching and learning, use of ICT, pupil attitudes, motivation, self esteem, achievement, potential attainment and the pupils' understanding of other cultures.

1.3.3 The Pupils

a) Interviews

Face to face interviews were conducted with the AHS pupils in small focus groups (history (N=2), German (N=4) and mathematics (N=3) in April 2005. All the interviews were tape recorded with the pupils' consent. They were transcribed, coded and analysed using Nvivo software.

b) Questionnaires

Questionnaires were administered to two cohorts:

- the 2003/04 cohort of Shetland and South African pupils;
- the 2004/05 cohort of Shetland, German, Japanese and South African pupils.

i) 2003/04 cohort

South African pupils

The school year in South Africa was coming to an end as the evaluation commenced in October 2004 so it was opportune to collect the data from these pupils. Questionnaires were administered to the 2003/04 cohort of South African pupils (N=15) just before they were due to leave school in November 2004. At the initial project meeting in October we learnt that the DHT of AHS was due to visit the schools in South Africa the following week during the school holiday. Our original intention had been to administer an online questionnaire to the pupils in all the partner schools using 'SNAP' software. However, discussions with the DHT revealed that one of the schools in South Africa did not have internet access, and the pupils did not have access to a computer, and in addition, sending completed questionnaires via the postal system from South Africa was extremely unreliable. It was therefore agreed that it was preferable to use a paper questionnaire for the South African pupils to be completed by hand. On an already planned visit to the schools in Cape Town, the AHS DHT transported the questionnaires by hand to the schools and back to AHS, and then returned them to AU by post.

Shetland pupils

In December 2004, a letter was sent to the 2003/04 AHS pupil cohort (N=13) who participated in the first year of the project and who had left AHS in May 2004. The pupils were requested to complete the questionnaire online, with details given to them of the website to access. However, only two pupils responded. In January 2005, a reminder letter and paper copy of the questionnaire was sent to all the pupils with the option of completing the questionnaire online or on paper. This resulted in one paper copy of the questionnaire being

returned. As there is only data from three pupils they are not considered to be representative and are not reported here.

ii) 2004/05 cohort
Shetland, German, Japanese pupils
As completion of an online questionnaire via website access had resulted in a low response rate from the 2003/04 Shetland pupils, it was decided to ask the overseas pupils to complete a questionnaire electronically and return it as an attachment via email. The questionnaire was translated into the native language for the German and Japanese pupils and was administered to the 2004/05 cohort in March 2005, via the partner school teacher. The numbers returned from pupils were: Germany N=5, Japan N=9. The Shetland pupils completed a questionnaire on paper during a visit of the researcher to the school in April. The numbers returned were: mathematics N=4, German N=5, history N=2.

Questionnaires were also administered to the South African 2004/05 cohort in September 2005, towards the end of their school session (November). Despite reminders to the South African teacher, none have been returned. As the pupils participating were from different schools and different pupils attended each session, this may have proved to be a difficult task for the teacher to coordinate.

The questions asked were designed to elicit information from the pupils about their opinions and views on the use of videoconferencing and the learning experience, specifically their expectations and whether these had been met, the positive and negative aspects of videoconferencing, and their attitudes towards virtual learning.

1.3.4 Videoconference Observations
The main data gathering activity for the videoconference sessions was by observation. The intention was to have two researchers present to observe two sessions in each subject, with one researcher present at AHS and the other researcher at the videoconference suite at Aberdeen University (AU). A link from AU to AHS and the partner school was enabled via an internet (IP) connection with the assistance of Learning and Teaching Scotland (LTS). Two sessions were observed in each subject area with a researcher present at AHS. However, on four occasions, although researcher/s were present at Aberdeen University to observe a videoconference session, it was not possible for a variety of technical reasons to establish a link between AU and AHS. For example in one case AHS had to contact a partner school directly instead of via LTS. As a consequence, the three-way connection via LTS could not be established and so it was not possible to observe the session from the AU videoconferencing suite.

On three occasions two researchers observed a videoconference session only from AU, via the LTS videoconferencing connection. On another occasion three researchers observed a videoconference session from AU, and then immediately following the videoconference interviewed a teacher using the videoconference link between the partner school and AU. A total of 11 videoconference sessions were observed synchronously: history N=2; German N=5; and mathematics N=4. Due to the school year ending in South Africa in November, no history videoconference sessions were held from mid-November until the end of January 2005. Consequently fewer history sessions were observed. For full details of the timetable of sessions observed, see Appendix 1. AHS recorded each videoconference session onto DVD and any session that was not observed synchronously, was observed by DVD playback at a later date.

A disadvantage of the observations of the sessions conducted solely from the AU videoconference suite was that it was only possible for the researchers to observe one of the partner schools at a time on the screen. Therefore when the teachers or pupils from the

overseas partner schools were talking, or the pupils writing out a solution to a mathematics problem, the camera focused on them. Consequently the AHS pupils and teachers were not visible to the researchers and their responses to these activities could not be seen.

An observation schedule was initially developed and piloted but due to the diverse nature of activities in each of the three subjects it became difficult to use a standardised schedule. For example, in mathematics there was no verbal communication between the AHS and Japanese pupils, compared to German where language was the focus of the videoconference session activity. It was agreed between the research team that observations would be unstructured and whatever what was 'seen and heard' would be recorded. A framework was developed to assist in the analysis of the observations.

Teachers and pupils from each of the partner schools were informed when a session would be observed. Archived video clips from a selection of sessions in 2003/04 were also observed.

1.3.5 Shetland Teacher and Pupil Diaries

A proforma was devised for the diaries and both the teachers and pupils were requested to complete this as soon as possible after a videoconference session had taken place. Fourteen pupil diaries (mathematics N=6, German N=8) and five teacher diaries (mathematics N=3, German N=2) were returned. Pupils were asked to provide information on whether they had been required to do any preparatory activities before the videoconference session, what had been good about the videoconference session, what activity they had done that had helped with their learning of the subject, what had not been so good about the session, and whether they would do any follow up activities. Teachers were asked similar questions, except for pupil learning, where they were asked about the learning outcomes they expected their pupils to obtain as a result of the videoconference.

1.3.6 Observation of Advanced Higher/Higher Classroom Activities at AHS

The researchers had intended to maximise visits to AHS by following up the observation of videoconference sessions with observations of Advanced Higher/Higher classroom activities in the three subject areas. However, during the four visits made by the researchers to AHS no observations of classroom activities related to the project were possible. The videoconference sessions for each of the three curricular areas are organised to fit in with the AHS timetable and school day, and consequently preparatory and follow-up activities did not usually occur on the same day as the videoconference sessions.

1.3.7 Scrutiny of AHS Project Documentation

Scrutiny of the school documentation for the GLIC Project bid was undertaken at the outset of the evaluation period, and of the school's internal evaluation report of the project published in March 2005.

DETAILED INDEX

SECTION 2
THE CONTEXTS OF THE PROJECT PARTNER SCHOOLS; INTRODUCING AND IMPLEMENTING THE PROJECT; AND BACKGROUND INFORMATION ON THE VIDEOCONFERENCES

2.1 Introduction

In this section we detail background information about each of the participating schools; the introduction and implementation of the project; and background information about the videoconference sessions. The data are derived from interviews with the seven teachers, including the project manager, and project coordinator, together with the teacher questionnaires and observation of the videoconferences.

2.2 The School Contexts and Background to the Project

2.2.1 Anderson High School (AHS)

AHS is a six year comprehensive secondary school situated in Lerwick on the main island of the Shetland Isles, the most northerly part of Scotland. It is geographically remote from the mainland of Scotland. The school has a roll of approximately 900 pupils and a teaching staff of 86, serving Lerwick and the immediate surrounding areas, with the associated primary schools of Bells Brae, Sound and Bressay. In addition, pupils from the small islands of Fair Isle, Foula, Fetlar and Papa Stour attend the school for up to six years. The school also serves all pupils in Shetland for fifth and sixth year, except for those attending Brae High School. There are extensive transport arrangements into Lerwick, and halls of residence accommodation for those pupils unable to travel each day.

Informal discussion with the DHT prior to the evaluation identified the role of the project in relation to the school's wider activities in international education and the use of ICT. Due to its geographically isolated position, AHS recognised the importance of international education for its pupils and took active steps to develop links with schools in several countries. In the 1980s the school had pupils from a number of different countries on its roll and sought links with schools in similar settings in other countries: Czech Republic; Germany; Japan; South Africa and Sweden in order to extend learning and teaching across the curriculum and national boundaries to create global classrooms. This initiative is the Global Classroom Partnership (GCP). In the GCP, ICT was used to enable schools to share ideas, information and material on themes agreed by the pupils and teachers. Additionally, other initiatives which later emerged, offered pupils opportunities to come together face to face at an annual conference; pupil exchange visits to the different schools; and the opportunity to work in a team spending time in each of the schools conducting research (The Learning School).

It is from these initiatives that the 'The Global Learning and International Classroom Project (GLIC)' emerged as an extension activity to enable both teachers and pupils to share learning and teaching opportunities via the use of videoconferencing. The GLIC Project is therefore only one aspect of the school's wider involvement in international education.

Several of the pupils observed in the videoconference sessions, and who completed diaries during the course of the evaluation, were engaged in other additional opportunities available to them in the 'Global Classroom Partnership'. For example, three AHS Advanced Higher history pupils visited Cape Town, South Africa for a week accompanied by the DHT. They stayed with pupils of the schools, participated in lessons, visited the South African parliament, and toured some of the Cape Town townships with a teacher who had lived in the area. A German pupil on an exchange visit to AHS stayed with the family of an AHS pupil studying German. He was first observed in videoconference sessions at AHS in October and December, and then later in March 2005 was observed back with classmates in Germany.

2.2.2 The Partner Schools

All the partner schools from the three countries already had links with AHS through the Global Classroom Partnership.

a) Germany

Graf Friedrich Schule (GFS) is situated in the small affluent town of Diepholz, Lower Saxony. Its pupils live in Diepholz and the neighbouring rural communities. It has a roll of approximately 1,000 pupils aged 12-19 years, and a staff of approximately 50. Graf Friedrich Schule is a 'Gymnasium', an academically selective high school. The school did not have the required technical equipment for videoconferencing in school, but because the staff were enthusiastic about their pupils taking part, made arrangements with a chemical company, Elastogran GmbH, in Lemförde twelve miles away who provide and sponsor freely the use of their videoconference suite for the school. The pupils, all from the same year group, volunteered to take part in the videoconference sessions in their own time, and were transported to the sessions by the teacher. The videoconference room is quite small and pupils sit around one table.

b) Japan

Nara Womens' University Secondary School (NWUSS), Nara, is a secondary school which was formerly a school attached to Nara Women's University. It is undergoing change to be a self-standing school, but the Principal is a member of the academic staff of Nara Women's University. It is a fee-paying school, as are all high schools in Japan. It enjoys a reputation as a high achieving school with a roll of almost 1,000 pupils aged 12-18 years and a staff of approximately 50. The school has videoconference facilities and uses a room fully equipped with laptops for the videoconference sessions. Pupil participation in the videoconference sessions is voluntary after school as part of a 'maths club'. The pupils are from different year groups.

c) South Africa

The two schools in Cape Town that were involved at the beginning of the project have since withdrawn, Wittebombe High School (during 2004), and Langa High School in February 2005. This was in part due to tensions between the schools themselves which are from different racial communities, but also because the history teacher left Langa High School and there was no replacement. South Peninsula High School expressed interest in the Global Classroom Partnership in 2002 with contact made by the Principal to the Global Classroom Partnership South African Coordinator. Following a whole-staff, student and school governing body decision in 2003 South Peninsula joined the partnership. Pupils and staff from another school, Rylands High School have participated in two videoconference sessions in 2005, but are not a formal partner in the project. Having videoconferencing facilities in the school, staff at Rylands High heard of the project from the Western Cape Education Service and requested to join sessions in history and modern studies. Attempts to videoconference using Rylands High School equipment failed.

The two schools, Langa and South Peninsula, have catchment areas of very different socio-economic circumstances. Langa High School is in Cape Town's oldest township community, has a roll of more than 1600 pupils drawn exclusively from township communities and 42 teachers. South Peninsula High School has a roll of approximately 1000 pupils and a staff of 25. Its pupils come from largely working class backgrounds from the formerly so called 'coloured' communities. Located in a formerly 'whites only' area under the former group 'Areas Act' in the south of Cape Town, South Peninsula High draws students from communities throughout the southern suburbs of Cape Town.

All the schools in South Africa are relatively less well funded than the other project partner schools, and hence have less well developed ICT infrastructure and equipment. South Peninsula has internet and email access, whilst Langa with an extremely limited budget, has

one ageing computer, one telephone line and one fax line. In response to these circumstances Shetland Islands Council agreed to fund additional ICT equipment, including communication facilities, which have been installed at South Peninsula High School during 2005. This has enabled regular email contact to be established between AHS and South Peninsula.

Neither South African school has the required equipment for videoconferencing and uses the videoconferencing facilities of The University of Cape Town Moot Room. This requires transport of students at the end of the school day to and from the facility located some distance from South Peninsula and Cape Academy. The room used for the sessions is a large lecture theatre and pupils sit in semi-circular rows some distance away from the camera. The pupils who take part have volunteered as the videoconference sessions take place after the end of the school day. The teachers transport the pupils to the university and then transport them home by car after buying their supper.

2.3 The Project Focus on the Three Curricular Areas: German, History and Mathematics

AHS sought to involve schools that already had, or could ensure they had access to the technical capability to enable the videoconference sessions to take place. It already had links with the schools in Germany, Japan and South Africa through the existing 'Global Classroom Partnership' activities, for example, there were already exchange programmes between AHS and Graf Friedrich Schule in Germany (see section 2.2). The DHT (history teacher) at AHS was the prime driver of the project, and once he was aware that appropriate facilities were available, he approached the German and mathematics subject teachers in AHS. They were enthusiastic about participating and could see the potential benefits for their pupils. The **German** teacher at another secondary school in Shetland was also invited to take part in the project and agreed.

> *Our involvement came entirely when we had a proposal from the DHT which we really wouldn't have dreamed of saying 'no' to as it sounded too exciting. It wasn't anything that we have planned into our work, but we were given adequate notice so that we could think a little bit about as we planned the session's programme last session.* AHS Teacher of German

One of the key factors responsible for the focus on **mathematics** was AHS' awareness of the innovative teaching of mathematics using ICT in the school in Japan, and the wish to share with the AHS pupils the teaching methods used by the Japanese mathematics teacher. Speaking of the Japanese mathematics teacher the AHS DHT commented

> *The* (Japanese) *Depute Head is an outstanding mathematician, he has written books about the teaching of mathematics in Japan and works very closely with the Sharp Corporation in Japan linking the creative side of Maths to the production of technology. It was a visit in 2002 and a discussion with him that led us to think that somehow we must share what's going on there. It became connected when we thought of the FLaT project of Global Learning and Teaching by using video conferencing so that the idea was born out of watching exciting work going on in school in Japan. The problems then became how do we transfer what is culturally based, linguistically different but mathematically challenging and exciting to the context of Scotland.* AHS DHT

The teacher of mathematics at AHS was enthusiastic about the possibility of working with NUWSS and the benefits to the AHS pupils and teachers.

> *Well it could be a useful tool for the pupils and also for the teachers, the teachers could interact and get quite a lot of CPD out of it in terms of sharing useful practice …and it could work both ways and it's certainly an ideal tool for developing best practices.* AHS Teacher of Mathematics

With respect to the decision to focus on **history**, the DHT at AHS already had contacts with schools in Cape Town dating back to links established in 1995/96 with Harold Cressy High School and later in 1999/2000 Wittebombe High School.

2.4 Developing the Collaborative Teaching and Learning Programmes with the Partner Schools

2.4.1 The Facilitating Factors

Once the AHS teachers who would be involved in the GLIC Project gave their support, the DHT contacted each of the partner schools to explain the project to them. The idea was well received by each of the partner schools and they agreed to participate in the project. The teachers from each of the partner schools were invited to visit AHS during the summer of 2003 to discuss the project and plan a programme of work for the videoconference sessions. Both the AHS and partner schools' teachers felt that having the initial planning meetings with colleagues from partner schools face to face had made future contact between themselves, predominantly by email, much easier. All the teachers in the overseas partner schools were willing to agree a programme of work in the three subject areas with the AHS teachers, that enabled elements of the Scottish Advanced Higher curriculum to be included in the videoconference sessions.

The three teachers who would be involved in the videoconference sessions between AHS and **Germany** (two from Shetland and one from Germany) jointly planned a programme of work at the initial face-to-face meeting. They decided on a limited number of topics, for example 'myself', 'my community' and 'my school', that the Shetland teachers knew would be covered in the Advanced Higher/Higher German syllabus. The two Shetland teachers thought that their German colleague was very flexible and obliging by agreeing to focus on these topics, as they were not topics that were usually in the German school's syllabus. A Shetland teacher of German commented

> *We tried to agree before it got under way about how many sessions we would have and what topic areas we would discuss and just really, kind of at that stage informal, just to try and think in advance how it might work out.*
>
> Shetland Teacher of German

The German teacher of English also supported the view that the initial planning meeting was successful. Subsequently, planning decisions about specific material for pupils' use in each of the videoconference sessions were via email contact.

With respect to **history**, the DHT already had an established working relationship with the schools in South Africa, and on their visit to Shetland the DHT and the South African history teachers devised and organised the structure and content of the videoconference sessions. Topics agreed for discussion in the videoconferences included the Union of South Africa 1910, White Supremacy and Segregation: Hertzog, Smuts and the National Party, and Afrikaner Nationalism 1910-1948. Subsequent to this, there were further visits by the staff in 2004 and 2005 to Shetland and South Africa, which enabled further up-dating of the teaching programme.

For **mathematics**, the presence of the teacher of English at the Japanese school, at the initial face-to-face meeting between the Japanese and AHS mathematics teachers, had been an important facilitating factor in the planning process. The Japanese Mathematics teacher does not speak English and his colleague was able to translate, and consequently enable a full discussion to take place. The teachers from each country agreed that the programme would consist of a mixture of topics from the Advanced Higher mathematics syllabus, and questions from the UK and International Mathematics Challenge. The Japanese pupils had experience of the type of questions in the latter.

This was an important meeting, as through discussion of our advanced higher curriculum, Mr X could see an opportunity to use his computer graphics to support our courses adding an 'extra dimension' to our learning and understanding of the syllabus.
Shetland Teacher of Mathematics

One important development that supported the planning was the launching of the project website http://www.learningface2face.org in September 2004. This enabled teachers from each of the participating countries to share resources and lesson materials prior to the videoconference sessions. They then posted materials on the website for pupils to access in preparation for a session, for example texts and source material in history. The website also provided the opportunity for pupils to communicate on a one-to-one basis via email to share and discuss issues relating to the videoconference sessions.

2.4.2 The Constraining Factors

Specific factors constrained the development of the programmes in each subject. For **German**, there appeared to be few constraints with regard to planning the videoconference sessions. In **history** the AHS DHT had to collaborate with four different teachers in South Africa and ongoing discussions between them centred around how to ensure continuity for the pupils. Additionally, the timing of the academic year is different for schools in South Africa and Shetland as the school year ends in November in South Africa. The programme that was produced had therefore to accommodate the different academic year structures, and to ensure that both schools would benefit from the teaching. As with the other subjects, subsequent email contact between the schools about the programme ensured that material for topics to be discussed at each of the sessions was available, for example, newspaper cuttings.

