




Rolls-Royce Science Prize entry

Entrant's address and contact details

School name:	Thurso High School	
School/college address:	Ormlie Road Thurso Highland KW14 7DS Scotland	
School phone number:	01847 893822	
Number of pupils in school(s) - male:	507	
Number of pupils in school(s) - female:	483	
Number of staff in school(s):	68	

Our team leader and our team

Name	Position (e.g. Headteacher, parent, etc.)	Organisation
Mr Sinclair Mackenzie	Physics Teacher	Thurso High School
Mrs Jean Alexander	Auxiliary	Thurso High School
Miss Debbie Sutherland	Biology Teacher	Thurso High School
Mrs Debbie Bullivant	Learning Support Teacher	Thurso High School
Miss Jenny Smith	English Teacher	Thurso High School

The key skills, strengths and roles of each team member are: (200 words)

Sinclair Mackenzie: Physics Teacher.

Sinclair is a NQT who is keen to improve ICT utilisation in science teaching. He uses Internet resources heavily in his teaching and sees wikis as a key strategy towards improving science and digital literacy.

Jean Alexander: Auxiliary

Jean was an early adopter of ICT, responsible for training pupils in basic information literacy skills within Thurso High School and administration of our school's website.

Debbie Sutherland: Biology Teacher

Debbie is an innovative member of the science staff. She has a strong interest in formative assessment strategies and sees voting systems as a powerful tool in her "Assessment for Learning" approach to teaching.

Debbie Bullivant: Learning Support Teacher

Debbie trained as a Primary teacher and has taught science from the non-specialist's perspective. She brings a unique insight into the problems communicating the language and concepts of science at lower levels of the 5-14 curriculum together with expertise in additional support needs within the Secondary environment.

Jenny Smith: English Teacher

Jenny is keen to support the development of literacy across the curriculum. She has experience of working with pupils on the editing and redrafting of NQ coursework within her own subject area, with a strong background in peer assessment.

Our proposal

Topic area of proposal: Generic Issues - Inclusion

Briefly, the aim of our proposal is: (50 words)

We will create classroom wiki pages to form on-line science textbooks written in the pupils' own words. The creation of wikis will promote scientific and digital literacy among lower ability pupils while encouraging co-operation and collaboration among pupils. Once wiki content has been created, pupils will record audio versions of these wiki pages as downloadable podcasts to provide accessible content for those pupils with reading difficulties. Video capable Apple iPods will be available to replay this podcast material. The attainment of pupils will be monitored throughout the duration of the project using an interactive voting system.

Pupil type to benefit: Inclusion

Age range to benefit from proposal: 11-16

Learning outcomes from our proposal: (50 words)

1. To develop scientific literacy in lower ability pupils.
2. To promote information literacy and self-confidence in all pupils.
3. Encourage pupils to practice peer and self assessment by editing the wiki.
4. Build an on-line community where pupils learn the value of working collaboratively for mutual benefit.

Our reasons for developing this particular proposal: (100 words)

Within our school there is a recognised need to motivate those pupils who find themselves in lower ability Science classes by the time they reach the upper stages of the 5-14 curriculum. Differentiation can go some way towards providing an accessible curriculum but does little to raise self-confidence, resulting in disengagement and behaviour issues. We aim to harness teenage enthusiasm for Web 2.0 applications such as Bebo and MySpace by introducing classroom wikis where pupils build a knowledge base for themselves. Participating pupils will develop their literacy and gain a sense of achievement by participating in the creation of their own knowledge network.

Detailed description of our proposal: (300 words)

The setting of Science classes in S2 can lead to the aggregation of significant numbers of disengaged pupils in lower ability classes. We propose to empower these students to create their own knowledge resource by introducing classroom wikis where pupils can provide content and assess/improve the contributions of their peers. Our wikis will be similar to the successful wikipedia.org encyclopaedia, providing space for any pupil to contribute information for the benefit of the whole class.

The wikis will be initiated by the pupils' creation of an on-line glossary, expanding organically into a knowledge network covering all aspects of the science curriculum. In providing this on-line learning space for pupils we aim to encourage reflection on classroom experience where this may not previously have taken place.

Staff will use RSS (Really Simple Syndication) feeds to monitor new and modified content on the wiki. Pupils will be encouraged to edit each other's work on-line to improve the quality of the wiki for all concerned. Pupils will use Apple's Garageband application to generate a corresponding audio version (complete with synchronised images) for those with reading difficulties. Our innovative "audio wiki" will exist as podcasts attached to each page for download to video capable Apple iPods, with storage and organisation alphabetically by topic. Optionally, pupils can include video footage of experiments performed in class.

