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# Evaluation of student facing web-based services: Any Questions (CORE Education Ltd)

**Report to the Ministry of Education**

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# AnyQuestions Final Service Report

## An Evaluation of Web-based Learning Services for Children and Young People in New Zealand

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# 1. Introduction

This document provides a final service report on the AnyQuestions.co.nz pilot as part of a larger evaluation of web-based learning services for children and young people in New Zealand.

This report focuses largely on a qualitative interpretation of data, and is designed to complement the quantitative evaluation being conducted by Nielsen Net Ratings.

The evaluation of Anyquestions.co.nz is being conducted with a view to achieving two main objectives:

- Understanding more fully the impact of each service on users, teachers, schools, and the service providers themselves.

- Determining how web-based services (in general) are currently aligning and integrating with children and young peoples' overall learning experiences and outcomes.

AnyQuestions is a collaborative pilot project between libraries, the government and those in the information and education sectors. The project's aim is to develop an online reference service for all New Zealand school students where they are only one click away from a librarian. The librarian can then help them find the information they need from relevant, quality sources.

The service is intended to act as an additional resource, to work alongside and complement, (but not replace) existing school and public library services - a 'guide on the side' at the point and time of need. The target group for the service is primary and secondary aged students from year 6 – 10 (10 – 14 year olds).

The providers of the service claim its point of difference is that it is people based, offering real time personal assistance, delivered through an electronic medium. Users are put in touch with library staff who use an agreed information literacy approach to help school students identify the information they need and help guide them through quality resources.

Using interactive software customised for this library service, it provides users with direct, real time, online support from a library staff member trained in appropriate resources. This service focuses on supporting the New Zealand curriculum, and is accessible from any Internet connected computer anywhere.

This service is intended to complement each school's library by providing another channel for their students to find information. It aims to help students develop the skills and knowledge to be able to search effectively themselves in an online environment.

The key perceived benefit of this service over open internet searching is that it is safe and helps students find quality assured information at the right level for their needs, however, AnyQuestions.co.nz is not designed to just hand the answers to the students. The service helps them find the relevant information themselves and helps develop their research skills.[1]

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[1] *Description of the service adapted from the AnyQuestions website* http://www.anyquestions.org.nz/

# 2. Research Approach

The approach taken for this research comprised of three key elements:

**1. Transcript analysis**

- Initial target of 500 transcripts, randomly selected from the total of 9874 available
- Reduced to 400 when problems with accessing the earlier ones – final total of 380 actually analysed
- Emphasis on transcripts from the latter part of the first year

**2. In School Interviews**

- 6 schools selected from among the highest users of the site (from site data)
- Covering primary, intermediate and secondary to address target age group of the programme
- Representative of main centres of NZ

*Schools selected were:*

- A large intermediate school and a private secondary school in Auckland
- Primary school in Wellington
- A state primary school, intermediate school and secondary school in CHCH
- *Note: We were unable to complete interviews in the Wellington school or the CHCH secondary school despite repeated attempts – in each case the particular staff member and/or students who had been using the site had left the school. (In one case the principal and staff could not think of who might have been using the site).*

*Interviews in each school conducted with:*

- The school principal,
- At least one teacher, nominated by the principal, who has encouraged the use of AQ
- A group of up to 6 students, some of whom have accessed AQ. (Aimed to ensure that some had used AQ in school and at home)

**3. Operator interviews**

- Completed by email questionnaire and phone calls (4 responses)

Special note

Quotes used in this report are presented in shaded panels referred to as Figures. These have been left unedited, except where portions have been deleted or identifying detail (eg names) substituted. Where this has occurred the substitution is contained within square brackets, or the deletion noted with …

The names of the operators have been substituted with the word “operator”, but individual student nom-de-plumes have been used.

# 3. Summary of findings (analysis)

The summaries of findings in this section are collated largely from the transcript analysis that formed a major part of this research. Where appropriate evidence from the interviews with staff, students and operators has been used to support or interpret the findings from the data.

Each of the sections reports on a particular focus area of the analysis, and the interpretations that can be made. It should be noted that, for an overall picture of the effectiveness of the programme it is important to take into consideration all of these elements and the picture they paint. This is done in the final section of the report where this analysis is used to inform comments on:

- The quality of service provision
- Immediate learning for young people
- Alignment and transfer of learning for young people
- Learning for providers, teachers and schools

## Student Questions

A main focus for the analysis of interactions in the Any Questions environment was the nature of the questions that were asked by the students, and how the operators responded to these.