In **mathematics** because of the language barrier the two teachers had to select topics which required the minimum use of language and relied mainly on mathematical notation. The videoconference sessions were with Japanese pupils who attended the 'maths club'. As participation in the club is voluntary and the pupils are of different ages (third to sixth year pupils) and abilities, the programme had to take account of this and the questions selected had to be neither too difficult nor too easy. The language barrier also constrained ongoing communications between the Japanese teacher and the AHS mathematics teacher when planning the content of each session.

2.5 The Videoconference Sessions

2.5.1 Timing of the Sessions

The videoconferences lasted either one hour or fifty minutes and were held at the following times:
Mathematics - 08.00 (in Japan 17.00)
German - 14.00 (in Germany 15.00)
History - 14.00 or 14.45 (in South Africa 15.00 or 15.45)

2.5.2 The Number of Pupils Present

The numbers of pupils participating in each videoconference session varied, particularly in the overseas partner schools as participation was voluntary. The number of pupils present was as follows:

Shetland Pupils		**Partner School Pupils**
History	N=3 (1 boy and 2 girls)	N=8 max. (1 boy and 3-7 girls)
German	N=6 (1 boy and 5 girls)	N=8 max. (1-2 boys and 3-6 girls)
Mathematics	N=4 (all boys)	N=10 max. (8 boys and 0-2 girls)

2.5.3 The Set Up of the Technological Equipment

The videoconference equipment is set up differently in each location. This has an impact on the image each partner school receives. At AHS the videoconference sessions were originally held in quite a small room, the project manager's room, and the first few observations of the sessions of all subjects were observed in it. The pupils were seated around an oval table in the middle of the room. The seating positions of the teacher and pupils varied in the different subjects, but frequently the teacher sat at the head of the table facing the camera with the pupils either side. The pupils were all facing each other at right angles to the camera. The camera was mounted high at a distance from the table, so for the participants in the partner school it was not always possible to see clearly the AHS person speaking. An interactive whiteboard was mounted on a wall.

From January 2005 onwards all the sessions were held at AHS in a much larger dedicated videoconference room with pupils and teacher(s) sitting around tables arranged in a U shape which faced the camera. This room also has an interactive whiteboard. From the observations of the videoconference sessions in the new room, it became clear that the microphone which had been previously used in the smaller room, was not powerful enough to pick up all the participants' (pupils and teachers) speech when it was centrally placed on the tables. Consequently the microphone had to be moved around the table to enable the speakers to be heard. This resulted in less spontaneous dialogue in the videoconference sessions with Germany and South Africa, where interaction between pupils in the two settings is an integral part of the teaching and learning. However, to combat this problem AHS purchased two new microphones and a pre-amplifier. These arrived in April in time for the final history and German videoconferences. The microphones were installed in fixed positions on each table. The microphones and the pre-amplifier, which helped to boost the volume level, increased the quality of the sound. However because of microphones' sensitivity, the slightest activity for example, moving a sheet of paper on the table, caused a disturbance.

The image the AHS participants received of their partner participants varied between the different subjects, as the image was determined by whoever was operating the camera in the partner school. The coordinator determined the positioning and direction of focus of the camera at AHS. For **German**, the videoconference room used by the Graf Friedrich Schule pupils is relatively compact so that Shetland pupils have a view of several German pupils sitting round a table. When one of them (or the teacher) speaks, the camera zooms in on them so that the Shetland pupils and teachers have a clear close-up view of their German counterparts facing the camera, and the voices can be heard. When viewing the videoconferences at Aberdeen University, it was often difficult for the researchers to see a close-up view of the Shetland participants' faces and hence view their reactions to what they were hearing. The coordinator reported

> *My reasons for sometimes not focusing on the person speaking was that as soon as a person would suddenly stop in a sentence and direct their attention to the teacher, I couldn't possibly zoom out and then go over to the teacher so I tended to keep them all in one picture.*

He thought that an element of future planning sessions would be the decisions taken on how the video camera would be used and who it would be focused on.

For the **history** videoconference sessions, the South African pupils are in a much larger room, a lecture theatre, and sit in rows of seats arranged in a semicircle. Their camera is set up so that AHS has a panoramic view of the room and the participants appear relatively far away in the distance, except when someone speaks and the camera zooms in on them. In one session the voices of all the South African participants were relatively quiet, this may have been due to the equipment not functioning properly or simply because the position of the microphone was too far away from them. The coordinator reported that because of the large size of the

room there are many microphones built into the tables. This resulted in it sometimes not being possible to hear the speaker, because the other microphones picked up the speech of anyone else who started talking.

In the one observed history session at a different venue, the British Council, the room was much smaller with pupils sitting on chairs arranged in straight rows. The pupils sat in the first three rows so when the camera zoomed in on them when they spoke they could be more clearly heard. At AHS the teacher sat in the centre of the group of pupils at the head of the table directly facing the camera and screen with the pupils surrounding him on either side.

For **mathematics** an important focus of the videoconference session is that pupils from each school share the solving of a problem by writing it out on a whiteboard which is interactive at AHS, but not at the Japanese school. When the camera zooms in on the Japanese pupils writing on the whiteboard, the clarity of the picture is frequently poor and difficult for AHS pupils and teacher to see. The coordinator suggested that having a second camera in the AHS videoconference room would solve the problem of pupils obliterating the view for the partner participants when standing in front of the whiteboard.

> *It would have been handy to have had a second camera that can focus straight on the whiteboard, and we discussed that with IT and they said they were going to order one and put it in place, so it would be set next to where the projector is hanging, so that you can switch the output for what the other party sees. I think that would have been better than at an angle as it was. It wasn't really important with any of social subjects or language but it was important for maths.*
>
> Project Coordinator

2.6 The Technical Support Available

The Local Authority provided support to AHS financially by seconding the DHT to develop the project. It also provided a project co-ordinator and a dedicated technician for ICT support. The DHT reported that *'The team of people at the Education Services have been absolutely excellent.*' Regular monthly meetings were held between the DHT representing AHS and a Local Authority Senior Education Officer to ensure that any practical difficulties were addressed promptly. However, as the dedicated ICT support person was only part-time in the role, the coordinator also took responsibility for some technical aspects of the Project.

A key role in the project has been that of the coordinator. This role has been taken by a number of students from countries in the Global Partnership on successive short term placements. Each coordinator further developed the role depending on the stage and needs of the project. Initially the coordinator's role focussed on setting up the communications between the schools and ensuring the ICT facilities were available in the schools. At the time the evaluation commenced a new coordinator from Germany had recently started in post. The previous coordinator had set up the LearningFace2Face website and as highlighted in Section 2.4.1, this was launched in September 2004.

The coordinator's role was to plan, in collaboration with the project manager and teachers involved, the programme and the timings of the videoconference sessions for each subject with the agreement of each partner school; ensure the room was available in AHS; video-record and make copies of the sessions. The coordinator was also responsible for making arrangements with LTS and the partner school, with regard to setting up the connection and testing it out before hand. When three schools participated in the videoconference sessions, a crucial means of ICT support was provided by LTS who coordinated the videoconference sessions to ensure the connections were made to each of the schools.

At AHS the project coordinator was present at each videoconference session to provide technical support to the teachers, i.e. ensuring the microphone and camera were positioned

correctly. He communicated with either LTS or an ICT technician from the Local Authority for additional support if technical problems arose. The presence of the coordinator at the sessions was considered to be essential by the AHS teachers to allow them to focus on the teaching and learning, and not be distracted by the technology itself.

To teach, and to actually ensure that all of the necessary means to make it operate is asking too much.

He (the coordinator) *would tell us whether to turn it* (the microphone) *off or on when the other person was speaking ….we've never actually had to work with zooming in ourselves.*

It has been essential to have a FLaT co-ordinator in the school to help in the transfer of questions and the setting up of the sessions.

2.7 Training for the Videoconferences

The Shetland teachers reported that they had a practice link-up session with their partner teachers to try out the equipment, and also for mathematics, a session using the interactive whiteboard. However, no specific training sessions were arranged for the pupils to prepare them for taking part in the videoconferences, before the actual programme of videoconferences commenced. Whilst the coordinator was present in the sessions to deal with technical difficulties if they arose, it became apparent from the first videoconference sessions observed near the beginning of the school year that the pupils were often not sure how to conduct themselves when speaking to pupils in the partner school. For example, in German, some Shetland pupils tended to look down to read from their notes when speaking, instead of holding their head up and looking directly at the screen or camera for most of the time. When looking down, their voices were not always clear. This sometimes made it difficult for the pupils in the partner schools to hear and understand what the Shetland pupils were saying.

In history, the AHS pupils all looked at the camera and screen when the participants from the partner schools were talking. There were occasions in the earlier sessions when the AHS teacher was speaking, all the AHS pupils would look at him and turned away from the screen and camera. In mathematics where the pupils wrote out an explanation of a solution to a problem it was often not very legible. Although the AHS pupils looked at the camera and screen they often 'huddled' together and looked away from the screen when they were having a discussion amongst themselves, or with the teacher.

DETAILED INDEX

SECTION 3
THE IMPACT OF THE TECHNOLOGY

3.1 Introduction

The aims of the evaluation focus on the impact of the project on teaching and learning and the sharing of teaching strategies and resources (Aim 2); and the impact of ICT within the project: whether it has helped to deliver a more varied and enriched curriculum and the benefits and difficulties of learning and teaching via videoconferencing (Aim 3). ICT, specifically videoconferencing, is the prime facilitator of the project and in considering the impact of the project on teaching and learning it is difficult to discuss this without taking into account the role of ICT. The data for Aims 2 and 3 will therefore be presented and discussed together.

Firstly the teachers' expectations of the project are discussed; the shared teaching strategies and resources; the impact on teaching and learning, including whether it has produced a more varied and enriched curriculum. This is followed by the teachers' consideration of whether their expectations were met, and their hopes for future developments of the programme in their curricular area. The final sections focus on the benefits and difficulties of using videoconferencing.

The data are derived from the interviews with the seven teachers conducted over a six-month period (December 2004-May 2005); questionnaires from six teachers (October 2005); observations of videoconference sessions; project coordinator interview and Shetland pupil and teacher diaries.

3.2 The Teachers' Expectations of The Project

All the teachers viewed their expectations of the project principally in terms of the benefits for their pupils as learners, and also for themselves as teachers. Although the teachers expressed expectations that were common to the project: an increasing international awareness for their pupils; enhanced opportunities for their pupils as learners; and the sharing of good practice globally with colleagues, the overall vision was clearly expressed by the project manager.

> *What matters is that we are thinking in Scotland of enabling world class learning, vocational, academic, social and personal, available to all schools virtually and practically, and the potential for that lies absolutely in what is being done here through this FLaT project. If at the end of the day we really want to create creative problem solving, adaptable young people, it lies in schools being bold enough and brave enough to learn from best practice globally, to learn from best available material in the research field and to not think small but respect things local, to live within things national, but to apprise things internationally.*
>
> The Project Manager (AHS DHT/Teacher of History)

The expectations highlighted by the teachers for their pupils as learners were usually specific to the particular curricular area.

3.2.1 German and English

The teachers from the two countries indicated that they hoped participation in the videoconference sessions would provide an interesting and motivating experience for the pupils. It would help the pupils to be able to speak a foreign language and interact with native speakers from another country: German for the Shetland pupils, and English for the German pupils. The teacher from Germany also indicated that she hoped that this would be a much more advantageous experience for her pupils compared to the usual practice of them only hearing English spoken, and being taught, by German speakers.

Improved understanding of English speakers, including those with a regional accent – better understanding of other environments and ways of life.
German Teacher of English

Increased confidence and a realisation that teenagers in other countries are very similar to them, despite cultural differences. Shetland Teacher of German

3.2.2 History

The South African history teacher indicated that he expected that his school and the pupils would be the *'gurus'* on South African history, helping the AHS pupils to learn South African history. However, his expectations had been exceeded because the videoconferences had been equally advantageous for the South African pupils who realised that they could learn from people in Shetland by sharing their different perspectives. The AHS DHT thought the project would provide an opportunity to use innovation to effect change in teaching and learning.

3.2.3 Mathematics

Both the AHS and Japanese teacher hoped the videoconference sessions would enable pupils to appreciate that despite their cultural differences they shared the language of mathematics.

For the pupils, to see the cultural aspect of it and to see that Maths is something we can do across the world and they have their own difficulties with it, and if we do get stuck we just have to work away at it to find a solution.
AHS Teacher of Mathematics

Experience of mutual understanding through mathematics in spite of the language difference. Japanese Teacher of Mathematics

The AHS teacher thought there was potential for sharing good practice with his Japanese counterpart, and to develop the use of technology in his teaching. The Japanese teacher indicated during interview, that the project provided the opportunity for the two schools to share the curriculum and indicated '*to understand the difference in the teaching method and curriculum, to expand this to create a common curriculum.*' He also hoped to share his expertise in using ICT to find solutions to mathematical problems, though on reflection, he was not certain this aim had been met.

We expected more about sharing the curriculum, we thought we could study and expand our common curriculum between the two of us, but it didn't work so well as we expected. Japanese Teacher of Mathematics

He thought this could be addressed by focusing on a particular aspect of mathematics but explained the drawbacks to that, *'we need more time for the planning bit, both of us are quite busy and it is quite hard.'*

We discuss in Section 3.5 whether the teachers of the three curricular areas thought their expectations had been met, and their hopes for future developments of the FLaT programme.

3.3 Sharing Teaching Strategies and Resources

Although the Shetland teachers shared strategies and resources with teachers from the partner schools, similar to those they already used for teaching in the classroom, the project provided an opportunity for the Shetland teachers to engage in sharing new teaching strategies and resources, which extended the teaching and learning experience for both the teachers and the pupils.

3.3.1 German and English

During the first year of the project the videoconference sessions had focused mainly on the same topic areas. In the second year, the teachers agreed there would be a variety of topics. The pupils had to prepare texts on the topics in advance of the videoconference. During the course of the year the teachers used a variety of formats. In the first sessions the pupils had to prepare a text to speak in the foreign language: the Shetland pupils spoke German and pupils from Germany would then ask questions about the text in English, and vice versa, to give pupils from each country the experience of speaking in a foreign language. In the following sessions pupils were required to prepare texts in their native language. However, after a couple of videoconferences using this format, the teachers from each school agreed that in subsequent sessions in order to make the most effective use of the time, instead of the pupils reading out their texts in the session, the pupils had to write something in advance and post it on the website. Pupils in the partner school read this and then came prepared to the session to ask questions about it. Other strategies that worked particularly well were when the pupils were given the responsibility of finding information themselves to talk about: a newspaper article; local festivals; or a topic of their own interest.

Prior to one videoconference session there were technical problems with email and the Shetland pupils were unable to receive the German pupils' articles until minutes before the session began. This meant that they had not had time to read the article and prepare questions. The German pupils had received, read and prepared questions on the Shetland pupils' articles. The session went ahead with the German pupils asking questions in English first. However, the Shetland pupils had to ask questions unprepared and this resulted in much greater spontaneity in their responses. The teachers when planning for the next session, decided that they would build on the spontaneity by agreeing a topic for discussion, but the pupils would not post the text on the website beforehand.

3.3.2 History

Although the resources shared by the teachers in the partner schools were predominantly source material and texts, the AHS DHT reported that the project had enabled him to share teaching strategies and resources that his pupils otherwise would not have experienced. A very successful resource had been the participation of invited South African guest speakers in Cape Town. These people had been active participants in the particular periods of history of South Africa that the pupils were learning about. In one instance the testimony of a political activist prompted a sustained and rich exchange between teachers and pupils in South Africa and Scotland on different motivations to participate in political and social decision making in democratic and authoritarian systems.

A strong element in the videoconference sessions was therefore the testimony of participants and actors who had lived through and helped shape political, social and cultural change in the South African communities. These sessions brought an immediacy and relevance to the sessions as well as introducing different perspectives and interpretations into the dialogues and historical discussions. Paper resources were embedded into lessons through the discussion of these interpretations and perspectives, and the oral testimony and contributions of individual participants from different nationalities added rich resources to assist the development of historical knowledge and understanding. For example, in a lesson on the determinants of Government policy, the AHS history teacher leading the session used key questions to frame and shape an examination of different factors which had conditioned the development of policy, taking account of internal political differences and personalities in South Africa. The sessions also provided resources with which the teachers could model historical thinking and analysis for pupils, demonstrating how facts and testimony could be challenged, re-considered and incorporated into historical concepts, explanations and commentaries.

3.3.3 Mathematics

It was evident that in mathematics the Japanese teacher made greater use of ICT than his counterpart colleague in AHS, and introduced him to using a computer for problem solving. The teaching strategy agreed by the AHS and Japanese teacher was for the pupils from Japan and Shetland to be given the mathematical problems before a videoconference. They were asked to prepare a solution for each problem so they would be ready to demonstrate the working out of this if they were asked in the session. They took turns to demonstrate the working out of the solutions by writing them out on a whiteboard. The Japanese mathematics teacher reported that he had hoped to make greater use of the computer in the sessions, for example, to demonstrate moving geometrical shapes to help the pupils understand the rules of geometry. *'For example in basic geometry we use a computer to move the shape so that the students can find out the rules for themselves, but when we visited Anderson High School they learnt Mathematics only using the blackboard so we wanted to show a new way.'*

The decision to use a computer for solving problems was acknowledged by the AHS mathematics teacher *'He* (the Japanese teacher*) is very good at the computer side of things and when he shows his solutions he makes use of the computer more than we do.'* The AHS teacher thought that sharing this strategy had been a good learning experience for both himself and his pupils. They learned from being shown solutions in the form of a graph on a computer (similar to using a graphing calculator), compared to the usual method of solving a problem algebraically. He highlighted the value of using the computer as a useful tool, not only for the pupils but also for the teachers.

As highlighted above, the pupils demonstrated the solution to a problem by writing it out on a whiteboard. Although the whiteboard at AHS was an interactive whiteboard, it was only used as an ordinary whiteboard and therefore was not used to its full potential. Language formed a barrier to sharing the teaching strategies for the videoconference sessions. This was overcome to some extent in the pilot year by the presence of a Japanese person at AHS who acted as an interpreter during her placement as project coordinator in Shetland. In the second year of the project a Japanese teacher of English was present with the mathematics teacher in Japan and acted as interpreter.

Preparing in advance of the session helped the teachers to maximise the time available in the session. The website had been launched in September 2004 and was in its infancy at the time of the earlier interviews with teachers. However, the AHS mathematics teacher suggested that greater use could be made of its potential.

> *What I think is the website could be developed more …… I think it has been slow getting the right materials to make it more appealing to pupils or teachers to use. I think we have to do something there in the next months ahead.*
>
> AHS Teacher of Mathematics

He also suggested that hyperlinks could be put in place from the website to useful mathematical sites. He highlighted that he and his Japanese colleague could develop discussion forums for pupils on the website. He thought that if they could make the website more interesting it would encourage pupils to use it to share solutions to problems with each other. This would alleviate the language barrier between them. A Shetland teacher of German also mentioned the untapped potential of the website *'I think the website could be a useful tool that we haven't really got in to in a big way.'* This issue is discussed in Section 3.4.4.

