



JISC Final Report

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1 Acknowledgements

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We are indebted to Naomi Korn and Paola Marchionni (JISC programme manager) for guiding us through the complexities of IPR, to the Web team at QMUL (led by Richard Hirst) for guidance on website design, to the e-learning Unit at QMUL for advice on video editing and to Vicky Scott for her colourful illustrations.

2 Project Summary

The Writing in Schools, Higher Education and Employment Settings (WISHEES) project, led by the *Thinking Writing* (TW) team at QMUL, brought together school teachers, university tutors and employers to create a collection of written texts, commentaries and related learning resources in Science, Technology, Engineering and Mathematics (STEM) subjects (<http://www.thinkingwriting.qmul.ac.uk/wishees>).

Understanding what makes a good quality text at school and tertiary level helps raise attainment as students who produce cogent writing attain higher grades. There is a perception that STEM subjects do not require much writing, but, for example, research suggests that engineers can spend 20-40% of their time writing. So STEM students need to be able to communicate in writing, not only in education but in the world of work where the CBI reports recent concerns from employers over graduate literacy skills.

The aim of the collection was to provide a searchable archive of texts which could be used by school teachers and academics to prepare students for the writing demands of school, university and employment, thus aiding transition from school to university. By bringing together participants from 3 sectors, schools, higher education and employment, the project facilitated dialogue and professional development, complimenting the work done by Thinking Writing in local schools in Tower Hamlets and neighbouring boroughs to enhance widening participation and access to university.

Project participants selected a range of authentic written texts and supplied commentaries on what they valued in those texts, giving guidance on what makes a

good quality text in the participant's context. In addition to the commentaries, the website has a range of tutorials aimed at providing ways into using the collection for different users (e.g. pupils, students, academics and school teachers).

3 Main Body of Report

3.1 Project Outputs and Outcomes

Output / Outcome Type <i>(e.g. report, publication, software, knowledge built)</i>	Brief Description and URLs (where applicable)
Event	3 project workshops, with representatives from schools, universities and employment, promoting dialogue and reflective feedback on 6 th April, 21 st June and 30 September 2011. Dissemination event, workshop on Wishees at Southbank University to 45 English for Academic Purposes professionals, 21 st November 2011. Launch event at QMUL, presentation on Wishees at QMUL to 25 academics and support staff from QMUL, schools and other universities, 16 th December 2011.
Software	Completed Stem Wishees website, http://www.thinkingwriting.qmul.ac.uk/wishees .
Content	Collection of 140 written texts, exceeding target set of 70 texts.
Content	50 podcast commentaries on these texts.
Tutorials	10 related tutorials, meeting target of 10.
Training	All Thinking Writing staff trained in the use of CMS and Google Analytics.
Piloting	3 user testing sessions organised with school and university students and tutors. Feedback collected and used to improve website. 5 observations of how users from selected groups use website.
Software	Project website linked to existing Thinking Writing website
Reports	Final project report submitted.
Collaboration	Existing collaborative links between Thinking Writing and local schools have been extended and strengthened. New links have been formed with other schools in Tower Hamlets and South Norwood. New links have been created with employers of STEM graduates (TfL and Astrium Ltd) Collaborative links with QMUL STEM departments have been extended and new contacts made.
Knowledge built	Building of knowledge and understanding around what teachers and tutors value in the selected texts (see below for more details).

3.2 How did you go about achieving your outputs / outcomes?

This was a highly collaborative project, involving participants from three sectors (school, university and employment) in creating a collection of texts, designing an

attractive and user friendly website and building knowledge and understanding around what tutors value in texts and how they make judgements about the quality of students' texts.

Aim

The aim of the Wishees project can be summarised as creating an online resource to aid student transition from school to university and employment, by providing a collection of written texts from each of these sectors with accompanying commentaries. Many school students are unprepared for the study and writing demands of higher education. Larger classes, less interaction with tutors and greater student autonomy may bewilder some students, struggling to understand tutor expectations. Longer, more complex writing assignments may confuse first year students who have no clear idea of the standard they are expected to reach. Similarly, third year students looking to employment, may be unprepared for the writing demands of STEM employers. Technical leaflets and reports and even conference papers may be unfamiliar to them.

Academics may have limited interaction with the school sector and may not be aware of the study routine there or the kind of written work students produce. Understanding the kind of assignments students are set at school and how teachers judge student writing, may help academics design first year courses that ease the transition from school to university and better prepare students for the demand of second and third year studies. Many STEM university courses include assignments that aim to develop the kind of oral and written communication skills students need in employment. To design these courses, academics need a good knowledge of the kind of writing STEM employees do.