We will monitor pupil attainment formatively over the duration of the project by fortnightly assessments using a Qwizdom interactive voting system, removing the need for scribes and readers.

By participating in this project, pupils will develop their scientific and digital literacy. We also hope to foster a community ethos for success that is typically lacking in the target pupil group.

Our goal is to progress towards the four capacities of "A Curriculum for Excellence";

- successful learners
- confident individuals
- responsible citizens
- effective contributors

Putting our proposal into practice

Outline of how our team would implement our proposal over a period of not more than 24 weeks: (300 words, bulleted lists accepted)

Project progress will be reviewed fortnightly.

- W1
- Order MacBook, iPod and Qwizdom system (SM/JA)
 - Select 2 suitable S2 classes to participate in project (SM/DS/DB)
- W2
- Students to receive Wikipedia induction in library computer suite (All)
 - Wiki training for staff (SM/JA)
- W3
- Create wikis and individual pupil accounts on wikispaces.com website (SM/DS/JA)
 - Pupils create simple personalised pages to encourage early wiki use.
 - Scaffold initial wiki entries using vocabulary from current science lesson (SM/DS)
 - Establish RSS feed for staff monitoring of wiki (JA/SM/DS)
- Wks4-8
- Develop question bank for Qwizdom Interactive Voting System (DS/SM)
 - Increase exposure to class wiki page as on-line glossary via digital projector during lessons. Encourage pupils to add/edit information to wiki during lessons, modelling the wiki editing process to classmates. (SM/DS/DB)
- W9
- Review meeting to assess staff and pupil engagement with the wiki (All)
 - Commence fortnightly formative assessment with Qwizdom interactive voting system (DS/SM)
 - Staff training in use of Garageband software/iPod (SM/JA)
- Wks10-16
- Wiki use incorporated into science homework (SM/DS)
 - Highlight examples of "wikignomes" and "wikitrolls" in pupils' work to classes as models of good and bad practice. (JS/DS/SM)
 - Digital still and video camera training for pupils (JA/SM)
 - Extend wiki to include digital images, video and audio content (SM/DS/DB/JA)
- W17
- Start training pupils in use of Apple Garageband to record content for "audio wiki" (SM/DS/JA)
 - Pupils with ASN learn how to independently download new audio content onto iPods (DB/DS/SM)
- Wks18-22
- Continue using existing wiki content to generate audio/visual podcast content (All)
 - Encourage ASN pupils to keep iPod content up to date using iTunes and provide feedback on content. (DB/DS/SM)
- W23
- Questionnaires to all participants (SM/JS)
 - Analysis of pupil attainment over project timeline (SM/DS)
- W24
- Presentation of project findings to Senior Management Team and Learning and Teaching Group (All).

Monitoring and evaluation

The monitoring procedures we will use during the project are: (200 words, bulleted lists accepted)

- Fortnightly project reviews with whole team
- Monitor wiki activity on RSS feed system (bloglines.com)
- Highlight examples of good and bad wiki practices
- Content that mirrors breadth of course to date signals successful wiki adoption
- Use portfolio redrafting strategies from English department to help pupils engage with wiki editing process
- Introduce Qwizdom Interactive Voting for frequent formative assessment without need for reader/scribe assistance (difficult to co-ordinate traditional assessment when several ASN pupils in same class)

-Compare end of topic summative test results with year group and historical data

**The evaluation procedures we will use at the end of the 25 weeks to check the effectiveness of our project are:
(200 words, bulleted lists accepted)**

-S2 pupils are summatively assessed half-way through school year, these results will be an early indicator of project effectiveness.

-Motivation and engagement of pupils throughout project will be measured in terms of tracked individual Qwizdom performance, homework and behaviour.

-Continued growth of wiki during school year will indicate effectiveness in encouraging active learning within Science.

-Pupil choices for S3/S4 subjects may show improved uptake of Sciences, e.g. increase in numbers taking more than one Science.

-Comparison of end of topic tests/exams against current year group and historical S2 assessment data.

-Analysis of pupil questionnaires to determine successful areas of project and areas for improvement.

Budget

Itemised costs of putting your proposal into practice within a maximum budget of £5,000 or equivalent in Euros:

Budget Item	Cost (GBP)
Apple MacBook laptop	703
Logitech USB desktop directional microphone	20
10 x video capable iPod (30GB model)	1610
Qwizdom Actionpoint software	99
Qwizdom Q4 Interactive Kit (20 handsets)	1550
Cover for staff ICT training and question development (4 days @ £190 per day)	950
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TOTAL	4932