3.3.4 The Use of ICT in the Three Curricular Areas

a) The most useful ICT resources

In addition to videoconferencing as the prime ICT resource, there was potential for other uses of ICT during the videoconference sessions. Inevitably, specific uses of ICT in the project

varied depending on the nature of the subject. The ICT resources judged to be the most useful by the teachers in the different curricular areas included, for German/English: a digital camera to take photos of AHS for posting on the website; for history: the website and the DVD recording facility for playback and review of the videoconference sessions; and for mathematics: the use of the internet.

b) Potential use of ICT resources

When asked if there were any ICT resources they would have liked to introduce, or made greater use of in the project, again there was a variation between the different subjects. The Shetland teachers of German mentioned extending the use of the digital camera and showing photographs or slides using the whiteboard, together with DVD recordings of videoconference sessions, and greater use of the website. For history, it was thought that having individual laptops would enable individual shared learning both during, and outwith, the videoconference sessions. Both mathematics teachers expressed a wish for greater use of computers/laptops and specific mathematical software, for example, *'Geometer's Sketchpad and Autograph'*, and the Shetland teacher also mentioned use of the interactive whiteboard.

c) Influence of ICT on choice of topics

The teachers of history and languages thought that ICT had not specifically influenced their initial choice of topics for pupils to study during the teaching programme, as they had been based on the existing Advanced Higher curriculum. However, the mathematics teachers commented that particular topics and questions had been chosen because using ICT in the form of *'applets and dynamic software, could bring those questions to life.'*

AHS Teacher of Mathematics

Also, they included topics where ICT could support learning in that they

> *Would serve as a good introduction to computer aided mathematics education, such as elementary geometry and functions.*
>
> Japanese Teacher of Mathematics

3.4 The Impact of the Project on Teaching and Learning

3.4.1 Introduction

As highlighted in Section 3.1, ICT, specifically videoconferencing is integral to the project and hence its impact on teaching and learning. Research studies (Burke et al 1997; Cifuentes & Murphy 2000; Thorpe 1998) have indicated that videoconferencing opens up opportunities for new ways of learning and teaching for both teachers and pupils; it can support rich learning interactions within groups; widen learners' horizons and introduce learners to different perspectives within peer to peer exchanges; introduce changes in the roles and relationships between teachers and learners; and has the potential for teachers to adopt new and innovative teaching and learning styles giving pupils more autonomy as learners.

Has the GLIC Project achieved any or all of these benefits? The project teachers in all curricular areas reported that participation in the videoconference sessions had impacted on pupils in a number of positive ways: it had enabled pupils to share and learn from others' perspectives; raised their awareness of cultural differences and of alternative strategies of learning, including greater independence in using ICT; and promoted their engagement with learning in terms of improved pupil confidence, motivation and self esteem. From these outcomes the teachers judged that pupil learning had been enhanced. The outcomes of improved pupil confidence, motivation and self esteem will be discussed later in Section 4. The AHS DHT (history teacher) reported that a pupil who participated in the pilot first year of the project said

> *I never really believed that it could happen, it* (the videoconferences) *taught me that maybe there is much more to learn from meeting people and seeing people than I had imagined.* AHS History Pupil 2003/04 (reported by the AHS DHT)

The teachers thought that videoconferencing, bringing teachers and pupils face-to-face for teaching and learning purposes across different continents, provided a unique learning context in comparison to other learning situations.

> *Overcoming the distance between Japan and Shetland, allowing both sides to communicate with each other as if they are right in front of each other.*
>
> Japanese Teacher of Mathematics

The teachers also reported that an added benefit of the videoconference sessions was that pupils' presentation skills had improved as a result of interaction with other pupils and adults.

With regard to the benefits for the teachers themselves, they thought that videoconferencing provided a unique opportunity for them to learn best practice from others, and that the DVD recordings they either had already seen, or would potentially see, would enable them to examine their own practice. Regarding the potential for teachers to adopt new and innovative teaching and learning styles, the researchers do not have baseline data regarding the teachers' normal teaching style prior to the evaluation commencing. From the observations it was apparent that there was a variety of teaching styles being used in the different subjects.

3.4.2 The Impact on Teaching

An important potential resource for the teachers to examine their own practice was the recording of each videoconference session which was then uploaded onto the website. This provided a permanent record for teachers to view and reflect on the use of this medium as an aid to teaching and learning.

Had the project changed the teachers' styles and facilitation of learning? Three out of the six teachers indicated a positive response when asked whether they had changed their teaching style as a consequence of taking part in the Project. The changes they mentioned included: allowing the pupils more opportunity to work independently; allowing pupils a more participatory role in discussions; and allowing pupils greater opportunity to discuss and compare their solutions (mathematical) and to present them to the class, compared to the usual practice in an Advanced Higher class.

a) German and English

The three teachers reported that their involvement in the project had motivated and encouraged them to consider a different emphasis in the course. The German teacher of English reported '*on being able to communicate and show even more English language films',* and to make greater use of ICT in their teaching or for pupil work. The latter included giving pupils homework tasks that required them to use the internet. '*I enjoyed the opportunity to see "new" technology in operation and it has made me feel a bit more motivated to use ICT to a greater extent.'*

From the observations, apart from when chairing the session, both the German and Shetland teachers acted principally as facilitators and only intervened during the videoconference session for a number of purposes: to suggest their pupils begin a particular segment of the videoconference, to move the interchange to the next stage, to encourage their own pupils to ask questions, to interpret for their pupils when the language used was not clear, to plan for the next conference. A teacher commented

> *The pupils benefit in terms of direct learning, one of the joys of this with the German and English is that the pupils are teaching and that's a delight, they are teaching each other. I haven't witnessed the other conferences in any other subjects but that must be something I would imagine must be of a certainly unique nature. We the teachers have tried from the start to be as little involved as possible, to say as little as possible. I would say that is getting better, pupils are getting more confident or*

maybe we are just getting better at keeping out of it so they are learning and teaching each other and that's wonderful. Shetland Teacher of German

On occasions the teachers were observed to assist pupils by engaging in useful modelling of language, for example, *'Please repeat the question'* - German teacher; *'So, das war's'* ("That's it") - AHS teacher.

b) History

The South African teacher indicated that the videoconference session provided an opportunity for him to share good practice as a teacher and to learn from another teacher.

As a teacher there are certain topics that you don't really like, that might not be your strong point. But for example when X (AHS DHT) *has covered a topic. Then the children see it a completely different way to the way that I explained it to them, but I think it also helps. And I can also learn from X* (AHS DHT) *"Oh that's a good way to get a point across", because we are normally just set in the ways that we teach, and yet to see a different perspective on the same topic - it also enriches me as a teacher. I can also learn and it improves my teaching methods.*

South African Teacher of History

The videoconference sessions were equally valued by the AHS DHT who indicated that they had enabled him as a teacher to appreciate South African History from new perspectives and sources - people who were active in shaping 20th century South African events. He also highlighted the additional demands of working collaboratively with teachers in schools from a different continent. This required sustained contact and planning, which had not always been easy because of the ICT limitations in South African schools.

It was clear that chairing videoconference sessions which relied on live, unscripted exchanges and exploratory dialogues placed new demands even on highly experienced classroom teachers. The AHS teacher also had to adjust to and accommodate new groups of South African pupils at each session, as only a core of four South African pupils participated in every session, with additional pupils participating in rotation. This made it difficult for the AHS teacher and pupils to build up a relationship with the South African pupils.

The teachers observed showed themselves to be aware of the need to design and facilitate sessions to support effective discussions. Both whole-class, question driven sessions and small group discussions were observed to work well and support effective learning. In the first session observed between AHS and South Africa in the new school year, the teacher took a more prominent and central position, managing and orchestrating contributions from other speakers and pupils. Pupil contributions were less frequent and often shorter under these arrangements. Complicated questions often received short, or even one word answers from the pupils which the teacher had to interpret and weave into elaborations and further commentaries. However, these commentaries were highly effective summaries and allowed the teacher to demonstrate historical thinking through talk as 'loud thinking' in the classroom.

After this session the AHS DHT received feedback from an AHS pupil who was on an exchange visit to Cape Town and was present with the South African pupils during the videoconference. The pupil emailed the DHT with suggested recommendations for ways to improve the experience for the South African pupils. These comments were taken onboard by the DHT. During the observation of a later session he asked questions of the AHS pupils which enabled them to have more say and greater participation. He also considered the opportunity to view the recorded videoconference sessions a good learning opportunity for himself.

It's quite unique that you can have that insight to re-run what you have done and to critically look at it from the two eyes of the student and the learner, so I would say in terms of teaching and learning the website, and I find it gruelling to go back to it, I

> *try to resist, but I do….. my talking too much and it's slightly getting less, the argument and debate is driven from there with us being a little defensive. It's a good thing to learn, and that kind of ability to microscopically look at what you have done and how you have done it and to improve upon it is definitely one element.*
>
> AHS DHT

c) Mathematics

Both teachers reported that involvement in the project had given them new insights into the mathematics curriculum and teaching. For the Japanese teacher, working face to face with pupils from another country, had enabled him to reflect *'on the state of maths education and curricula in our school and in Japan as a whole.*' The AHS teacher indicated that it had raised his awareness of the potential role of ICT in teaching mathematics, *'it will play an important part in the future of mathematics teaching… visual graphics can help students to a better understanding of the algebraic process.'*

During the observed sessions in mathematics there was very little teaching being done by the teachers since it was the pupils who were showing their work on the boards. At one point the Japanese teacher demonstrated how he would solve a problem and he used technology in the form of a graph drawing software package to do it. As a consequence it appeared that the impact on the teaching of mathematics arising from the observed sessions was minimal, but both teachers appeared to be aware of this. For example the Japanese maths teacher is anxious to develop the use of the computer during the videoconference sessions. He would like students in both settings to *'use the computer at the same time and we could find various solutions together'*. The AHS maths teacher recognised the need to use new teaching approaches. For example

> *I am also considering the sort of Interactive Whiteboard aspect of it more than I would have done before so all these things……*

On the other hand, the pupils at each location were writing their solutions for everyone to see - fellow pupils on the same site, pupils at the other site and to both teachers. This in itself is not common practice at Advanced Higher Level, and therefore could be described as a different teaching approach. Before writing their solutions on the board, the pupils had to prepare them and be confident about their appropriateness and accuracy. The procedure also allowed for ongoing assessment not only by both teachers but also by their peers.

d) Collaboration between the Shetland teachers

An important feature of the project was the sharing of good practice globally between teachers in the different countries. However there was less collaboration between the four Shetland teachers themselves, regarding sharing their experiences and teaching methodologies of the three subjects. The Shetland teachers met together on only one occasion, at the beginning of the evaluation. When asked about collaboration between the different subjects, two teachers expressed a wish that there could have been more opportunities for this.

> *A very brief informal discussion took place, however, information was limited and a more formal process may have resulted in greater insights into teaching methodologies using ICT.*
>
> *I would have welcomed the opportunity to discuss methodologies with other departments using video-conferencing.*

However, whilst it was recognised that '*sharing ideas would always be valuable', a* teacher of German thought that the teaching approaches varied between the subjects. '*Our approach is different from other subjects in that the teachers do not teach during the conference – almost all the interaction should be between pupils.'*

One teacher indicated that although there had been no 'formal' meetings, he had viewed strategies used by colleagues both in advance of, and during virtual learning and teaching sessions in other subjects. '*I have learned to adapt some of the strategies used by colleagues in departments where pupil participation is high.'*

3.4.3 The Impact on Learning

In this section the impact on learning is discussed with regard to specific aspects of enhanced learning in each curricular area, including the impact on developing a more varied and enriched curriculum. The results from the teacher questionnaire (Table 3.1) indicate that all teachers (N=6) thought that the project had a positive impact with respect to pupil learning, and pupils sharing ideas/ways of learning in their curricular area. The majority (N=4), also thought it had helped them as teachers to develop a more varied and enriched curriculum and to promote innovations in learning and teaching.

Table 3.1 The Teachers' Views on the Impact of the Project on Learning and Teaching
(number of questionnaire responses) N=6

How much do you agree with the following statements? * includes nil response	**Strongly Agree/ Agree**	**Strongly Disagree/ Disagree**
The Project has been **very successful** in promoting innovations in learning and teaching in my subject.	4	2
I feel the students **learnt a lot** through taking part in the VC sessions with students in our partner school.	6	0
It was **helpful** for my students to share ideas/ways of learning, and to talk to students in their partner school.	6	0
Taking part in the Project **has helped me** develop a more varied and enriched curriculum in my subject.*	4	1

a) German and English

The teachers highlighted that the project provided the opportunity for the pupils to practise speaking a language in a 'real' situation and they all managed to communicate, despite making mistakes. One teacher commented *'realising you don't have to be perfect'* was an important learning experience. All three teachers expressed the view that the German and Shetland pupils' listening and speaking skills in a foreign language had improved. Teachers from both countries commented on this.

> *They were having to listen very carefully when the Germans actually spoke in their own language.* Shetland Teacher of German

> *They learn by listening to the Shetland pupils, they learn to cope with the accent.* German Teacher of English

The German teacher emphasised that the experience for pupils of coping with an accent was especially useful.

> *The ones who have a slight accent, it takes a lot of getting used to it, that's what I wanted my pupils to experience.* German Teacher of English

The benefits perceived by the Shetland pupils' are reflected in comments in the diary which they completed after a session.

> *If you are learning a foreign language it is useful to be able to put it into practice by speaking to actual German people.* Shetland Pupil

> *Hearing the German pupils speaking is very good practice for listening and translating.* Shetland Pupil

There were frequent clear indications that pupils were understanding the foreign language they were hearing: appropriate laughter/giggles, interactions on a particular theme sustained over several minutes, including relevant interventions, follow-up questions and spontaneous reactions to what they heard: 'Ja!'; 'Gute Frage!'; 'Cool!', Danke!/Bitte!','Kein Problem!', etc. However, there clearly appeared to be other occasions when pupils were listening 'dutifully' but with few obvious signs of understanding: there were significantly long pauses, for example, after hearing a difficult word or concept in German, e.g. 'Ausländerberatungsstellen', 'Fleisch in Weinblättern' (when hearing about a meal to celebrate world religions) and occasionally the interchange became disjointed and hesitant. Equally, the set-up of the technology sometimes made it difficult to gauge whether the Shetland pupils understood the texts they heard being read out by the German pupils, and whether the Shetland pupils were alert and attentive. For the observations from the AU conference suite, the technology rarely allowed pictures of both groups of pupils to be displayed on the screen simultaneously. This made the observation and interpretation of the pupils' reactions difficult.

In all the sessions observed, however, pupils appeared to cope well with a range of authentic foreign language inputs and, with occasional prompts from teachers, managed to sustain successfully the interchange on the agreed topics for discussion. They were seen frequently to take control of the interaction, for example where they intervened to ask for clarification. Requests for explanation of individual words or concepts were by far the most common form of intervention by pupils. However, there appeared to be few indications of the Shetland pupils shadowing of the language used by the German pupils or imitation of models heard.

Activities to extend learning

During the course of the year the teachers changed the formats of the sessions as indicated in Section 3.3.1. The pupils prepared a written text in the foreign language and then read it out; at other times Shetland pupils prepared a written text in their native language and the German pupils asked them questions in English. The Shetland pupils read articles written by the German pupils in German, and then prepared questions to ask them in German. The potential for enhancing the learning activity was seen after a later session in February which included a third school, Ballyclare High School, in Northern Ireland. The teachers agreed to make the next session more *'spontaneous',* i.e. by agreeing a topic for discussion but not posting the text on the web beforehand. One commented on the need to balance supporting pupils who were less confident and needed to be prepared with the need to talk spontaneously.

> *It would be good if there was one session where there was just a topic area and they just came in and – I think it might probably be chaotic, I don't know, where they just have a normal conversation, if you can have a normal conversation without – I felt at times it was maybe that one person would speak and then the next, and then the next person, so it's difficult to get it more natural but that's what I would like to see. It depends on the pupil's command of the language, but to get to that stage that would probably come towards the end of a year's work and it would only be if two groups were taking part and they got to know each other a lot better.*
>
> Shetland Teacher of German

The teachers indicated they hoped to use recordings of the sessions for follow-up work with pupils, although complete recordings of the sessions did not appear to be available to them. A teacher reported in a diary entry in February

> *As before, we would value a DVD recording of the session so that we could analyse in class elements of the spoken German that people did not understand when listening live. The technology does not seem to work for this yet.*
>
> Shetland Teacher of German

However, selected video clips from videoconference sessions were posted on the website. On one occasion one of the Shetland teachers had made use of these. Together with the pupils they viewed the German pupils speaking. *'I did it for listening practice to see how much more they could understand…that is something that could be exploited more using the website.'* This clearly was a useful resource to aid the pupils' listening and speaking skills: for example, the modelling of particular German expressions, intonation, strategies for turn-giving/turn-maintaining, etc.

As indicated in section 3.4.2, the DVD recordings provided a potential resource for both teachers and pupils. However, this does not appear to have been made explicit and shared with all the Shetland teachers. The coordinator explained that is an issue that the school intends to address during the current school session.

> *We didn't figure out the potential there, but I think it will be improved I am quite sure about that. We talked ….. may be establish within the school a dedicated server that can hold all the lessons, and all the teachers can go directly to it and get it from the server. It wasn't really clear how we would do it with regards to exchanging this material because the technology, the computer in the room, was not really up to speed. That should be changed and I ordered new specifications.*
>
> Project Coordinator

One striking feature of the observations was that although certain pupils when speaking had good regard for the audience, even pausing to ask *'Habt ihr verstanden?' ('Did you understand?'*), very often the delivery was with head down, at speed, not always clearly audible etc. However, the teachers did try to encourage pupils to speak clearly, slow down, and repeat where necessary.

The teachers considered that one means of extending learning was for the pupils to communicate outwith the videoconference sessions. Although the technology was in place for pupils to communicate personally with each other this had not happened. One of the Shetland teachers considered that it would have been helpful for the pupils if this aspect had been developed further, as this would have helped the pupils to get to know each other better (see Section 3.4.4).

Occasions when learning was hindered by the technology

Through contacts made via the AHS DHT, a modern languages teacher from Northern Ireland expressed a wish for his school to become involved in the videoconference sessions. Ballyclare High School joined the videoconference sessions in 2005, the first time in February as observers. On the second occasion in April they participated in the session. As a result of this, the dynamics between the Shetland and German pupils appeared to change from the earlier sessions when only the two schools participated. The flow of conversation between the Shetland and German pupils was not so apparent as had been observed in previous sessions. The Shetland pupils appeared to be reluctant, at times nervous when asking questions in German to the German pupils. On the first occasion when the Ballyclare pupils observed only, the picture for Ballyclare was often not visible, or when it was visible the sound and image failed to synchronise, resulting in the Shetland pupils not being able to see and hear the Ballyclare participants clearly.