There is, therefore, a need for resources that help students, school teachers and academics understand writing in the three sectors, so that transition between these sectors can be facilitated. The Wishees project aimed to help meet this need by providing a resource that shows examples of written texts in all three sectors, with commentary on these texts. To do this, we collected texts with related podcasts and tutorials, built a website and, through project meetings, facilitated dialogue between schools teachers, academics and employers.

We also aimed to facilitate professional development of teachers and tutors, helping them articulate how they make judgements about the quality of texts. The video podcasts were an opportunity for tutors to explore their beliefs about what they value in student texts and to reflect on the tasks they set, reflecting on the kind of thinking they wanted students to engage in and whether the task was successful in helping students to engage in that thinking (see task description on the website, for example http://www.thinkingwriting.qmul.ac.uk/wishees/collections/queenmary/medicalengineering/medicalengineeringliteraturereview/55531.html?utm_source=university_engineering&utm_medium=link&utm_campaign=medicalengineeringliteraturereview, (box 1, and podcast).

Creating the collection

This collaborative project relied for its success on creating productive links with school teachers, academics and employers, and gaining their trust so that we could

work with them to select texts, film podcasts and develop learning resources (tutorials).

We aimed to collect examples of writing in as many disciplines and sub-disciplines as possible. We felt the texts needed contextualisation so collected participants' descriptions of the task set, why it was set, where this task came in the course, what work students had done before/what work the task would help prepare students for (e.g. a final year project) and what kind of thinking the tutor was hoping to see.

Variation

Pedagogically, we felt that *showing* students examples of good writing with related tutor commentaries, and a range of writing, students approaching the same task in different ways, would be more effective than *telling* students how to write (Sadler 2010). We wanted to avoid long lists of instructions and advice about writing (available on many other websites). Through seeing variation, different ways of approaching a task, we felt users of the collection could be helped to make judgements about what makes good quality writing in a sector. We avoided 'model answers' to tasks as we felt that in HE, tasks set would be 'ill-structured' problems (Voss and Post 1988), that is problems with no single correct answer, so showing how students approached these tasks in different ways would be more useful than providing a model answer which could encourage students to produce formulaic responses.

Podcasts

The video podcasts are intended to be short (typically around 5 minutes) informal chats, similar to the kind of chat students might have with a tutor in their offices. We asked tutors to talk about the purpose of their task, the kind of thinking they wanted students to do and where they saw that thinking represented in the written text. We asked tutors to avoid using the language of assessment criteria as this language is part of the tutor's professional discourse, and not easily understood by students (see Price et al 2010). We were also guided by Sadler's (1989) widely quoted critique of explicit assessment criteria, which, he argues cannot contain the vast range of tacit knowledge that tutors draw on in making judgements about quality in student work, and encouraged tutors/teachers to use their own language and give examples by making constant references to the texts.

Building the website

This was one of the most challenging aspects of the project. We worked closely with our web team and outside developers to build an attractive and fully accessible website.

User testing

User testing was central to the development of the website and carried out at every stage of development, initially during project meetings, then with a small group of A level students from a local school, and finally more detailed testing with representatives from each of our user groups (a school teacher, school students, a university tutor, university students, a parent). We recruited user testers through our project contacts, asking school teachers and academics to find us willing students and colleagues, and gave incentives, such as Amazon vouchers, to user testers.

For detailed user testing we combined observations and a questionnaire developed from our experience of the initial user testing and with the guidance of Dr. Saima Sherazi (see appendix 1 for questionnaire). After an initial introduction to the website, we asked user testers to explore the website for around 20 – 30 minutes, observing their interaction with the resources, which pages they visited, how long they spent on them and how they used the resources. We noted any problems and discussed these with users, along with the questionnaire. The observations were invaluable; we discovered that users were finding it very difficult to use the 'accordion' so deleted this.

Feedback and final design decisions

Website design continued throughout the project as we refined the website, for example, school students wanted a more visually attractive website so we employed an illustrator to design the map and other graphics on the website. Users wanted an easily navigable website where they could find content with just a few clicks; the map, a visual representation of the three sectors (school, university and employment) and subjects (Biology, Engineering etc) allows users to get to content 'without too many clicks'. Feedback suggested that users whose mother tongue was not English would need transcripts, so we added these. We observed that users were having problems navigating page 2 (e.g. http://www.thinkingwriting.qmul.ac.uk/wishees/collections/queenmary/medicalengineering/medicalengineeringliteraturereview/55531.html?utm_source=university_engineering&utm_medium=link&utm_campaign=medicalengineeringliteraturereview) so introduced instructions, numbers 1 – 2 – 3 so that users could follow the sequence and designed a 'How to use the website' video tutorial (see homepage). We experimented with several different methods of filming but found that a small flip camera was less intimidating, less formal and less intrusive so produced better quality, more relaxed commentaries. Users wanted a space on the website for student voice, so we added a paragraph writing competition. They also wanted tutorials to be interactive, so tutorials were designed as a series of interactive exercises to guide students through the kind of thinking and planning they needed to do for a particular assignment.