A disadvantage for the Shetland pupils in having an additional English-speaking school participating, was the period of 'downtime' when one of the English speaking schools did not participate in the conversation, but was simply an observer. When Ballyclare asked the German students questions in German, the Shetland pupils appeared disengaged, and uninterested in watching the exchange between the schools. Both the Shetland teachers expressed concern in the diaries they completed after the session.

My pupils and I feel that the sessions we have had with only two schools participating were much better and the pupils had more opportunity to speak. In my opinion, when too many people participate, certain pupils clam up and therefore do not get as much out of the vc. Shetland Teacher of German

'There were challenges involved in linking three schools for the first time. The role of the chairperson (German teacher of English) *was certainly harder: although she did well, we should consider how to make things slicker. This in turn removed some of the enjoyment we have had in previous sessions. My pupils and I knew we would lose the sense of a mutual status being accorded to both languages. This has disappointed us all, and we would like to look at ways of counteracting this if indeed it is possible to do so.'* Shetland Teacher of German

When asked what had 'not been so good' about the session, a Shetland pupil wrote in a diary entry *'It made it more difficult to know who was speaking, and we were unsure when to speak.*

Cultural Awareness
An important aim of the project was to increase pupils' awareness of other cultures. The teachers were of the opinion that as a result of videoconferencing, the pupils' knowledge of the German culture had increased, both by talking to the German pupils and sharing newspaper articles and aspects of each other's lives.

The observations identified a variety of examples in a number of videoconference sessions of the pupils from Shetland and Germany sharing and taking apparent pleasure in presenting aspects of their experience to the other group, for example, about their school and festivals, and in responding to questions. Face to face contact enabled the pupils from the partner school to share information that they were less likely to get from textbooks or classroom-based lessons in their own countries, for example, Shetland pupils presented articles on Up Helly Ha, a local Shetland Isles traditional festival.

Their follow-up questions showed evidence of a genuine interest in comparing the situation in each context, for example, a Shetland pupil asked whether German pupils have TV/computer in their bedroom; a German pupil asked whether there are Muslims living in Lerwick; a Shetland pupil asked how difficult exams are; a Shetland pupil asked whether it was dangerous for children to attend the local Schützenfest (a country fair featuring rifle-shooting competitions). Especially if the face-to-face sessions are followed up with further research and study of the theme discussed, it can be argued that the curriculum for these pupils has been substantially enriched. The diary entry of a pupil recorded *'and we also find out a lot about Germany, and the different customs they have.'*

b) History
Out of the three history videoconference sessions scheduled during the 2004/05 school session, only two with South Africa were observed. A connection could not be established between South Africa and AHS for the remaining session. Each videoconference session was held in a different location in South Africa with different groups of pupils.

The South African teacher reported that by sharing South African history with the teacher and pupils in Shetland his pupils had learnt about the history of their country from a different perspective. It also had helped the South African teacher to gain a different perspective as well (see Section 3.4.2b).

The introduction of different perspectives is one of a number of ways in which the project has helped to deliver a richer and more varied curriculum for pupils. The exploration of different perspectives is associated with richer opportunities for discussion and other forms of classroom talk. The history sessions observed made repeated demands on those taking part to

accommodate different accounts and explanations of historical events. The AHS teacher highlighted this to be an important aspect of learning history for the pupils

> *To see directly 20th Century SA from perspectives of contemporaries in South Africa… new insight for all - students and teacher – about key issues of segregation – Afrikanerdom – Apartheid.* AHS Teacher of History

The witness testimonies incorporated into videoconference sessions provided opportunities for the social, cultural and economic impact and significance of historical events and political decisions to be explored and assimilated into personal understandings. For example, a former prisoner on Robben Island gave an account of his experiences. As a consequence there were curriculum gains for the pupils. The challenge to reconcile textbook histories with personal testimonies from history and different societies placed stimulating new learning demands on pupils.

The videoconference sessions provided pupils with insights into very different cultural and social experiences as learners, for example, in the willingness to talk from personal experience and openly about controversial issues such as race, justice, fairness, equity and repression. Such dialogue placed demands for open-mindedness and critical thinking upon pupils. In one history lesson observed, pupils were challenged to defend positions they adopted and statements they made, for example in relation to the economic and social consequences of the policy of separate development. By exploring the different perspectives and cultural expectations and experiences, the videoconference sessions gave pupils the opportunity to reflect on their own approaches to learning, and their own assumptions about how issues are to be understood.

The project helped pupils to focus upon differences in national arrangements, personal circumstances and cultural resources. As such, the videoconference sessions allowed pupils to confront and address cultural and social differences, and so escape the relativism of exclusively national and culturally-situated understandings. Thus the development of international perspectives and understandings, as a consequence of the direct experience of working and learning with others from a very different culture, was an important element in the enriched curriculum provided by the project. The South African pupils' views confirmed this (see Section 5.5).

The learning potential of these new opportunities and challenges is enhanced when the sessions are conducted live and then captured for later analysis and reflection with teacher support. Finally, the videoconference sessions provided pupils with settings in which they could develop key communication skills and develop confidence and competence, with the use of discussion as a medium for the exploration of thinking and the building of individually constructed, but shared understanding (see Section 4.4).

c) Mathematics

Both the Japanese and AHS teacher judged the videoconferences to have had an impact on the pupils' learning, in that the pupils from the two schools had solved and described the same mathematical problem in different ways. In doing this, they had learnt from each other and that different countries teach mathematics using different methods. The Japanese teacher indicated that the sessions had been a stimulus for the Japanese pupils to try to learn by themselves. He indicated that the language had been more of a barrier in the second year of the project than the first year where the pupils had a greater command of the English language. However, some of the current cohort of Japanese pupils studied English and could '*speak English quite well'*. He indicated that one of his pupils had explained his formula in English in the previous videoconferences session.

> *They understand each other quite well in the mathematical point of view, but we are still having some difficulty in language barriers. They enjoyed the different sort of calculations of advanced teaching method. I think it helps the students to understand*

mathematics and the English point of view, they learned a lot of technical terms of maths and they enjoyed it. It was very hard to listen to English but they can read quite well. Japanese Teacher of Mathematics

In the videoconference sessions observed, both the AHS and Japanese pupils, when working through the solution to a problem simply wrote it out in silence on the whiteboard. In the interview with the Japanese teacher, the researcher asked him if it would help the Japanese pupils if the AHS pupils talked and explained their solutions (and thinking) out aloud. He replied

It would be better if we could talk while we solve the problem, but in the mathematics class they can communicate just by writing on the board.
Japanese Teacher of Mathematics

When a pupil wrote their solution on the whiteboard, the observers were able to compare this pupil's solution with their own previously produced solution. Differences in mathematical methods were noted by the pupils and teachers. The data from the AHS pupil diaries confirmed this.

The Japanese students' solutions were similar to ours but with some interesting differences.

I saw different ways of solving the questions that I would not have previously used.

I learned the Japanese had to go into far more detail.

I learned what the graph of $y=x^4 \sin 2x$ *looks like.*

Saw a different method of showing and finding complex roots of an equation.

The mathematics teacher at AHS commented on his observations of practice in Japan. He considered the videoconference sessions were invaluable in finding out how mathematics is taught in different countries, and for comparing abilities of pupils in Japan and Shetland. He noted in particular that Japanese pupils are ahead or better at algebraic manipulation, compared to his own pupils who appeared to be better at applying general problem solving strategies. He commented favourably on the Japanese teacher's ability to use ICT in teaching mathematics and saw this as stimulation for his own personal development in this aspect.

With regard to raising the pupils' awareness of other cultures, the AHS teacher also pointed out that his pupils benefited from noticing the Japanese pupils' high ability and hard work ethos. He felt that it was particularly valuable for pupils from a relatively isolated community to be outward looking and to compare themselves and their practices with those of an entirely different one.

They gained an insight into maths education in Japan and the ability of their Japanese peer group. This gave them a good pre-university insight into acknowledging the maths capabilities from students outside Shetland.
AHS Teacher of Mathematics

3.4.4 Communication Activities Outwith the Videoconference Sessions

In addition to the videoconference sessions, the use of ICT provided an opportunity for communication activities outwith the videoconference sessions, for example, discussion forums on the website and email communications between individuals via the website. However, these were less well used by pupils than by the teachers, as already highlighted in interviews with the Shetland teachers of mathematics (Section 3.3.3) and German (Section 3.4.3a). All six teachers agreed with the statement in the questionnaire, *'I am disappointed that my students did not communicate by email with students in our partner school, and get to know some of them better.'*

a) The teachers

Both the Shetland and the partner schools' teachers indicated that the main communication activities outwith the videoconference sessions were email messages sent between the subject teachers to their counterpart in the partner schools. The general purpose of the messages was to agree the content of the sessions and which resources to place on the website for pupils to access prior to the videoconference. For example, the two teachers of mathematics exchanged the problems which the pupils would be solving. The history teachers exchanged newspaper articles which were subsequently placed on the website for pupils to access. The three foreign language teachers wrote and exchanged articles for the pupils to translate and then formulate questions to ask in the videoconference session.

b) The pupils

Although the technology was in place for pupils to communicate personally with each other this had not happened. One of the Shetland teachers considered that it would have been helpful for the pupils if this aspect had been developed further, as in German, this would have helped the pupils to get to know each other better.

> *It would have been good if as well as taking part in the video conferences they had been linked up with just one person and maybe just once a week email them, or it could be written into the programme for next year, just to get to know at least one person a bit better and they could have practised emailing in German and in English. It would have been good practice for both of them.* Shetland Teacher of German

The teachers also highlighted the use of discussion forums on the website for pupils as an area for future development.

> *AHS pupils to make more personal contact with Japanese students through internet, e-mail, web-page, discussion of problem solving.*
>
> *More use of the website, e.g. for posting texts in advance of conferences, and by pupils writing messages to each other.*

3.5 Had the Teachers' Expectations of the Project been Met – What are their Hopes for Future Development of the Project?

When asked whether their expectations for the pupils had been met, all six teachers responded positively, citing the gains for pupils already reported in Section 3.4.1. However, three teachers thought that pupils' understanding of other cultures could be developed further by individual email contact between the pupils in the partner schools and greater use of discussion forums on the website (Section 3.4.4)

> *To a certain extent, although I would have liked each pupil to have made more personal contact with a counterpart in Germany, through e- mail etc. In this way they would have got to know more about one particular person.*
>
> Shetland Teacher of German

Other suggested areas for future developments in the FLaT programme included: DVD recordings of the sessions to be made available to teachers shortly after each conference; identifying potential links with other schools, *'a possible link up to another top Maths performing school, say the former Czech Republic';* and taking forward the concept of pupils within the school learning globally across age and stage. The latter is central to AHS' 'School of Ambition' programme, *'Living locally: Learning Globally'* which commenced in the school session, 2005/06.

Central to any future developments was the recommendation that the technology used for videoconferences is '*reliably robust' and 'kept up-to-date'*. The Japanese teacher of mathematics highlighted that it was *'not always possible to implement an exciting*

curriculum in day-to-day classroom teaching' and the FLaT project '*would create a programme that motivates participating students to learn more and enables them to study independently.'*

3.6 The Benefits of Videoconferencing for Teaching and Learning

As discussed in Section 3.4, the main benefits of videoconferencing reported by the teachers for themselves and their pupils are:

For Teachers

- The sharing of best practice with teachers globally;
- the provision of a more varied curriculum;
- reflection on the teaching process, facilitated via a recording of the videoconference;
- the provision and availability of new resources;
- the opportunity to compare and contrast teacher roles and techniques to support learning.

For Pupils

- The provision of a more varied curriculum;
- sharing and learning from others' perspectives;
- raising awareness of cultural differences by sharing of experiences;
- raising awareness of alternative strategies of learning;
- improved confidence, motivation and self esteem;
- improved communication and presentation skills.

An AHS pupil who participated in the history videoconferences summed up the experience.

> *It is a brilliant project that gives you an insight into a completely different way of life.* AHS History Pupil

3.7 The Difficulties of Videoconferencing for Teaching and Learning

3.7.1 The Technical Difficulties

The main difficulties of the use of videoconferencing perceived by the pupils and teachers in each of the subjects, and the project coordinator, related to the technology:

- failure to establish a connection between AHS and the partner school, and loss of the connection during the videoconference;
- problems with the technology during the videoconference, for example quality of the picture; failure of the audio and visual signals to synchronise;
- inadequate equipment, for example, sensitivity of the microphone for the size of room;
- increased likelihood of technical difficulties when there is more than a two-way link between schools.

Observation of the videoconference sessions revealed that the technology functioning properly was an important factor in whether the conference was successful in terms of the teaching and learning. The sessions lasted for fifty minutes or one hour, and if there were problems in establishing a connection to each country, which occurred on several occasions, time was wasted waiting for the session to begin. Technical difficulties encountered during the videoconference session were seen to be a source of frustration. In all the subjects when technical difficulties occurred, it disrupted the flow of learning and pupils appeared to 'switch off' although were seen to sit waiting patiently.

The project coordinator reported that when there was a failure of the technology, it was not always a straightforward matter to deal with the problem because of the variety of connections used between the different countries. The connection used for the

videoconference sessions between AHS and Germany and South Africa was via an ISDN (telephone) line. The connection between AHS and Japan was via an IP (internet) connection. The type of connection used appeared to have an impact on whether the videoconference session was likely to incur technical difficulties.

> *I think the ISDN connections were better in the sense that they were more stable connections, they are not dependent on any network traffic because they are using basically telephone lines and if you have an established telephone line between two parties its always going to be more stable. The frustrating thing maybe was the technology, …….if things go wrong, to have things immediately in place to make it work is quite difficult, because you never know where the problem is, and because we had such a variety of connections, it is always going to work differently with different connections.* Project Coordinator

a) German and English

The connections to Germany were relatively successful, and only on one occasion was a long delay of seventeen minutes observed.

However, the addition of a third school, Ballyclare High School, joining in the videoconferences for two sessions, resulted in a greater number of technical difficulties with a three-way link. As indicated in section 3.4.3a, the addition of another school affected the relationships established between the Shetland and Graf Friedrich Schule pupils. However the technical problems, for example, the image of Ballyclare not being visible so that the Shetland pupils were unable see the Ballyclare participants, appeared to have a greater impact. The establishment of a three-way link appeared to be responsible for the frequent failures of synchronisation of the image and the sound, compared to the usual two-way link between AHS and the German school. A Shetland teacher in interview commented

> *'For a subject which is dependent on the aural it depends on how good the technology was working on the day. I do feel that on more than one occasion the screen froze or sometimes we couldn't hear them clearly so that kind of held us up. I felt and I know the pupils felt, that we could understand it best when we were zoomed in on the person speaking, and if everything was working well, and their lips. I really think it does help if their lips are moving in time to what they are saying, but when you just see somebody's face frozen on the screen, or if there is a delay between their lips moving in time to what they are saying, the pupils find that difficult to follow.'*
>
> Shetland Teacher of German

The technical difficulties were distracting for the pupils and an extract from a pupil diary notes that *'We couldn't see the Irish school most of the time, only hear them, and see the German school which made it difficult.*' This clearly impacted on the engagement of the pupils with the task, and their enjoyment of the session. The technical difficulties also caused difficulty for the German teacher who was chairing the session on both occasions that Ballyclare was involved, and who could be heard to say *'Can't pick up who is speaking. Are you still there?'* On both occasions there was interference from noise and the sound quality was poor. The Shetland teacher also commented in the diary after the session

> *I knew there would be difficulties involved in linking the three schools for the first time but the technical problems definitely detracted from the enjoyment of the conference. It was sometimes unclear who was speaking, or impossible for us to see the speaker. This made the pupils feel more detached from the proceedings.*
>
> Shetland Teacher of German

The project coordinator reported that involving more sites in a videoconference session, compared to a direct two-way link, would inevitably mean there was a likelihood of increased technical difficulties. This had been exacerbated in the first session which included Ballyclare High School because the link was only made via a webcam.

b) History

The connection to South Africa was particularly dependent on the technical capabilities of the venues for the videoconferences in South Africa. On the first occasion when the researchers attempted to observe a session from the Aberdeen University videoconference suite, the connection between AHS and South Africa was unsuccessful. We were later advised by AHS that Langa High School had given the wrong connection information to AHS. A session much later in the school year had been arranged to take place at the British Council because the technical support person at the university was away on leave. The project coordinator spent several hours with the person at LTS attempting to establish a connection to the British Council prior to the videoconference. However despite these efforts it was unsuccessful. The only possible means for the videoconference session to take place was for AHS to connect by ISDN directly to South Africa and incur the connection costs. Once the connection was made the teacher from South Africa indicated the picture of AHS was blurred. Generally once the connection with South Africa was established there seemed to be fewer problems, although there was often a lack of synchronisation between the image and the sound.

c) Mathematics

There were a greater number of difficulties in establishing the connection between AHS and Japan, and once established it was often difficult to maintain. On the three occasions a mathematics videoconference session was observed there were difficulties in establishing a connection between the two schools. On one occasion it took thirteen minutes, and for another session it took thirty minutes before the connection was established. This significantly reduced the time available for pupils from each school to share the problem solving activity. However, the AHS teacher used the time constructively whilst waiting for the connection to be established as he directed the pupils to begin working to solve additional problems. During most of the sessions observed either the sound, image or both, were lost at some time during the session. This disrupted and prevented the solutions being seen by both schools. In every session each school asked at least once if the other school could still hear or see them. During one session there was a period of seven minutes when the technology in Japan was not functioning properly, and the teacher and pupils could not see the AHS pupils demonstrating the solution to a problem. An AHS pupil recorded in his diary on this date *'The picture in Japan cut out now and again, so we could not show them the end of the solution*.' At another session the Japanese teacher who acted as interpreter said '*We have some trouble with our camera, it doesn't work well today, we can see you but not ourselves.'*

3.7.2 Adapting to New Behaviours

As highlighted in Section 2.7, Shetland pupils often tended to look down to read from their notes when speaking, instead of holding their head up and looking directly at the screen or camera for most of the time. This sometimes made it difficult for the pupils in the partner school to hear and understand them. The use of videoconferencing for teaching and learning requires both teachers and pupils to adapt to changing behaviours in the learning situation. For example, during the videoconference session there is a need to follow the protocols of use with regard to taking turns and waiting to speak etc., and speaking clearly in order to be heard and understood. A Shetland teacher of German reported that the project had enabled both the pupils and teachers to gain the new skills of speaking slowly, clearly and taking turns.

DETAILED INDEX

SECTION 4
THE IMPACT OF THE PROJECT ON PUPIL ATTITUDES, MOTIVATION, SELF ESTEEM, ACHIEVEMENT AND ATTAINMENT – THE TEACHERS' PERSPECTIVES

4.1 The Impact of The Project

This section is based on data from the questionnaires and interviews with the teachers, and scrutiny of the Shetland pupils' Higher and Advanced Higher examination results. The pupils' perspectives are discussed in Section 5. With respect to the project's impact on achievement and attainment, there were already a number of other 'Global Classroom Partnership' initiatives in which some of the AHS pupils were involved (Section 2.2.1). This makes it difficult to attribute any improvements in pupil achievement and attainment levels solely to the GLIC Project. In addition, in one subject, history, the pupils only participated in two sessions during the school year. Commenting on the pupils' achievements the DHT said

> *There are aims and goals that maybe are not measurable, they are all about young people understanding the world they live in.*
>
> Shetland Teacher of History (DHT)

From the questionnaire data (see Table 4.1), the six teachers were equally divided about the project's impact on attainment (three strongly agreed/agreed and three strongly disagreed/disagreed with the statement *I have little evidence of improved student attainment as a consequence my students' involvement in the Project.* The use of videoconferencing was considered by all the participating teachers to have had a positive impact on the pupils in a number of areas. Table 4.1 indicates all the teachers (N=6) thought that participating in the videoconference sessions had made their pupils more interested in the subject and improved their attitude towards it. They also unanimously agreed that pupils' confidence, motivation, self-esteem, interest in, and understanding of other cultures in each subject area was increased. However, as the pupils from the partner schools had volunteered to participate outwith their school time, it could be judged that they were already considerably motivated pupils.

Table 4.1 The Teachers' Views on the Impact of the Project
(number of questionnaire responses) N=6

How much do you agree with the following statements?	**Strongly Agree/Agree**	**Strongly Disagree/ Disagree**
Working with students in our partner school has made my students **more interested** in finding out more about life in their country.	6	0
Taking part in the Project has made my students **more confident**.	6	0
Taking part in the Project has **not made** my students more interested in the subject.	0	6
Taking part in the Project has **not improved** my students' attitude to the curricular area.	0	6
My students found it **very exciting** being able to work with students in *our partner school*.	5	1
I have little evidence of **improved student attainment** as a consequence my students' involvement in the Project.	3	3
Taking part in the video-conference (VC) sessions has **improved my students' motivation**.	6	0
Taking part in the Project has **not had any real impact** on my students' understanding of another culture/country.	0	6

4.2 The Impact of the Project on Pupil Attitudes towards the Subject

The opportunity to see and talk to pupils in other countries was a salutary experience for some pupils. For example in **mathematics** even though AHS pupils were unable to communicate verbally with the Japanese pupils, taking part in the videoconference sessions influenced their views about the subject as they were surprised to see Japanese pupils' enthusiasm for the subject. The DHT reported a mathematics pupil in the first year of the project saying '*I canna ever imagine us* (AHS) *having a Maths Club after school with so many folk coming in, what is it about Japan?'* The AHS mathematics teacher reiterated this and thought the pupils in the second year of the project had also received *'a quiet message from the video conferences that the Japanese culture was quite hard working*.'

With respect to **history**, the South African teacher indicated that his pupils now enjoyed history more because they obtained and shared ideas and opinions about South Africa from others' perspectives. The videoconferences helped their understanding of others. For example, despite being unable to see the participants at the overseas location, an AHS visually impaired pupil in the early stages of the project had said '*Yes I am not going to see it but I have to understand the world I live in'*.

A Shetland teacher of **German** reported that participation in the videoconferences with Germany had resulted in some of the less able Shetland pupils, or those who were less enthusiastic about speaking German in class showing more of an interest in the subject. The ready enjoyment of the interchanges evident from the videoconference sessions observed, suggests there may be some gains in affective, cognitive and behavioural aspects of pupil attitudes. The German teacher of English reported that participating in the videoconferences had shown the pupils the value of studying the subject, '*the pupils no longer regarded English as a school subject, but as a means of communication. This is important for getting on later in life.'*

4.3 The Impact of the Project on Motivation

The project was considered by the teachers to have had a positive impact on pupils in all subject areas.

4.3.1 German and English

Although the German pupils were already strongly motivated, their teacher reported that participation had increased their motivation. In comparison to the pupils in the class who had not volunteered to participate, '*motivation and participation in the involved group were higher than in the rest of the class'*.

The Shetland teachers considered that videoconferencing had made the learning environment more exciting for their pupils, compared to the usual practice of them listening to the language spoken in a comparatively de-contextualised manner on a CD or a cassette in the classroom. The teachers thought that the pupils came to realise they could understand more about a foreign language than they believed they could, through the experience of seeing and hearing a person speaking it, and this view was confirmed by the pupils themselves.

> *I found the experience of videoconferencing very useful, it gave the chance to interact with German speakers and hear how they use their own language rather than learning from a book.* Shetland Pupil

> *Everyone seemed relaxed, and so it was more enjoyable. Also there weren't too many people on each side, and I thought that was an advantage.*
> Shetland Pupil

The videoconference sessions clearly provided pupils with a clear communicative purpose, i.e. to find out about the life of young Germans and to respond to questions about their own experience. They clearly took pleasure in presenting aspects of interest to them (school, local festivals, music, proposed ban on drinking alcohol in streets, etc.) and in finding out about the lives and opinions of the German pupils. To this extent the videoconference sessions can claim to make a contribution towards pupils' integrative motivation. The enthusiasm that the videoconference sessions had generated was recorded in a Shetland pupil's diary.

> *It's just a lot of fun to do, really. It's interesting and our counterparts in Diepholz are a good laugh.* Shetland Pupil

4.3.2 History

The South African history teacher reported that when his pupils knew a videoconference was forthcoming they were more willing to do preparatory reading for the lesson, so that they understood the topic and were prepared for taking part in the videoconference sessions. They realised they would be talking to participants, rather than taking a more passive role as they would normally do when studying the topic from a book. Observation of the videoconference sessions showed that pupils appeared to develop and maintain high levels of engagement when questioning their South African counterparts and expert witnesses. It was clear that pupils were developing key communication skills in such sessions and enjoyed an element of control over their personal learning.

4.3.3 Mathematics

The attendance of AHS pupils at the videoconference sessions at 8am on a Monday morning, and for the Japanese pupils at 5pm in the afternoon was a strong indicator of pupil motivation. The commitment of the AHS pupils was evident by their getting up early throughout the winter months to attend, even when the weather was particularly inclement on one morning when there was heavy snow. The Japanese teacher thought that the use of the computer to explain the working of the solution to a problem had motivated the AHS pupils who had no previous experience of using it for solving these problems. He also thought that his own pupils who attended the videoconference session in the 'maths club' enjoyed it, with five or six members participating in every session and others attending some of them. *'They are enjoying it and they are quite happy to have this class.'* He thought pupils from both countries were motivated to study harder because they were interested in learning about the different ways of solving mathematics problems.

4.4 The Impact of the Project on Pupil Self Esteem and Confidence

The videoconference sessions in all subjects had proved particularly helpful for pupils who were shy or nervous, by raising their confidence and general self-esteem. In all three subject areas the teachers felt that the pupils had gained confidence in their knowledge of the subject, and for German and history, had been encouraged to speak to pupils and teachers in the other countries. Their confidence had built up as the pupils from each country got to know each other.

For the videoconferences between Shetland and **Germany**, where speaking the language is an important element of the learning, the project teachers took steps to ensure that pressure was not placed on particularly nervous or reticent pupils. This enabled the pupils to be less nervous and gain more confidence in speaking.

> *One of them is quite a nervous girl and I think it did her confidence a lot of good being able to take part, and I think they actually enjoyed doing them.*
> Shetland Teacher of German

The experience had also given confidence to pupils who were less secure in other aspects of the subject, *'pupils who were weak (e.g. in writing) relaxed and spoke freely.*'

In **mathematics** the pupils being required to stand up and write out an explanation of the solution to a problem on a whiteboard, presenting it in front of others, had helped their self esteem.

> *It's more self esteem because if you are standing up there you are quite nervous initially and I think one or two because it's a small group, it's not like a huge 30 people and they all feel well "it could be my turn to answer a question I have done the question, I am able to do the question" so they are more prepared to have a go. ….. I think it's that kind of effect that you're not frightened when it gets to the second or third time to have a go at these things, they feel more confident, it maybe brings them an opportunity to almost do a mini presentation, describe their solution and then do it, because they don't really come out to my blackboard in my class and start writing. So in terms of that, that's quite good.* Shetland Teacher of Mathematics

In **history** the South African teacher explained

> *'I think they have become more confident in a sense that not only do they know the study material, but they are confident that they can talk in class, they can share their ideas, they aren't scared or intimidated by anybody.'*

The experience had also encouraged pupils to take part in one of the wider 'Global Classroom' initiatives, the Learning School (see Section 2.2.1). For example, in **history** the South African teacher talking about a female pupil commented, *'so I've seen her grow as a young lady, from a shy little girl who hardly speaks in the classroom, to somebody who is now going to apply into Learning School'.*

The virtual nature of the videoconference sessions provided an inclusive medium for some pupils. The AHS DHT reported that the **history** sessions had particularly helped an AHS pupil with a profound stutter. *'He argued very eloquently and directly with a Principal of a school*.' The fact that the pupils and teachers were 'distant' to him had made learning an easier experience than learning face to face in an 'actual' classroom where he was conscious of his own impediment.

4.5 The Impact of the Project on Pupil Understanding of Other Cultures

In all subjects the teachers reported that meeting and engaging with pupils from other countries via the videoconference sessions had made the pupils more open minded and given them a better understanding of other cultures. They were able to make comparisons between their different countries. For example, in **history** the pupils discussed paying fees to go to school,

> *Automatically there is a comparison between what they are doing in Cape Town and what people are doing in the Shetland Islands.*
>
> South African Teacher of History

This teacher added

> *Now they can see not only me teaching them but they get ideas, they get opinions from people, from the Shetland Islands. I teach the South African perspective of South African history. Now they can get perspective what other outsiders saw as happening in South Africa.*

For **German** both Shetland teachers highlighted that the contact with peers from overseas identified cultural differences. The awareness of different customs was highlighted in the pupil contributions to discussions during the videoconference sessions.

In **mathematics** the sessions allowed pupils the opportunity to see how pupils from other cultures worked out the same problems. However, because there was a language barrier there

was no pupil-to-pupil dialogue, and hence little opportunity to share understanding of the different cultures. Despite this the pupils from each country communicated at the end of a session by waving to each other. However the AHS mathematics teacher, as highlighted in section 4.2, thought that seeing the way the Japanese pupils tackled a problem had given the AHS pupils an insight into the work ethic of Japanese pupils.

As indicated in Section 2.2.1, in addition to the videoconference sessions, some Shetland pupils were involved in a variety of other initiatives where they had opportunities to meet pupils from other cultures: an annual conference; pupil exchange visits to overseas schools, as well as overseas pupils on exchange visits to AHS. A Shetland teacher of German thought that although the videoconference sessions had given the pupils '*a point of reference in Germany'*, it was a less meaningful experience for understanding other cultures, compared to the pupils who had been on exchange visits to pupils in different schools in Germany.

DETAILED INDEX

SECTION 5 THE PUPILS' PERSPECTIVES OF THE PROJECT

5.1 Introduction

5.1.1 Background Information

This section is based on interviews with AHS pupils in April 2005 studying history (N=2), German (N=4) and mathematics (N=3); Shetland pupil diaries; and data from the questionnaires completed by the pupil cohorts from all the partner schools during two years of the evaluation. In the session 2003/04, South African pupils completed a questionnaire in November 2004, and in the session 2004/05 the Shetland, German and Japanese pupils completed a questionnaire during April 2005. See Section 1.3.3 for further details.

Table 5.1 The Pupil Questionnaire Sample

The Pupils	Male	Female	Age 16 years	Age 17 years	Age 18 years	Age 19-20 years	N=
Shetland	5	6	3	8	0	0	**11**
German	2	3	3	2	0	0	**5**
Japanese	7	2	6	3	0	0	**9**
South African	7	8	1	8	3	3	**15**
TOTAL	**21**	**19**	**13**	**21**	**3**	**3**	**40**

5.1.2 Participation in the Videoconference Sessions

The **South African** pupils were based at two schools in Cape Town, Langa High School (N=8) and South Peninsula High School (N=7). Of the fifteen pupils, approximately a half (N=8) indicated they had participated in three to five videoconference sessions; six pupils in more than five sessions, and only one pupil in one to two sessions. The AHS DHT in interview, suggested that the reason that some of the South African pupils had only participated in a few videoconference sessions was that the South African classes are much larger than the AHS classes (approximately 35-45 pupils), and therefore the South African teachers wanted to give as many pupils as possible the opportunity to participate.

Of the five **German** pupils, four indicated they had participated in three to five videoconference sessions, and one pupil in more than five sessions.

The **Japanese** pupils participated in an after school 'maths club' within a computer suite in the school, and the pupils were from a wider age range than the other partner schools, including younger pupils. Of the nine pupils, four indicated they had participated in one to two videoconference sessions, two in three to five videoconference sessions, and three pupils in more than five sessions.

All the **Shetland** pupils studying German and mathematics indicated they had participated in more than five sessions, and the two history pupils participated in two sessions.

5.1.3 Access to ICT Technologies and the Internet

With regard to access to ICT technologies and internet access, approximately half of the **South African** pupils (N=7), predominantly from South Peninsula, had access to the internet within school. There was no internet access at Langa High School. Nine pupils had access to the internet outside of school, seven pupils from South Peninsula and two from Langa.

All the **German, Japanese** and **Shetland** pupils had access to the internet within their school, and all, except one **German** pupil, had internet access outside of school.

5.2 The Pupils' Expectations of the Project

Although the pupils' expectations of participating in the videoconference sessions varied depending on the particular subject they were studying, they expressed broader aspirations that were common to all subjects: meeting and communicating with pupils of a similar age from other countries and cultures; and learning from, and sharing ideas with each other.

To talk to students from the other school in English more freely, not just about maths.
Japanese Pupil

To have relationships with people outside of my country, and to know their history, culture and tradition. South African Pupil

The pupils' expectations specific to their subject, reiterated their teachers' expectations.

5.2.1 German and English

The German and Shetland pupils expressed the view that they hoped to gain an experience of other cultures and the opportunity to hear the native language spoken and to speak with native speakers. Additionally, all the German pupils also mentioned the opportunity to get to know pupils from another country.

I was hoping that I would be able to discuss things with young people of my own age from another culture relating to our everyday lives and opinions.
German Pupil

5.2.2 History

Both the Shetland and South African pupils highlighted learning about South Africa from each others' perspectives and gaining more knowledge of history.

Opinions and views from other people my age in different countries.
Shetland Pupil

Sharing ideas about the old South Africa and the new democratic country, having views from overseas on the way they see our country.
South African Pupil

5.2.3 Mathematics

Both Shetland and Japanese pupils mentioned that they hoped to gain insight into the different ways mathematics problems are solved in the two countries.

To get unusual mathematics problems to solve that are not used in normal classes. Learning different ways of solving problems from those used in Japan.
Japanese Pupil

To experience the different learning from another country.
Shetland Pupil

Whether the pupils' expectations at the end of the programme of videoconference sessions were met, or not, is discussed in Section 5.7.

5.3 The Impact of the Project on Pupil Learning

5.3.1 Introduction

There was a range of opinions amongst the pupils about the impact of the videoconference sessions on their learning, as some of the pupils had participated in the sessions regularly, whereas others in some of the partner schools, and the AHS history pupils, had participated only a few times. The wording of the statements in one of the questions in the pupil questionnaire varied to take account of the nature of the different subjects, for example, the language pupils were asked *'It has been really good* to *be able to speak to, and listen to, the partner school students'* whereas in the questionnaire for the mathematics pupils, the

statement was '*It has been really good to be able to work on mathematics problems with school students',* (see Appendices 2-4 for tables of pupil responses for individual subjects).

Table 5.2 shows that the pupils from Shetland and all the partner schools viewed the videoconference sessions as having a positive impact on the learning of their subject. The majority (N=38) of the forty pupils *'strongly agreed/agreed'* that it had been helpful to speak to, and listen to the native speakers/ work on mathematics problems/ or, talk about the history of South Africa; and share ideas and information about their subject with pupils from another country (N=37).

With respect to the role of the videoconference sessions in helping the pupils to have a better understanding of their subject, thirty one pupils *'strongly agreed/agreed'* with this statement. However, approximately half of the mathematics pupils (N=6: AHS=1 Japan=5) were more likely to disagree. The majority of the pupils, (N=33), *'strongly disagreed/disagreed'* with the statement 'Being able to talk and listen to the partner school students has not helped me with my subject'. See Appendix 5.

Table 5.2 The Pupils' Views on the Videoconferences - Comparison of Pupil Responses by Subject
(number of questionnaire responses) N=40

	Strongly Agree/Agree					
How much do you agree with the following statements?	**AHS Maths N=4**	**Japan Maths N=9**	**AHS History N=2**	**South Africa History N=15**	**Shetland German N=5**	**Germany English N=5**
It has been **really good** to be able to work on mathematical problems/speak to and listen to native speakers/talk about history to the partner school students.	4	8	2	14	5	5
Being able to talk and listen to the partner school students **has not helped** me with my subject.	2	3	0	0	1	1
It has been **helpful** to share ideas and to talk to students from the partner country.	4	7	2	15	4	5
It has **helped me to have a better understanding of my subject** because I am taking part in Virtual Classroom / LearningFace2Face Project.	3	4	2	15	4	3

The responses to the open questions in the questionnaire are dealt with separately for each subject.

5.3.2 German and English

In the open questions, pupils were asked 'What are the two most important things you have learned through being part of the FLaT Project?' Their responses indicated they viewed the project as a worthwhile learning experience. Although one Shetland pupil mentioned an intrinsic reason, '*learning about people from Germany, we have been interested seeing how similar they are'*, the majority of the Shetland pupils viewed the benefits of the videoconference sessions mainly in terms of the sessions providing a means to extend their learning experience.

Listening. My listening exam involves listening to German people.

I was able to practise my own German skills. I am doing Higher German and it was beneficial to me.

Shetland Pupils

Two Shetland pupils highlighted the importance of spontaneity in conversing in a foreign language, rather than always using prepared texts to speak from. When this occurred pupils thought that they engaged better with learning.

Spontaneity made me concentrate more and was more engaging.

Shetland Pupil

Having to do stuff you hadn't prepared for, it gives you a better way of learning. You learn more not having a prepared talk. Shetland Pupil

The responses of the German pupils tended to be broader in scope and relate to wider educational purposes.

Languages are immensely important these days.

Not being afraid of speaking in a foreign language even if it isn't always absolutely right - I have now have the courage to go abroad after leaving school.

The opportunity of speaking to students in another country and seeing them at the same time. It made the technological progress of our time clear to me, and how this can be applied usefully.

German Pupils

5.3.3 History

The pupil responses to the open questions indicated they viewed the project as a worthwhile learning experience, in terms of giving them access to different perspectives in addition to their own and their teacher's opinions.

The way people have different views, ideas.

I have learned that learning is not restricted to my classroom, I can learn outside of my classroom.

South African Pupils

The AHS pupils studying history reported that the videoconference sessions had provided an opportunity for the AHS pupils to debate issues that were previously not feasible, due to the small numbers in their class. The sessions also enabled the pupils to follow up perspectives on an issue in their class after a session. The AHS pupils viewed debating issues on South African history a worthwhile activity.

To be more open with my views.

There is no point in just agreeing when I may have a valid point.

The videoconference sessions also provided an opportunity for pupils to take on the role of the teacher and facilitate the learning activities.

'It was fun to teach other people about my history without someone (the teacher*) who guides me to do so.*'

South African Pupil

5.3.4 Mathematics

Both the AHS and Japanese pupils reported that the videoconference sessions had made them aware of the universal nature of mathematics; enabled them to solve mathematics problems using different methods; and given them the opportunity to tackle mathematics problems they would not normally encounter in class.