Engaging participants and creating a community

Given the short time scale of the project (discussed below) and that it started towards the end of the academic year, in the exam period, it was challenging to get teachers' and academics' attention and engage them with the project aims. Similarly, finding a time when participants from all three sectors (schools, universities and employment) could meet and exchange ideas was problematic. We arranged several project meetings with varying levels of attendance. The project meetings were practical, with lots of group work. We mixed the groups so that school teachers, employers and academics were working together and this created useful exchanges. Building a community was difficult as different participants came to each meeting, but there was a small core of regulars who reported that the meetings had been useful.

Each sector presented different challenges. For school teachers, the project started at a bad time, during their exam period. It was difficult to get teachers' attention. Moreover, teachers were often assigned the project by senior management and felt it was just another task, so there was little buy-in initially. However, once we got participants' attention and managed to meet and explain the project and build up a relationship, some showed considerable interest in and support for the project. For example, one of the school teachers, Henry Hammond (Head of Science at Oaklands School, Tower Hamlets) arranged a meeting at his school with some of his colleagues and Akmol Khan (Head of Science at Morpeth School, Tower Hamlets) which resulted in not only texts and podcasts for the collection but also collaboration in the development of tutorials which two teachers worked on over the summer break. Financial incentives were important for teachers and the schools, especially in the current economic climate. The Head of Outreach and Widening Participation at QMUL (Anne Setright) helped us make contact with key people in local schools and advised on dissemination of the project in the Schools sector. The Educational Liaison and Access Team also gave assistance and the Outreach Manager for Mathematics and Physics (Laura Thomas) provided us with texts from the Cassini project and put us in touch with Professor Carl Murray, one of the competition judges, who commented on the texts (see http://www.thinkingwriting.qmul.ac.uk/wishees/collections/school/Cassini%20Project/58973.html?utm_source=school_science&utm_medium=link&utm_campaign=scienceastronomy). QMUL is committed to supporting local schools in Tower Hamlet to raise aspirations and attainment. The Wishees project has helped us to strengthen the University's support in concrete ways and build on Thinking Writing's existing work which was previously funded by Aimhigher.

Once the exam period was over we got excellent participation from academics at QMUL, particularly Dr. Tina Chowdhury and Dr. Brendan Curran who contributed texts, podcasts and developed learning resources. The relative ease with which we achieved buy-in from QMUL academics is perhaps because many were colleagues who had worked with us on other projects, so we had good established working relationships. We had initially planned to collect around 25 texts from QMUL academics; this was rapidly exceeded and currently there are 64 QMUL texts online. Another 12 academic texts from Quinnipiac University in Connecticut were serendipitously collected by Sally Mitchell and Teresa McConlogue during an exchange visit; we found academics there were keen to get involved with the project as they could see how the project would benefit their students.

Our most difficult challenge was the employment sector. The Careers team at QMUL, especially Sabrina Wedderburn, helped us to make contact with QMUL alumni in STEM employment. Initially the contact was with TfL and Astrium Ltd. We tried, unsuccessfully, to make contact with a financial institution, as many QMUL STEM graduates go into finance. The problem we faced was the sensitivity of documents. We asked for technical reports, minutes of meetings and examples of email communication. We were offered marketing texts, already in the public domain. But we wanted technical specifications, far more sensitive documents. We did obtain technical leaflets, reports, a presentation, a conference paper and examples of written interview tasks. Arranging filming sessions to fit in with employees' busy timetables was also problematic. As a result, the employment

section is the smallest on the website but we hope that now we have made links we will be able to grow this section. Employers were not interested in financial incentives. We made one payment to a charity, The Railway Children, in recognition of TfL's participation. Companies were more protective of their texts and didn't want users to adapt them. We decided to use a more restricted Creative Commons license for their documents; the Non-commercial No Derivatives CC license.

Building knowledge and understanding

We viewed this project as primarily a professional development project, not only for participants but also for members of Thinking Writing. For participants, the process of writing about the task they set helped them think about why they were setting this kind of task and what kind of thinking they expected students to do to complete the task. For Thinking Writing, this gave us an insight into tutors' thinking and an opportunity to question them and gain a deeper understanding of how they made judgements about the quality of student texts. What we felt participants gained from making podcast commentaries was an opportunity to explore their own understandings of what they value in student texts, and to articulate these understandings. Sadler (2010) argues that tutors draw on a vast range of tacit knowledge when making judgements about quality in student writing. This knowledge is often unarticulated, so the podcasts gave tutors a chance to begin exploring this knowledge.