Ability to understand each other through maths expressions even when we don't understand each other's language.

Without saying anything, we could get our thoughts through to Shetland students and vice versa by just showing maths expressions.

Japanese Pupils

We were challenged by some of their number theory and they found some of our skills difficult.

I think we did learn a lot about Maths and how it's universal.

Shetland Pupils

5.4 The Impact of the Project on Pupil Attitudes, Motivation, Self Esteem, Achievement and Attainment

5.4.1 Quantitative Data

The pupil data confirmed the teachers' views on the positive impact of the project, for the majority of the pupils, with regard to pupil attitudes, motivation, and self esteem (see Section 4). As already indicated in Sections 2.2.2 and 2.5.2, pupils in the overseas partner schools participated in their own time, as did the AHS mathematics pupils in sessions at 8am before the start of the school day.

Table 5.3 Pupils' Views on Attitudes, Motivation, and Self Esteem
(number of questionnaire responses) N=40

	Strongly Agree/Agree					
How much do you agree with the following statements? * includes nil response	**AHS Maths** **N=4**	**Japan Maths** **N=9**	**AHS History** **N=2**	**South Africa History** **N=15**	**Shetland German** **N=5**	**Germany English** **N=5**
It has been **very exciting** being able to work with students at the partner school.	4	6	2	15	2	5
The video-conference (VC) sessions have been **great fun**. *	3	6	2	14	1	4
I always **feel a bit scared** about contributing to the VC sessions and only speak if asked to by the teacher. *	1	7	0	4	1	1
I became **more confident** about taking part in the VC sessions after realising that we were all probably nervous to begin with. *	2	2	2	14	4	3
Taking part in the Virtual Classroom / LearningFace2Face Project has made me a **more confident** person.	1	4	1	14	2	2
I do not enjoy this way of learning my subject. *	0	1	0	2	1	0
This way of learning via VC sessions has made me more interested in learning my subject.	2	4	2	14	2	5

Table 5.3 shows that for the majority of the forty pupils, participating in the videoconference sessions had a positive impact on their attitude towards their subject, level of motivation and

self esteem. Thirty pupils *'strongly agreed/agreed*' that the videoconference sessions were fun; and working with the pupils from the partner school was very exciting (N=34); taking part in the videoconference sessions had made them a more confident person (N=24); and learning via videoconferencing had made them more interested in learning about their subject (N=29). Approximately one third of the pupils (N=14), *'strongly agreed/agreed'* that they had been anxious contributing to the videoconference sessions, in contrast to the twenty five pupils who *strongly disagreed/disagreed'* with this statement (see Appendix 6). Twenty seven pupils indicated their confidence had increased over the number of sessions. Thirty four of the forty pupils '*strongly disagreed/disagreed'* with the statement 'I do not enjoy this way of learning my subject'.

Comparing the pupils' responses between the partner schools, a greater proportion of the Japanese pupils expressed anxiety about contributing to the videoconference sessions, and fewer Japanese pupils gained confidence as the sessions progressed. However, this is not surprising as very few were able to understand or speak English, and several younger pupils who only attended for 1-2 sessions found the level of the problems too difficult for them, thus preventing them from contributing, '*I didn't understand the maths problems we had to solve.'*

With respect to the videoconference sessions increasing the level of pupils' interest in the subject, the Shetland pupils studying German were the least positive, as they also were with regard to the sessions being 'fun' and 'exciting'. These views are in contrast to their earlier diary entries (Section 4.3.1), when they expressed a higher degree of interest and enjoyment. Their increased negativity might have been due to the introduction of a third school (English speaking) joining the sessions, which gave less time for the Shetland pupils to speak German and thus affected the overall experience for them.

Too many English speakers - benefits the Germans more than us.

Getting a chance to speak - there were too many people.

Shetland Pupils

The addition of the third school was also highlighted as a disadvantage for the pupils by both of the Shetland teachers in their diary entries (see Section 3.4.3a).

5.4.2 Qualitative Data

The pupil responses to the open questions in the questionnaire confirmed the quantitative data.

a) The impact of the project on pupil attitudes towards the subject, motivation, self esteem and confidence

A selection of the pupil responses below indicates that pupils from all subject areas, except some of the Shetland pupils studying German (see Section 5.4.1), found participating in the videoconference sessions to be a motivating and interesting experience. There were no responses to the open questions from the German pupils about this.

Shetland Pupils

We now know about the German people and I have learned a lot about them I didn't know before. This has made the language more interesting to me. (German)

The more you speak the more confident you become. (German)

It was something that came with the Advanced History class that makes it a bit more real and different - it makes it a bit more interesting for us. (History)

It was generally the notation, I thought that was the most interesting when they were repeatedly dividing. They had like a special algorithm that they went through and it

was, I think algorithm is the right word for what they use, but it was quite interesting to see how they wrote down because it was very compact. (Mathematics)

South African Pupils

Learning is made interesting by being interactive. Learning shouldn't be boring.

It is fun, exciting and I get to find out information on things I know nothing about.

Developing my public speaking skills. Boosting my confidence.

Japanese Pupils

I really enjoy these sessions through which I have got more maths knowledge and made new friends. I am very proud to be part of this project.

It was a rare opportunity and valuable experience. Unlike distance learning videos, it was interesting to be able to have two-way communication, asking questions and showing answers.

With regard to the impact on pupil confidence and self esteem, some of the pupils participating in the videoconference sessions found speaking in front of others rather daunting.

Working up the courage to say something. There was the fear of saying something wrong to people using their native language. German Pupil

Lack of confidence. I couldn't bring myself to stand up and write on the board when the time came. Japanese Pupil

Overcoming shyness - in my first session I did not want to speak but in the second I became more confident. AHS Pupil (History)

One third of the South African pupils indicated that due to anxiety, they were sometimes reluctant to express a view, *'I feel that I may be wrong at times'*. However a Shetland pupil acknowledged that anxiety could be overcome,*' the more you speak the more confident you become'*.

b) The impact of the project on attainment and achievement

In the interviews with the Shetland pupils, they were asked whether they thought participating in the videoconference sessions would have any impact on their future attainment and achievement in the subject. Their responses indicated that although they viewed participation to be beneficial and worthwhile, they did not see it contributing in terms of enhancing their examination results. The following are a selection of the Shetland pupils' comments.

German

Possibly in the listening exam, but I'm not sure if I would say if there would be a massive difference from just the videoconferencing.

I don't think it will make a significant difference.

History

I don't think it will be too much difference, certainly if the topic comes up we will be able to speak about South Africa.

Mathematics

I suppose it was an incentive to be fair, to pull our finger out and get some course level questions done throughout the year.

We're that lazy that we might not have done the course level questions all through the year until right at the end when we are all trying to cram, but I suppose it is good practice and I can't see how it hasn't been worthwhile, just not really a learning thing.

c) Differences in pupil attitudes between gender and across different curricular areas and cultures

As already indicated in Section 5.1.2 there were differences in the number of videoconference sessions the pupils participated in. Because of this, and the numbers of pupils involved in each subject being small (German/English N=10, history N=17 and mathematics N=13), it was not possible to link differences in pupil attitude to the gender of pupils, the particular curricular area studied or their cultural background.

Although the pupil sample was almost equally divided between male (N=21) and female (N=19) pupils, it is interesting to note that gender appeared to be closely linked to the curricular subject choice. In Shetland the mathematics pupils were all male (N=4), the history pupils were both female (N=2) and for German there were four female pupils and one male. The AHS DHT thought these figures reflected the national trends in choice of subjects. There was a similar division for the language pupils in Germany, (male N=2, female N=3), and in Japan for mathematics (male N=7, female N=2). Of the South African pupils studying history, seven were male and eight were female.

One Shetland teacher commented that female pupils appeared to be able to articulate their anxieties more openly than male pupils.

What is interesting in terms of gender is that the circumstance of the virtual classroom exposes you as a teacher to seeing confidences and uncertainties that might well be a little masked in the actual classroom. The boys, strangely enough, are more reticent about the whole uncertainty and nervousness, the girls will tell you right away, "Oh God I hate this, are they really watching us?" The boys do speak eventually as well, so it's very hard to specify gender differences other than those that are grown out of a system that we should be looking at in the school, why are mathematicians and linguists divided by gender?

5.5 The Impact of the Project on Pupil Understanding of Other Cultures

5.5.1 Quantitative Data

As already highlighted in Section 4.5, an important aim of the project was to increase pupil's awareness of other cultures. Table 5.4 shows that whilst approximately half of the pupils (N=21) *'strongly agreed/agreed'* with the statement 'I feel I have learned a lot (about the country) through taking part in the vc sessions with the partner school students', this figure conceals a wide variation between the pupils in the partner schools. The Shetland pupils studying mathematics and German indicated the lowest responses, (1 out of 4, and 1 out of five respectively), whilst the Shetland history pupils (2 out of 2) indicated the highest response. The latter is perhaps not surprising considering that South Africa was the topic of focus in the videoconferences. The pupils from the three overseas partner schools indicated a positive response, with over half of the South Africa and German pupils *strongly agree/agreeing* with the statement. Four of the nine Japanese pupils also *strongly agreed/agreed* with the statement. This is perhaps a higher number than one would expect considering the Japanese pupils did not actively communicate with the Shetland pupils, or about anything other than mathematics. However, one pupil commented '*I learned a little about how classes are conducted in foreign countries.'*

Over half of the Japanese and South African pupils *strongly agreed/agreed'* with the statement 'I think it is difficult working with the partner school students/to understand what it is like, in the partner country.' This is perhaps not surprising since in neither the history nor

the mathematics videoconferences did the Japanese and South African pupils have an opportunity to find out about life in Shetland.

In contrast both German and Shetland pupils studying German unanimously disagreed with this statement (see Appendix 7). This suggests these pupils perceived they had gained some insights into the life of the pupils and of cultural differences in the partner country. Only four of the eleven Shetland pupils indicated a wish to find out more about life in the partner country. However, as is discussed in Section 5.5.2 there may be reasons for this.

Table 5.4 Pupils' Views on the Understanding of Other Cultures
(number of questionnaire responses) N=40

	Strongly Agree/Agree					
How much do you agree with the following statements?	**AHS Maths** **N=4**	**Japan Maths** **N=9**	**AHS History** **N=2**	**South Africa History** **N=15**	**Shetland German** **N=5**	**Germany English** **N=5**
I think it **is difficult** working with the partner school students/to understand what it is like, in the partner country.	0	6	1	8	0	0
I feel I have **learned a lot** (about the country) through taking part in the VC sessions with the partner school students.	1	4	2	10	1	3
Working with students at the partner school has made me interested in **finding out** more about life in the partner country.	1	3	1	N/A	2	4

5.5.2 Qualitative Data

The Shetland pupils' responses about their expectations and experiences of the project reflected their view of the videoconferences more as a tool to help with their learning, rather than for the wider educational and cultural experience. Whereas pupils from all the three overseas partner countries expressed the benefits of getting to know pupils from other cultures, this did not figure largely in the Shetland pupils' responses (see below). This may be due to all the other initiatives taking place in the Global Classroom Partnership Project. For example, AHS pupil visits to the Global Classroom Partnership countries, and visits to AHS of overseas pupils from these countries. The AHS pupils reported that as the school had contacts with several overseas schools, they thought they had gained more cultural awareness and got to know pupils from other countries through these activities, rather than the videoconference sessions.

> *There's plenty going on with global classroom, exchanges, etc, we are lucky.*
>
> Shetland Pupil (History)

> *You don't really know until you actually go to the place to be honest, so I mean there is only so much you can learn and so much they're going to want to say in front of their teachers.*
>
> Shetland Pupil (German)

However, one AHS mathematics pupil due to visit Japan with other Shetland pupils (to the Global Classroom conference) later in the year, commented that the experience of participating in the videoconferences had '*made me more excited about going to Japan at the end of the year.'*

The following are a selection of comments from the pupils about what they had learnt about pupils in other countries.

Shetland Pupils

The Japanese were far more thorough in their approach and this showed differences. (Mathematics)

You just see that people from all these different countries are like - well it's the same for them as well. (Mathematics)

It made me realise some of the similarities between people of my age. (German)

German Pupils

The conferences showed me that young people have largely the same opinions and ideas even though they have grown up in different countries and cultures.

Young people are the same/similar everywhere.

I learned something about the traditions and culture in Shetland.

Japanese Pupils

I saw cultural difference in that Shetland students regularly used expressions we would think difficult to read.

I had never thought about whether maths symbols were international or not. The project showed me mathematics taught in a different culture, such as unexpected ways of solving a problem.

Although I live in a tourist area with many foreign visitors I rarely get to know them. This project has given me an opportunity to talk with foreign people.

South African Pupils

Seven of the fifteen pupils indicated they had learned from sharing with another culture.

I have learnt that we as South Africans are not as different as I thought when it comes to our history.

It is of vital importance to know their (AHS*) perspective on things because we now live in one world and everything concerns everything.*

Learning that we are all somehow the same.

One aspect of the project already highlighted by the two Shetland teachers (see Section 3.4.4), which would have helped the pupils to get to know each other better, would have been the use of email communication and discussion forums on the project website between the videoconference sessions. Approximately half of the pupils (N=23) *'strongly agreed/agreed'* with the statement 'I am disappointed that I have not communicated by email with partner school students, and got to know some of them better'. The pupils from the overseas partner schools felt more strongly about the lack of communication (more than half from each school) compared to the Shetland pupils (half or less from each subject group). (See Appendix 7). However, of the nine South African pupils who expressed disappointment that they had been unable to communicate with the AHS pupils via email, six were from Langa High School and had reported having no internet access at school or outside of school.

One Shetland pupil indicated that s/he felt inhibited about asking questions of pupils from the partner country with their teachers present in the videoconferences, whereas email communication would allow more private exchanges.

5.6 Advantages and Disadvantages of the Pupils' Involvement

5.6.1 Positive Aspects of the Pupils' Involvement

Pupils from all subjects commented that the use of technology, i.e. videoconferencing, had provided them with the opportunity to meet and communicate with pupils from a different culture and country; and also with a different way of learning compared to their traditional classroom experiences.

> *It made the technological progress of our time clear to me and how this can be applied usefully.* German Pupil

Additional positive aspects mentioned by the pupils were specific to the subject.

a) German and English

Pupils from both countries emphasised the unique opportunity to listen to a language spoken by native speakers which videoconferencing provided.

> *At school we only ever hear English spoken by Germans.* German Pupil

> *Having proper conversations.* Shetland Pupil

b) History

The pupils from both countries reported that sharing their experiences, knowledge and opinions of South Africa's political history with other pupils had been a positive experience. For the AHS pupils, particularly hearing the South African witness testimonies had been particularly worthwhile as had feeling that their opinions were valued by others. The AHS pupils also felt that the videoconferences provided a useful revision opportunity.

For the South African pupils the videoconferences also opened up the potential for travel, scholarships or exchanges. Although the South African pupils did not mention specifically a change in career ideas, half of the pupils indicated that participating in the videoconference sessions had changed their minds or consider alternative opportunities about what they wanted to do after leaving school.

> *I see a need for more videoconferences as this helps to extend our knowledge about history and boosts our confidence when it comes to talking freely in English. I hope that South African pupils who took part in those videoconferences can get an opportunity to study or visit Scotland/ UK.* South African Pupil

This is confirmed by the interview data from the South African history teacher (see Section 4.4), who highlighted that as a result of participating in the videoconference sessions, two pupils had decided to go to the 'Learning School' (see Section 2.2.1), and another pupil was considering a gap year after leaving school. Before participation in the project the pupils' only option was to continue into further education after school.

c) Mathematics

Both the Shetland and Japanese pupils highlighted the learning benefits reported in Section 5.3. Sharing the videoconference sessions had made them aware of the universal nature of mathematics; enabled them to solve mathematics problems using different methods; and given them the opportunity to solve mathematics problems that were not part of their usual curriculum.

> *Without taking part in the project, I would still be solving problems the way I'm accustomed to.* Japanese Pupil

5.6.2 Negative Aspects of the Pupils' Involvement

In response to the open question 'What have been the two of the most difficult things for you about taking part in the videoconference sessions?' the pupils' views ranged over a number of areas, with the most frequent response focusing on anxiety about speaking, and having to overcome shyness to participate.

I had to face my fear and just speak. South African Pupil

Overcoming shyness - in my first session I did not want to speak but in the second I became more confident. Shetland Pupil (History)

Talking in front of friends and teachers, it feels daunting.
Shetland Pupil (German)

The next most frequent response, particularly by mathematics pupils, was about technical difficulties.

This caused interruptions and sometimes total blackout.
Shetland Pupil (Mathematics)

It was great fun but unfortunately there were a few problems with line connection and video images getting jumbled up during sessions. Japanese Pupil

In particular the Shetland and German pupils highlighted the difficulties when a third school was involved in the link-up.

When the other school was using the connection we never saw them and only seldom understood them. German Pupil

In the history videoconference sessions, the Shetland pupils considered it was difficult not having a clear close up image of the South Africans.

Several of the German and South African pupils mentioned their difficulty in being unable to understand or hear clearly the accents of the Shetland pupils.

It's hard to understand what they are saying when it's pronounced different.

Not being able to understand their dialect.
South African Pupils

The Shetland students usually read out their texts quite quickly and quietly. This made it difficult for us to understand and to come to grips with their contributions. It would have been better if we had simply talked.
German Pupil

Other negative aspects highlighted by the pupils were specific to the subject.

a) German and English

Most of the pupil responses have already been highlighted above. Other responses from pupils included the lack of spontaneity, a wish for greater opportunity to discuss current topical affairs; and the need for fewer people to be involved as the numbers with a third school participating gave less opportunity to speak.

Having to prepare so much, as opposed to conversing spontaneously.
Shetland Pupil

b) History

Individual comments from South African pupils included: being unable to prepare for the session (the lack of resources, e.g. computers and text books); the timing of videoconference

sessions (after the school day had ended); having to travel to the local university (the lack of videoconference facilities in school); and transportation home (missing the last bus). However, the teachers involved in the project assisted pupils by taking them by car to the videoconference sessions and home afterwards

A small minority of South African pupils indicated that they found taking part in the videoconference sessions a difficult experience. This was when the discussion focused on sensitive issues of their country's political history, for example, apartheid.

To get to show my feelings about apartheid while there are white people around me - if I did it would seem like I still want to fight.

Thinking that they wanted us to talk more about what white man done to our country.

c) Mathematics

Despite their claim about mathematics being a universal language, both Shetland and Japanese pupils (seven of the nine) commented about language being a barrier. For some of the Japanese pupils, particularly the younger ones, a lack of understanding of the mathematics problems also posed a difficulty. The following suggestion was made by a Japanese pupil, about the need for pupils to 'talk through' a solution when writing it on the whiteboard, as an aid to help pupil understanding. This supports the suggestion already highlighted by the Japanese mathematics teacher (Section 3.4.3c).

It would be more interesting if we could communicate our solutions more directly (at present we need our teachers to translate and also explain maths). When we presented our solutions, we tended to speak to the people in our own class but it would have been better if we had tried to speak to the people on the other side of the video link (so that we would feel more as if we were communicating with the other side. The same also goes to Shetland students). Despite these problems, I really enjoy these sessions through which I have got more maths knowledge and made new friends. I am very proud to be part of this project.

For the Shetland pupils, using an interactive whiteboard to write the solutions to the problems has posed a difficulty.

It wasn't actually linked through to them (Japan)*, that was the problem, it takes a while to get used to writing on these interactive whiteboards. I thought if that maybe appeared on a computer monitor through in Japan then fair enough, that would be a good idea, but it was just the camera zooming in on it. Just any normal whiteboard would have been easier to write on.*

5.6.3 The Technology

Regarding the functioning of the technology during the videoconference sessions, the responses from the pupils indicated that the quality of the image they received and the sound varied between the different subject areas and locations. For **German and English**, four of the five German pupils thought the sound quality was poor, whereas for the Shetland pupils the sound was not perceived as a problem (N=1), (see Appendix 7). The image was considered to be 'good' by two thirds of the German and Shetland pupils. In **history,** the two AHS pupils disagreed with the statement 'the quality of the picture for the VC sessions is good and we can see the partner school students clearly', compared to only one third of the South African pupils (N=5) who perceived that the image they received of AHS was a problem. The quality of the sound and image for the South African pupils were reported as being good (N=13 and N=10 respectively).

For **mathematics** all the Japanese pupils (N=9) indicated that the image they received of AHS was not good, and two thirds (N=6) thought the quality of the sound was poor, (see Appendix 7). All the AHS pupils (N=4) indicated that both the image of the Japanese pupils and the

sound quality were good. As already indicated by the project coordinator (see Section 2.5.3), the image the participants see of the other location depends on how the videoconference equipment is set up and whoever operates the video camera.

5.7 Were the Pupils' Expectations of the Project Met?

a) German and English

Only two Shetland and two German pupils thought that their expectations had been met. Over half of the Shetland (N=3) and German pupils (N=3), felt their expectations had not been met. These pupils expressed disappointment that they had less opportunity to talk in the native language than expected, and they felt that pupils were not very confident about speaking. A German pupil suggested that playing ice-breaker games in the first sessions of the year would have helped pupils to get to know each other better and feel less inhibited about talking. Two German pupils thought that the sessions did not allow them the freedom to discuss topics they wished to share with Shetland pupils. They would have liked some choice in the selection of topics for discussion instead of the content of sessions always being determined by the teachers.

> *In my opinion no proper discussions took place. The choice of topics for the conferences might be the reason for this. We also didn't say very much in our foreign language.*
>
> German Pupil

> *In my opinion the videoconferences were too restricting. No one really had the confidence to speak freely, unless specifically prompted by the teacher.*
>
> German Pupil

This was endorsed by a Shetland pupil, '*we just have to speak about what we're told to speak about, we didn't actually get to choose our own topics which I thought would have been a bit better.'* Although the number of positive responses to the aspects in the questionnaire which measured attitude, motivation, and level of interest was low, the Shetland pupils did make some positive comments.

> *It is a lot of fun to do.*
>
> Shetland Pupil

> *We have realised that the German pupils' lifestyles are very similar to ours and that has been interesting.*
>
> Shetland Pupil

b) History

All the Shetland pupils (N=2) and the majority of the South African pupils, (N=13) indicated their expectations had been met. Two South African pupils felt that their expectations had not been met, but suggested that this was due to them participating in only a few videoconferences which had not given them sufficient time to get to know other pupils, or to learn about aspects of South Africa history.

c) Mathematics

All the Shetland pupils (N=4) and approximately half of the Japanese pupils (N=5), indicated that their expectations had been met. The younger Japanese pupils who indicated that their expectations had not been met, suggested that this was because they found the level of problems discussed too difficult, and like the South African pupils, they had only participated in a few videoconference sessions (1-2). Individual comments from Japanese pupils included one pupil who had not found the problem solving methods used by Shetland pupils to be significantly different from those used by Japanese pupils, and another pupil who thought that the technical difficulties during the sessions had detracted from allowing real depth into solving the problems.

5.8 Final Comments

In response to being asked at the end of the questionnaire to make a final comment on the project, approximately one third of the pupils made a comment the majority of these being positive. They clearly valued the experience.

Thank you for giving me the opportunity to participate in the project, it has been great fun and very educational too. It has been an amazing experience for me. Thank you!

South African Pupil

I think it's a really good experience.

Shetland Pupil (History)

I think having an opportunity to meet students from Shetland through a video link is an amazing thing.

Japanese Pupil

DETAILED INDEX

SECTION 6
THE LOCAL AUTHORITY AND ANDERSON HIGH SCHOOL SENIOR MANAGEMENT TEAM'S PERSPECTIVES OF THE PROJECT

6.1 Introduction

This section is based on individual interviews conducted with a Shetland Islands Council senior education officer and the AHS Headteacher in April 2005, and interviews with the project manager (AHS Deputy Headteacher) at the beginning and end of the evaluation period. The purpose of the interviews was to determine their views on the project's implementation, and the successes and the barriers to implementation. The interviews also focused on advice the participants could offer to other local authorities and schools considering embarking on a similar initiative; and how the project is evolving and moving forward to the next stage.

6.2 The Perspectives of the Local Authority

6.2.1 Benefits of the Project

The Authority staff explained that the authority had an established history of international links with overseas schools and is currently involved in several other international initiatives. The Authority judged the project to have *'been very successful'* on the basis of the outcomes achieved. These included: increased international interest from overseas schools either through wanting to join the project, or to learn from Shetland's experience and set up a model similar to the one used in Shetland; increased national interest in the authority; and increased local interest both from businesses and the public; and also from Headteachers in other schools in the authority keen to be involved in a similar initiative.

a) Impact of the project internationally and nationally

Presenting the project at the 2004 Scottish Education and Teaching with Technology (SETT) conference and at a number of conferences overseas had resulted in interest in the project from a number of countries. It was from contacts made at SETT that the school in Northern Ireland expressed an interest in participating in the project. The project manager reported that the British Council in South Africa had become aware of the project and made use of DVD recordings of the history and modern studies videoconference sessions for a two day seminar with teachers.

b) Impact of the project locally

The Authority's view was that the project has impacted on other authority schools by providing a stimulus to other Headteachers. This had resulted in the project manager leading a presentation of the project at a two-day authority-led CPD event, followed by visits to three primary schools and two junior high schools. The Authority is now considering expanding the use of videoconferencing into Junior High schools and primary schools.

One useful feature of the videoconferences that the authority has recognised is the potential use of DVD recordings for teachers' professional development.

> *The most frightening but fascinating thing was the fact that it was all recorded and after the sessions when you go back to it with students you see yourself as you are. It is quite rare for a teacher to be able to evaluate the actual learning and teaching in that kind of play back.*
>
> Project Manager

c) Impact of the project on the pupils

For the pupils the Authority judged there were a number of gains. The project enabled the pupils to participate in new experiences that extended their learning, by giving them the opportunity to encounter new perspectives on issues and debate these. It had raised pupil

motivation and confidence, and the Authority staff reported that talking to their peers had stimulated interest in pupils in other schools who now wished to be involved.

With regard to learning and teaching, the authority's view was that the project had delivered an enriched and extended curriculum. Videoconferencing was considered to be a very useful tool that enabled pupils to debate issues, examine others' perspectives, and added a different dimension to their learning.

> *I do think it is a good way of developing another resource within the classroom to be used and good for the students, to actively participate in discussions, in arguments in some cases with people that have a totally different concept, totally different views on the same subject. I think that was one of the things in conversations that we have had that I have found really fascinating is where the students in different countries are discussing the same topic but with two different views. I don't think unless you actively participate in that you will never be aware of that from a book, so from the actual benefits to the students of making a topic become alive it's absolutely fantastic.* Local Authority Personnel

With regard to improvements in attainment, the Authority staff judged this to be more difficult to answer and indicated that benefits of the project were not necessarily directly measurable, but had long term influences on pupils that would permeate into their future lives. The Authority's view was that the impact of the project on the pupils' achievements was not solely on academic skills, but also on the 'softer' skills, for example, communication, team working, discussion and debating skills. These all were considered to be important learning benefits. The project manager reiterated this view.

> *That's one of the imperatives of what we are doing. If we help young people in a small way make sense of learning beyond the confines of the subject class and community, that's a skill for life and an important skill to carry with them. It's not a measurable thing but it's permeates much of their life and future.*
>
> Project Manager

6.2.2 Barriers to the Project

The Authority staff reported that few difficulties had arisen during the project. Where they had occurred they related to specific funding needs, and the authority had worked with AHS staff to resolve them. For example, the authority provided funding for the school to purchase the necessary software to enable a visually impaired pupil (see Section 4.2) to fully participate. The authority also gave additional support to AHS and the partner schools in South Africa by donating monies raised from recycling and sale of older computers. This funded a complete upgrade of the communication links of the two South African schools allowing them to link together, which also facilitated regular email contact between South Africa and Shetland (see Section 2.2.2c).

> *We've always managed to work round any kind of issues and I think that is why it has become such a successful project. We just see these as issues to be taken forward not that they are barriers to moving ahead, so things like providing resources, some of the schools that are perhaps less fortunate than we see in Shetland, we have been able to find resources from the Authority that have assisted other schools that are involved.* Local Authority Personnel

6.2.3 Facilitating Factors in the Success of the Project

The Authority staff explained that from the project's inception the establishment of good working relationships between the authority and school had been an important factor in its success. Equally important was the investment in time for regular project meetings between the Authority staff and the project manager to share ideas, review and monitor progress. One element of the review process was the progress reports produced by the successive project coordinators throughout the life of the project. The reports were valuable to the incoming

coordinators when they took over the position. It was the project coordinators who were responsible for the ICT developments within the project.

Another important factor in the ongoing development of the project was the commitment of the local authority in providing funding to the school to allow the project's continuation, once the period of FLaT funding had ceased. Support was given for resources for example, ICT support staff, and the necessary ICT infrastructure and resources for the new videoconference suite in AHS.

When asked what advice the authority would offer to other authorities and schools considering the use of videoconferencing for teaching and learning, the authority staff emphasised the importance of purchasing the best quality equipment and also ensuring that the partner schools had the appropriate equipment to be able to link together.

6.3 The Perspectives of Anderson High School Senior Management Team

6.3.1 Benefits of the Project

The Headteacher reported that the project had brought a number of benefits to the school, teachers and pupils. She thought the success of the project had been due to beginning with just a few subject departments in the senior school, and then expanding gradually.

a) Impact of the project locally

The Headteacher confirmed the authority's view that local press coverage of the project had raised the profile of the school, and stimulated local business interest in the potential use of videoconferences. It had made people in the Shetland Isles aware of the increased range of international education opportunities offered to the pupils. The project manager (DHT) had attended the Authority Headteachers' meetings to introduce and demonstrate the project, and show other Headteachers how they could take forward similar initiatives in their school.

b) Impact of the project on the teachers

The project's focus on a few curricular areas had provided a springboard which stimulated interest from staff in other departments not initially involved with the project. Modern studies began participating in the second year of the project and further expansion has resulted in staff in other departments, for example, science, participating in the 2005/06 school session.

> *It has been a catalyst for encouraging discussion for things like teaching styles and I think that's one area. I know there are other departments that are keen to move on and work through formative assessment for example, science departments.*
>
> AHS Headteacher

The Headteacher indicated that the project had also stimulated general staff interest and awareness of the use of ICT for teaching purposes. Observing the equipment used within the videoconference room had increased staff familiarity and confidence, to the extent that several staff had requested an interactive whiteboard for teaching use in their classroom.

Regarding the impact of ICT on teaching and learning, the Headteacher thought that awareness of the project had given teachers an insight into its potential use.

> *I think a new facility like this encourages people, loosens people up a bit to think more broadly about teaching and learning, I think this is something that we've seen come out of this. The extent of it is so enormous, and I think having had this in the school has allowed us to have a little of what we could be looking at in schools of the future.* AHS Headteacher

The DHT also gave a presentation to staff at an authority-led two day inservice course which focussed on ICT. The Headteacher indicated that this had enabled the staff in other departments to be better informed and created a knock-on effect.

c) Impact of the project on the pupils

When asked about the project's impact on the pupils, the Headteacher indicated that the most important effect was that of motivation, particularly where pupils were 'marginal' in terms of achieving a pass at Advanced Higher examinations.

> *I know that these senior classes are motivated, there is no question, by the experience that they are having, it's impossible to measure. I would imagine our classes see fairly good sustained attendance and completion of courses because of the motivating factor.*

The Headteacher reported that international education is embedded in different ways in the school community and mentioned that AHS pupils have *'the taken for granted assumption of being international pupils, the normality of it which is wonderful'*. She indicated that the visit to AHS by four Japanese girls (at the time of interview) was regarded by the pupils as a normal activity. This supports the pupils' views (see Section 5.5.2). With respect to the project's impact on attainment and achievement, the Headteacher thought these were more difficult to measure, particularly when there is a variation between each year group.

6.3.2 Barriers to the Project

The main difficulties the project encountered related to the infrastructure and to technical matters. Initially the school had to identify an appropriate room to be converted for the videoconference sessions. Whilst not the cause of major problems, the move of the technological equipment from the DHT's office to the new dedicated videoconference room required it to be made 'secure'. When the necessary cabling was being installed in the room it uncovered problems with asbestos being present. This delayed the move to the room. However, the Headteacher indicated that these problems had been overcome with the support of the authority and its ICT services department. There had been some periods when the Authority ICT services had been under pressure so that requests for support had not always been dealt with as quickly as s/he would have liked.

6.3.3 Facilitating Factors in the Success of the Project

A number of factors had aided the development of the project. The secondment of the DHT to the project had enabled him to devote more time to the project. The project was an agenda item on the weekly senior management team meetings. This enabled the DHT to regularly give a progress report to the senior management team who provided help and support through discussing ideas and decision-taking. The Headteacher indicated that

> *When it started it was just practical issues about how many pupils it would be, when would they be out of school. It has developed into much more philosophical discussions about what they are actually doing and what the impact is.*
>
> AHS Headteacher

The Headteacher also highlighted the support of the authority, its commitment to the school and its role in raising awareness in local schools. The importance of the development proceeding in stages was regarded as crucial.

> *The importance of having it in stages has helped everybody enormously. We have taken time and we have been building on a strong base with strong international links in the school before the project, but even from that base it has allowed an evolutionary process.*
>
> AHS Headteacher

DETAILED INDEX

SECTION 7
CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

In conclusion, in assessing the overall impact of the GLIC Project on the teachers and pupils in the participating schools (Aim 1), it is clear that the teachers in Shetland and the partner schools are positive about their involvement, both for themselves and their pupils. For themselves, they have welcomed the opportunity to be involved in new and innovative teaching practices, and to share their experiences and practice internationally. The teachers see gains in pupil motivation, confidence, self esteem, a greater understanding of other cultures, and hence the enhancement of pupil learning. The teachers' views were supported by the majority of pupils in Shetland and in the overseas partner schools, together with a number of other stakeholders: the AHS Headteacher; local authority personnel; project manager and the project co-ordinator. However, these benefits can only be sustained when the technological equipment is robust and reliable.

In the short period of the evaluation and particularly when the project is in the early stages of development, it is not possible from the evidence gathered to make any substantive claims of increased attainment and achievement other than in the 'soft skills' mentioned above. However, we are aware of the enthusiasm of the participants, and as the project evolves the teachers will become more experienced in developing new styles of teaching and learning for videoconferencing. From our observations of the videoconferences we offer suggestions on how the pupils' learning experiences could be enhanced further, (see Appendices 8-10).

From the data collected during the first phase of the evaluation we made some recommendations in our interim report. These recommendations were intended to assist AHS in moving forward to enhance teaching and learning for all participants. From the interview conducted with the project manager at the end of the evaluation period, we are aware that some of these recommendations have already been taken forward. The recommendations from the interim report are listed below in Sections 7.2 -7.4.

7.2 Communication

7.2.1 Communication between AHS Teachers

All the AHS teachers involved would benefit from having the opportunity to meet together to share their experiences. This would allow them to discuss the approaches/strategies to teaching and learning that they are using in the videoconference sessions, and to find out what works well in the different curricular areas. Clearly there are differences depending on the nature of the subject, but some aspects are common, and a shared repertoire of teaching and facilitation techniques could be created.

Although it is important as the project expands for new teachers to become involved, it is equally important to ensure that the expertise gained by teachers who leave (to allow others to take part) is not lost, but shared and passed on to new teachers.

7.2.2 Communication between Teachers in the Partner Schools

Teachers in each subject area would find it helpful to talk via videoconference with the teacher in the partner school. This would give them the opportunity to discuss progress, and reflect on the need, if any, for changes to the programme, to teaching methodologies and learning strategies, and goals for future sessions.

7.2.3 Communication between Pupils in the Partner Schools

Communication between pupils could be exploited to greater advantage. The use of email communications between pupils could help to establish relationships between pupils from the

partner schools. Knowing at least one person, would help the pupils when taking part in the videoconferences. Initially these email communications could be focused on exchanges about aspects of life in their respective countries. With mathematics, because of the language barrier between the Japanese pupils and the Shetland pupils, it is difficult to achieve greater communication between the pupils. However, in the videoconferences with Japan it is recommended that when the AHS pupils write their solutions on a board, they should also be expected to explain their solutions out aloud, in their own language (English) and, for the Japanese pupils, in English if the pupils feel able to do this.

7.3 Resources for Learning

7.3.1 DVD Recordings of Videoconference Sessions

The DVD recordings of sessions made by the project co-ordinator for the use of the teaching staff are a unique teaching and learning resource, and both the teachers and pupils would often benefit from viewing them. Teachers and pupils could reflect on what happened in previous sessions, providing an opportunity for extended pupil learning. Presentation and communication strategies for exchanges by videoconference could be encouraged. This is an important issue as even if teachers plan a good learning activity, the session is less effective if the pupils cannot communicate effectively.

7.3.2 The Project Website

The website could be used to a greater extent. It is well used by teachers to post materials for pupils to discuss during the videoconference sessions. Video clips of most videoconference sessions are available on the website to view after each session. However, a greater use of the discussion forums for pupils to share and discuss ideas about topics, and to get to know pupils in the partner schools better, would be advantageous, and would promote extended and sustained learning, social and cultural exchanges between pupils.

7.4 Promoting Effective Interaction between Videoconference Participants

Participants in future sessions would benefit from being given advice and training on how best to promote effective interaction between themselves and their counterparts in the partner schools. For example, looking at the camera, awareness of body language, speaking slowly and clearly using ‘standard’ English instead of a local dialect.

They could participate in a ‘mock’ videoconference session. A recording of the ‘mock’ videoconference would allow the pupils to see and hear themselves, and to discuss with their fellow pupils and their teachers how successful they felt the session had been, and to learn in a supportive setting from their experiences. Similarly new teachers would also benefit from taking part in a ‘mock’ videoconference.

7.5 High Quality Technical Facility and Capability

Even if all the above factors are taken into account, if the technology is not robust at each of the sites, the effectiveness of videoconferencing is seriously impaired. Equally important is technical support during the sessions and manipulation of the camera/s to maximise the participants’ view of others in each location.