3.3 What did you learn?

Lessons learnt

Making contact

We learnt a great deal about working with participants from schools and employment. We began by working with schools and employers who were aware of the project and had supported our proposal, but even with these institutions we faced problems. The key issue was finding the right person to contact in a large organisation. We learnt that making contact could take some time; we began contacting schools and employers in March, had meetings in March and April, and by May we were at the stage where we could begin collecting texts and filming podcasts. So it took at least two months, sometimes longer, to identify and begin working with project participants.

Collecting the right texts

Once we had made contact, we then began negotiating which texts to collect. We managed to engage early on with some key employers of STEM graduates, Transport for London (TfL) and Astrium Ltd and collect texts but the texts were of a non-technical nature. We discovered that employers were concerned about putting anything sensitive/confidential on line and concerned about the Creative Commons 'share alike' licence that allows for reuse and adaptation of material. With schools and universities, we were happy to collect short pieces of writing e.g. from the Mathematical Writing course at QMUL, as well as longer pieces and

posters. We wanted authentic texts that represented the range of writing students might do in STEM subjects.

IPR

In addition to issues around Creative Commons licences discussed above, we encountered another IPR problem which was a conflict between QMUL ethics approval and the CC licenses we were using. QMUL ethics approval requires us to allow participants to withdraw from the project at any time. However, CC licenses require that licenses be granted 'in perpetuity'. For example the CC Non-Commercial Non Derivatives license states:
'Section 7 b:

Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work).'

Our solution was to keep the clause allowing students to withdraw, in accordance with our ethics approval, as we judge that students will not withdraw. In our experience, no participant has so far exercised their option to withdraw so we judge this to be a low risk. Consultations with Naomi Korn and Paola Marchionni were invaluable in resolving IPR issues.

Filming

We encountered technical problems when filming podcasts in offices. Our aim was to film informal podcasts, similar to the kind of chat tutors might engage in when students came to their offices for advice. So we liked the idea of filming in participants' offices because users can see academics/teachers and employers in their normal environment. However, there were issues with noise (especially emergency vehicles' sirens on the Mile End Road). Some filming was done in our eLearning studio where we could achieve better sound and use the interactive whiteboard to display texts; however this is a more formal setting, and as tutors have to stand in front of the whiteboard, creates a different type of interaction. Interestingly, some teachers chose not to participate in the project because they would need to provide a podcast commentary on their students' texts; they were happy to supply texts but concerned about providing a commentary and concerned about negative comments if videos were posted on Youtube.

Funding carry over

Because of the short time scale for the project and the longer lead time needed to make contacts with the right people in schools and employment, we have agreed with our project manager (Paola Marchionni) to hold over funding to complete collection of texts, especially from schools and employers.

Things that went well

We had an excellent response from academics at QMUL, who contributed 64 texts and 22 podcasts and got involved in developing learning resources. Academics were keen to contribute as they could use the resources created with their students, directing students to relevant collection units at appropriate times in their courses e.g. when medical engineering students need to write an executive summary for their research project they will be directed to the appropriate webpage. We also had a good response and much enthusiasm from academics and students at Qunniac

University who were keen to contribute to the collection and could see the value of this resource, particularly the podcast commentaries on the texts. As well as strengthening our links with departments at QMUL, we also strengthened links with local schools, with one teacher, Henry Hammond, arranging a student visit to QMUL for user testing, and a further project this year which will result in more resources for the Wishees website.

We learned a great deal about website design from this project, helping us think about how to redesign the Thinking writing website which was due for a revamp. As a team, we learned how to use the Content Management System (Rhythmyx) to maintain the website, and how to use Google Analytics to evaluate use of the website.

The project helped develop our understandings around what tutors value in students texts. Asking tutors to talk about what they value in texts, and not to focus on assessment criteria, was revealing; some tutors were cautious in their commentaries, others were more expansive about what they wanted students to learn and how students should present their learning.