7.6 General Advice to Schools Considering Implementing Videoconferencing

The specific recommendations (see Sections 7.2-7.5) given to assist AHS in the development of the project could serve as useful pointers/guidelines for other schools considering implementing videoconferencing for teaching and learning purposes. On the basis of our evaluation of the GLIC Project we suggest the following advice for each group of stakeholders for the successful use of videoconferencing in schools.

7.6.1 The Local Authority

Should:

- develop a good working partnership with the school;
- contribute to effective project management;
- provide good technical and financial support, and resources to the school;
- regularly monitor and review the process.

7.6.2 The School Senior Management Team

Should provide:

- good support to the staff and pupils;
- an effective ICT infra-structure to support videoconferencing;
- reliable equipment which is fit for purpose;
- funding for up-dating/renewing equipment as necessary;
- sufficient, and on-going, technical support;
- opportunities for the demonstration of good practice and the potential of videoconferencing to teachers, and how it can be used to enhance pupil learning;
- training for staff and pupils to maximise the potential of videoconferencing and other forms of ICT e.g. interactive whiteboard;
- on-going encouragement and support for teachers and pupils to build up confidence and expertise for taking part in the videoconferences, and for maximising the potential teaching and learning benefits;
- encouragement to staff to adapt their teaching styles to exploit the technologies fully.

7.6.3 The Teachers

Need:

- the ICT equipment to be reliable and fit for purpose, e.g. camera and microphones;
- a videoconference suite which allows teachers and pupils to clearly see and understand what pupils and teachers in the partner schools are doing and saying;
- the training and support essential for understanding the full potential of videoconferencing and for maximising the potential teaching and learning benefits;
- technical support to be available to teachers generally, and during videoconference sessions if required e.g. in initiating the link with partner school, or when there is a breakdown in the link with the partner school;
- staff development which focuses on how to integrate videoconferencing/ICT into practice;
- to be encouraged to share with colleagues their experiences, ideas and expertise;
- to share professional and pedagogical practices to maximise the potential of videoconferencing;
- to ensure that the number of pupils taking part in the videoconferences should be managed, such that pupils are not intimidated and/or reluctant to take part in the sessions.

7.6.4 The Pupils

Need:

- training and support in how to maximise the learning and other benefits for them in taking part in the videoconferencing session e.g. to follow protocols in turn taking, looking at the camera and speaking clearly;
- help to build up confidence for taking part in the videoconferences;
- encouragement to share their experiences, ideas and expertise in taking part in videoconferences.

REFERENCES

Burke, C., R. Lundin, et al. (1997). *Pushing the boundaries of interaction in videoconferencing: a dialogical approach*. Distance Education 18(2): 350-361.

Cifuentes, L. and Murphy, K.L. (2000) *Promoting multicultural understanding and positive self-concept through a distance learning community: Cultural connections.* Educational Technology Research and Development, 28,(1) 69-83.

Thorpe, R. (1998) *The use of personal video conferencing with special needs pupils from three schools serving rural areas: a case of successful adoption of new technology*. Journal of Information Technology for Teacher Education, 7, (3).

Timetable of Observations of Anderson High School Videoconference Sessions October 2004 - April 2005

German	**06.10.04**	**17.11.04**	**08.12.04**			**09.02.05**	**27.04.05**
	Observed by 2 researchers at AHS.	Observed by 2 researchers at Aberdeen University (AU).	Observed by 1 researcher at AHS. Observation attempted by 1 researcher at AU, but AHS connected directly to the German school.			Observed by 2 researchers at AU.	Observed by 1 researcher at AHS.
History		**4.11.04**			**31.01.05**		**28.04.05**
		Observation attempted by 2 researchers at AU. No connection established between South Africa and AHS.			Observation by 2 researchers at AU and 1 researcher at AHS.		Observation by 1 researcher at AHS. Observation attempted by 2 researchers at AU, but unable to connect with AHS.
Mathematics		**6.12.04**		**17.01.05**	**31.01.05**	**14.03.05**	
		Observed by 2 researchers at AU.		Observation by 1 researcher at AHS. Observation attempted by 2 researchers at AU, but LTS unable to connect with AHS.	Observed by 1 researcher at AHS.	Observed by 3 researchers at AU.	

Appendix 1

Comparison of Shetland and GFS (German) Pupils German/English **Shetland** N=5 **GFS** N=5 *= missing	**Strongly Agree/ Agree**		**Strongly Disagree/ Disagree**	
	Shetland	**GFS**	**Shetland**	**GFS**
a) It has been **very exciting** being able to work with students at Graf Friedrich Schule/ Anderson High School.	2	5	3	0
b) The video-conference (VC) sessions have been **great fun**. *	1	4	4	0
c) I always **feel a bit scared** about contributing to the VC sessions and only speak if asked to by the teacher. *	1	1	4	3
d) I became **more confident** about taking part in the VC sessions after realising that we were all probably nervous to begin with.*	4	3	1	1
e) I do **not enjoy** this way of learning German/ English. *	1	0	4	4
f) It has been **really good** to be able to speak to, and listen to, the German/Shetland students.	5	5	0	0
g) The quality of the picture for the VC sessions **is good** and we can see the German/Shetland students clearly.*	3	3	2	1
h) Being able to talk and listen to the German/ Shetland students **has not helped** me with my German/English.	1	1	4	4
i) I feel I have **learned a lot** through taking part in the VC sessions with the German/Shetland students.	1	3	4	2
j) The quality of the sound for the VC sessions **is poor** and it is hard for me to hear what the German/Shetland students are saying.	1	4	4	1
k) This way of learning via VC sessions has made me **more interested** in learning German/ English.	2	5	3	0
l) It has been **helpful** to share ideas and to talk to students from Germany/ Shetland	4	5	1	0
m) I **am disappointed** that I have not communicated by email with students at Graf Friedrich Schule/Anderson High School, and got to know some of them better.*	2	4	3	0
n) It has **helped me to have a better understanding of German/English** because I am taking part in Virtual Classroom /LearningFace2Face Project.	4	3	1	2
o) I think it **is difficult** working with the German/Shetland students because life in Shetland/Diepholz is very different.	0	0	5	5
p) Taking part in the Virtual Classroom / LearningFace2Face Project has made me a **more confident** person.	2	2	3	3
q) Taking part in the Virtual Classroom / LearningFace2Face Project has **made me change my mind** about what I will do when I leave school.	0	2	5	3
r) Working with students at Graf Friedrich Schule/ Anderson High has made me interested in **finding out** more about life in Germany/ Shetland.	2	4	3	1
s) I would like to **maintain contact /communication** with some of the German/ Shetland students.	3	3	2	2

Appendix 2

Comparison of AHS and NWUSS (Japanese) Students Mathematics **AHS** N=4 **NWUSS** N=9 * = missing	**Strongly Agree/ Agree**		**Strongly Disagree/ Disagree**	
	AHS	**NWU**	**AHS**	**NWU**
a) It has been **very exciting** being able to work with students at Nara Women's University Secondary School/ Anderson High School.	4	6	0	3
b) The video-conference (VC) sessions have been **great fun**.	3	6	1	3
c) I always feel a **bit scared** about contributing to the VC sessions, and only speak if I am asked to by the teacher.	1	7	3	2
d) I became **more confident** about taking part in the VC sessions after realising that we were all probably nervous to begin with.	2	2	2	7
e) I have **not enjoyed** this way of learning mathematics. *	0	1	3	8
f) It has been **really good** to be able to work on mathematics problems with students in Japan/ Shetland.	4	8	0	1
g) The quality of the picture for the VC sessions **has been good** and we could see the NWUSS/ AHS students clearly.	4	0	0	9
h) Being able talk to and listen to the NWUSS/ AHS students has **not helped** my mathematical understanding.	2	3	2	6
i) I feel I have **learned a lot** about Japan/Shetland and Scotland, through taking part in the VC sessions.	1	4	3	5
j) The quality of the sound for the VC sessions **has been poor** and it was hard for us to hear what the NWUSS/ AHS students and teacher were saying.	0	6	4	3
k) This way of learning via VC sessions has made **me more interested** in learning mathematics.	2	4	2	5
l) It has **been helpful** to share our ideas and ways of learning mathematics with students from another country.	4	7	0	2
m) I **am disappointed** that I have not communicated by email with students at NWUSS/AHS, and got to know them better.	1	6	3	3
n) It has **helped me** to have a better understanding of mathematics because I have taken part in Virtual Classroom / LearningFace2Face Project.	3	4	1	5
o) I think it **is difficult** working with AHS students because life in Shetland/ Japan is very different.	0	6	3	3
p) Taking part in the Virtual Classroom/LearningFace2Face Project has made me a **more confident** person.	1	4	3	5
q) Taking part in the Virtual Classroom/LearningFace2Face Project has **made me change my mind** about what I will do when I leave school.	0	0	4	9
r) Working with students at NWUSS/AHS has made me interested in **finding out** more about life in Japan/ Shetland.	1	3	3	6
s) I would like to **maintain contact/communication** with some of the Japanese/Shetland students.	2	7	2	2

Appendix 3

Comparison of AHS and South African Students History **AHS** N=2 **South Africa** N=15 * = missing	**Strongly Agree/ Agree**		**Strongly Disagree/ Disagree**	
	AHS	**SA**	**AHS**	**SA**
a) It has been **very exciting** being able to work with students in Cape Town/Shetland.	2	15	0	0
b) The video-conference (VC) sessions have been **great fun**.*	2	14	0	0
c) I always **feel a bit scared** about contributing to the VC sessions, and only speak if I am asked to by the teacher.	0	4	2	11
d) I became **more confident** about taking part in the VC sessions after realising that we were all probably nervous to begin with.	2	14	0	1
e) I do **not enjoy** this way of learning history.	0	2	2	13
f) It has been **really good** to be able to talk about the history of South Africa with students from South Africa/ Shetland.	2	14	0	1
g) The quality of the picture for the VC sessions **is good** and we can see the South African/ Shetland students clearly.	0	10	2	5
h) Being able to talk and listen to the Cape Town/ Shetland students **has not helped** me to think differently about South African history.	0	0	2	15
i) I feel I have **learned a lot** through taking part in the VC sessions with the South African/Shetland students.	2	10	0	5
j) The quality of the sound for the VC sessions **is poor** and it is hard for us to hear what the South African/Shetland students are saying.	0	2	2	13
k) This way of learning via VC sessions has made **me more interested** in learning about South African/my country's history.	2	14	0	1
l) It is **helpful** to share ideas and to talk to students from South Africa/Shetland about South African history.	2	15	0	0
m) I **am disappointed** that I have not communicated by email with students in Cape Town/Shetland, and get to know some of them better.	1	9	1	6
n) It has **helped me** to have a better understanding of South African history because I am taking part in Virtual Classroom / LearningFace2Face Project.	2	15	0	0
o) I think it **is difficult** for us to really understand what it is like living in South Africa/Shetland because life in Shetland/ South Africa is very different.	1	8	1	7
p) Taking part in the Virtual Classroom / LearningFace2Face Project has made me a **more confident** person.	1	14	1	1
q) Taking part in the Virtual Classroom / LearningFace2Face Project has **made me change my mind** about what I am going to do when I leave school.	0	8	2	7
r) Working with students in Cape Town has made me interested in **finding out** more about life in South Africa.	1	N/A	1	N/A
s) I would like to **maintain contact/communication** with some of the South African students.	1	N/A	1	N/A

Appendix 4

Comparison of Pupil Responses by Subject **Learning the Subject**	**Strongly Agree/ Agree**						**Strongly Disagree/ Disagree**					
	AHS Maths N=4	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**	**AHS Maths N=4**	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**
It has been **really good** to be able to speak to, and listen to, the Partner School students.	4	8	2	14	5	5	0	1	0	1	0	0
Being able to talk and listen to the Partner School students **has not helped** me with my subject.	2	3	0	0	1	1	2	6	2	15	4	4
It has been **helpful** to share ideas and to talk to students from the Partner Country.	4	7	2	15	4	5	0	2	0	0	1	0
It has **helped me to have a better understanding of my subject** because I am taking part in Virtual Classroom / LearningFace2Face Project.	3	4	2	15	4	3	1	5	0	0	1	2

Appendix 5

Comparison of Pupil Responses by Subject **Attitude to Subject, Motivation, Self Esteem**	**Strongly Agree/ Agree**						**Strongly Disagree/ Disagree**					
	AHS Maths N=4	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**	**AHS Maths N=4**	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**
It has been **very exciting** being able to work with students at the Partner School.	4	6	2	15	2	5	0	3	0	0	3	0
The video-conference (VC) sessions have been **great fun**. *	3	6	2	14	1	4	1	3	0	0	4	0
I always **feel a bit scared** about contributing to the VC sessions and only speak if asked to by the teacher. *	1	7	0	4	1	1	3	2	2	11	4	3
I became **more confident** about taking part in the VC sessions after realising that we were all probably nervous to begin with. *	2	2	2	14	4	3	2	7	0	1	1	1
Taking part in the Virtual Classroom / LearningFace2Face Project has made me a **more confident** person.	1	4	1	14	2	2	3	5	1	1	3	3
I do not enjoy this way of learning my subject. *	0	1	0	2	1	0	3	8	2	13	4	4
This way of learning via VC sessions has made me more interested in learning my subject.	2	4	2	14	2	5	2	5	0	1	3	0

* Missing responses

Comparison of Pupil Responses by Subject **Cultural Understanding and Communication**	**Strongly Agree/ Agree**						**Strongly Disagree/ Disagree**					
	AHS Maths N=4	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**	**AHS Maths N=4**	**NWUSS Maths N=9**	**AHS History N=2**	**SA History N=15**	**Shetland German N=5**	**GFS German N=5**
Working with students at the partner school has made me interested in **finding out** more about life in the Partner Country.	1	3	1	N/A	2	4	3	6	1	N/A	3	1
I think it **is difficult** working with the partner school students because life in Shetland is very different.	0	6	1	8	0	0	3	3	1	7	5	5
I feel I have **learned a lot** through taking part in the VC sessions with the Partner School students.	1	4	2	10	1	3	3	5	0	5	4	2
I **am disappointed** that I have not communicated by email with partner school students, and got to know some of them better. *	1	6	1	9	2	4	3	3	1	6	3	0
I would like to **maintain contact /communication** with some of the Partner School students.	2	7	1	N/A	3	3	2	2	1	N/A	2	2
Taking part in the Virtual Classroom / LearningFace2Face Project has **made me change my mind** about what I will do when I leave school.	0	0	0	8	0	2	4	9	2	7	5	3
The quality of the picture for the VC sessions **is good** and we can see the Partner School students clearly. *	4	0	0	10	3	3	0	9	2	5	2	1
The quality of the sound for the VC sessions **is poor** and it is hard for me to hear what the Partner School students are saying.	0	6	0	2	1	4	4	3	2	13	4	1

* Missing responses
N/A These questions were not asked of the South African students in 2004.

Contexts for Videoconferencing use in Modern Languages

Context

Whole class discussions using videoconferencing
Generated from a composite set of videoconference observations

Class to class presentations by videoconference in German/English on a range of topics agreed by the class teachers

Videoconferencing added authenticity (cultural and linguistic) to language learning and added variety and enjoyment to the learning process.
These sessions worked best when they:

- included exploration of aspects of the cultural life of young people in the respective countries
- made use of illustrations/realia to intensify the experience (e.g. the use of digital photos to show aspects of school life)
- encouraged a mutual understanding in the students that communication could be achieved in spite of errors and mistakes
- encouraged pupils to relax and enjoy the exchanges
- involved the same pupils (a limited number of pupils) on each occasion
- developed out of a core programme of agreed topics for discussion
- restricted the interchange to two schools
- were managed and moderated sensitively by the teachers (e.g. prompting pupils to begin their presentation, to ask questions, to speak slowly, etc.)
- allowed pupils to intervene when appropriate (e.g. to check for comprehension, to ask for clarification
- made use of agreed protocols for the conduct of conferences.

The learning effectiveness of such sessions could be extended by:

- systematically encouraging pupils to make contact outwith the sessions (by e-mail, etc.) in order to get to know more about a particular person
- posting texts on the website in advance of the conferences
- seeking to deepen and intensify the experience of the partner culture (e.g. by extending the use of additional props/realia/visuals to illustrate what is being described)
- using DVD-recordings of the sessions for follow-up work (e.g. on the life of young Germans, or the conversational gambits used by native speakers)
- allowing pupils to interact for at least part of the conference without the presence of teachers

Contexts for Videoconferencing use in Social Subjects

Context

Whole class discussions using videoconferencing
Generated from a composite set of videoconference observations

Whole class discussions of the evolution of a historical concept over time

Videoconferencing added opportunity, relevance and different voices
These sessions worked best when they:

- included witness testimony from those with lived experiences to share
- compared and contrasted different accounts and explanations
- introduced different perspectives and viewpoints
- used key questions to frame and structure group discussions
- allowed modelling of historical thinking and analysis
- took careful account of mechanics – e.g. the audibility of pupil voices
- were chaired to pay attention to turn taking and so balance contributions across sites
- achieved a balance of contributions from the teacher and participants
- took account of different cultural expectations about openness and participation
- provided opportunities to challenge and defend positions and conclusions.

The learning effectiveness of such sessions could be extended by:

- facilitating exploratory talk in small groups
- basing discussion on documents shared and examined beforehand
- developing and encouraging pupil questioning techniques
- using learning tasks as well as questions to structure interactions
- building a shared sense of the impact and import of events
- allowing pupils to talk together directly without setting pre-determined outcomes
- capturing live sessions via recordings to be revisited for later reflection.

Contexts for Videoconferencing use in Mathematics

Context

Sharing experiences of mathematics teaching using videoconferencing
Generated from a composite set of videoconference observations

Using videoconferencing for sharing experiences of mathematics teaching

Videoconferencing as a means of sharing experiences of mathematics learning and teaching. These sessions worked best when:

- the videoconferencing equipment worked well and connections were quick and constant
- the teachers prepared what was to be done such that all pupils knew what was going to happen and what was to be discussed or explained
- the pupils and teachers knew precisely the objectives and purpose of the session
- the pupils understood and shared the objectives of the session
- the time available was used efficiently and effectively by all concerned
- the value and advantage of using videoconferencing were clear to pupils and teachers
- the benefits of videoconferencing over normal methods of learning were obvious
- the sessions increased participants' awareness of the differences in mathematics teaching in Shetland and Japan
- the language of mathematics helped to overcome other language difficulties
- participants were able to see different mathematical methods from those they normally use.

The learning effectiveness of such sessions could be extended by:

- making apparent the benefits of using ICT to enhance the teaching and learning of mathematics. (This would include videoconferencing but also the use of other ICT such as graph drawing software and interactive whiteboards)
- participants comparing and contrasting different methods of solution of problems set (e.g. graphical versus algebraic)
- teachers using a variety of different mathematical methods and/or teaching methodologies to teach topics which are common to both curricula
- encouraging individual pupils to present their solutions to all participants by explaining their solution out loud rather than in silence
  (It would be sensible to use English if possible, as no Shetland pupils had any Japanese language but some Japanese pupils had some English)
- the teachers identifying weaknesses in their own teaching and recognising improvements which could be made.