3.4 Immediate Impact

The project has created a major resource for Thinking Writing to use in its professional development work with academics and local school teachers. It also provides an approach that can be expanded into other disciplines. We know that contributors (school teachers and tutors) will use resources created in this project with their students: see the table below for examples of impact and some example evidence

Impact	Evidence
use of learning resources with students to help improve thinking/writing on specific tasks	Tutorials have been developed around various texts in the collection (e.g. Medical Engineering, Biology, GCSE Maths, AS level Science) and will be recommended to students.
Careers and Widening Participation team have better understanding of TW work	Closer cooperation with Careers and WP team who engaged in meetings, were part of the Project Advisory Group and gave feedback.
Local schools have closer link with TW	School teachers contributed to the collection, developed tutorials (supported by Thinking Writing) and their students got involved in user testing. 4 London schools were involved in the project and we have since made contact with a further two schools to develop work around STEM writing.

It is too early to assess the impact of the project but there are encouraging signs. Links between Thinking Writing and Oaklands School have been strengthened and will be developed this year (see below). The Outreach and Widening Participation team is now in regular contact with Thinking Writing and we are planning future outreach and widening participation activities relating to literacy and transition.

The website has potential to develop students' digital literacies and to engage them in using digital resources to support their learning and develop awareness of good quality writing in different settings.

3.5 Future Impact

We will disseminate the project using traditional and non traditional strategies e.g. press releases, mailing lists for academics and school teachers, careers events and parents' evenings, use of social media and linking to appropriate websites. We anticipate that school students and teachers and university students and tutors will be the main users of the website.

For schools, the Stem Wishees will be a national resource (available to any school). School teachers can encourage students to access it to gain understanding of undergraduate-level writing. This will be particularly important now that the national Aimhigher programme has finished. It is possible that some schools will have reduced opportunity to take their students on campus visits and taster days etc, and on-line access to examples of undergraduate texts (with the accompanying comments) will be useful for Year 12 and 13 students in particular.

Thinking Writing is working with Oaklands School and St. Paul's Way Trust School, in Tower Hamlets, and Professor Conrad Lichtenstein (Chief Scientific Officer at Population Genetics Technologies) to develop a lecture on Genetics (with reference to Harry Potter) with follow up writing tasks (aligned to the sixth A level Biology curriculum). The writing with tutor commentary will be posted on the Wishees website. This work will bring local school students into the university for an afternoon where they will meet and talk with Professor Lichtenstein.

For university students, we think this resource will impact on students' understanding of writing in their disciplines and on tutors' understanding of what they and their colleagues look for in student texts.

We will track use of the collection through Google Analytics; all pages and actions on the website have been tagged and use of the website will be monitored. We will also monitor feedback from teachers/tutors and students, for example feedback from QMUL tutors who recommend the resources to their students, and feedback from their students as part of normal course feedback.

4 Conclusions

- In a highly collaborative project, such as Stem Wishees, there needs to be a considerable lead time to enable setting up contacts and establishing relationships with participants. In future projects we would ensure that we factored this in.
- The collection of licences for texts and podcasts took a lot of chasing; in future we would budget for more administrative support to do this work.
- Students are elusive and have many demands on their time. Providing incentives, such as £10 Amazon vouchers was one way of getting their consent and involvement in user testing.

- The timing of this project was unfortunate as it clashed with the exam period in schools and universities and then Easter and summer holidays. A start time of September would have allowed for time to make contacts in the first semester and then develop these/collect texts while students were still on campus in the second semester.

5 Recommendations

General recommendations:

- Allow sufficient lead time for work in schools and with employers.
- Budget for incentives for participants.

For JISC:

- Provide early support on IPR issues for all projects and the opportunity for ongoing consultations
- For community projects, involving schools, the project timescale needs to take into account the academic year (exam periods and holidays).

6 Implications for the future

We will continue to grow the collection and to fill in gaps in the collection by extending our contacts with QMUL academics, local schools and employers. We will also experiment with 'crowd sourcing' asking users to contribute texts and podcasts to expand the collection. As the website is linked to the Thinking Writing website its sustainability is assured; it will be maintained and developed by Thinking Writing as part of our normal activity.

7 References

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8 Appendix 1

Questions for user testing of Stem Wishees Website Sep 2011

Before we start, write down 3 words that describe this website. Explain why you chose those words.

First impressions

- What are your first impressions of the website?
- What did you look at? How did you actually view the collection page?
- What is the best feature?
- Any glaring problems?

Design

1. What do you think of the layout? The look of the website etc?
2. Is the site user friendly (easy to navigate)?
3. What about the organisation of collections?

Use

4. (on the collection page) Did you know what to do (was it intuitive)?
5. (tutorials) Are the instructions clear?
6. Should there be on line help available, like a dictionary?
7. Would you use the website again? How would you use it?

Content

8. Is the content useful? Why/why not?
9. Is the content challenging? Why/why not?
10. What other resources do you think should be included?

Time

11. How long did you spend on it?
12. How long can you imagine staying on the site?

Any other comments?