No surprisingly, a question posed by the user formed the starting point for nearly all of the interactions within the AnyQuestions environment. Operators then used their skill as reference librarians, and their training as AnyQuestions operators, to decide how best to respond. The questions asked were classified as being either open or closed, according to the criteria shown in figure 1:

**Figure 1: Criteria for analysis – Question type**

| | | |
|---|---|---|
| Question type | Closed<br>Open | The focus here is on how well the question is suited to pursuing an inquiry-based approach, vs. simply "finding the answer". Enter "closed" if the question 'closes down' the opportunity for further inquiry, or "open" if it invites more discussion. E.g.<br>"What colour is magnesium oxide?" = closed<br>"I need to know something about what it was like to be at school during WW2" = open |

The definition of 'open' and 'closed' adopted for the purposes of this research is determined by how well the question is suited to pursuing an inquiry-based approach. Thus, in our analysis, a closed question is considered to be a question where the response that could be made was limited to a specific answer – not necessarily just a "yes" or "no".

Figure 2 (next page) illustrates the way in which questions were coded for this research.

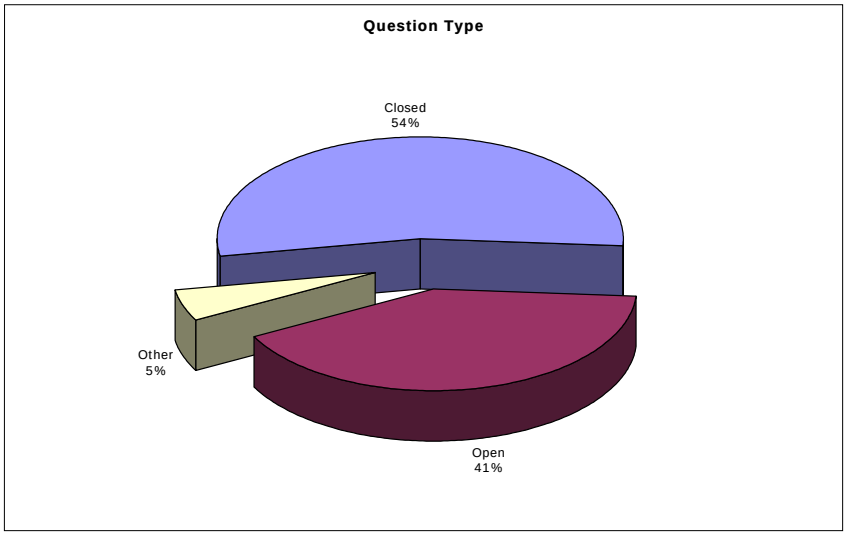
**Figure 2: Examples of questions asked, illustrating coding used**

| | |
|---|---|
| "Open" | • How to write an essay about Michael Jackson's trail?<br>• Why were telephone numbers written, for example, 135-j in the 1950s and 1960s in New Zealand?<br>• Can you tell me anything about Barbie as I am doing a speech on Barbie<br>• What gear do volcanologists use? and what is their purpose?<br>• What is the history of pipe organs?<br>• What did Soviet Leader Stalin do to Russians to scare them into voting for him?<br>• What are some good sites about Cleopatra? I need to know about her life and how she lived please |
| "Closed" | • what is an odyssey?<br>• what is the definition of koru, wharenui, waiata, mihi.<br>• when where 1&2 cent coins removed from circulation<br>• Just tell me when [Thomas Edison] was born, when he invented the light bulb and tell me how to spell his name<br>• Who Discovered Tobacco?<br>• What is added to soap to make it transparent? |
| "Other" | testing the site<br>not a transcript (no transcript given)<br>Test entry - Support, Docutek |

As will be revealed in the following section, many of the 'closed' questions were dealt with by operators in a way that actually did develop some level of inquiry or higher order thinking, but in terms of coding at this stage, the questions were taken at face value as they were asked.

Graph 1 illustrates the proportion of open and closed questions in the sample, showing a higher proportion of closed questions than open, with just a few that were unable to be classified (see examples given in fig. 2)

**Graph 1: Type of question asked by the inquirers**



Students interviewed for this research appeared to be aware of whether their question was open or closed, with one student commenting:

> The type of question you ask (open or closed) can depend on how much time you have got e.g. if I have a project to do and it has to be in tomorrow then I will probably want the answer like quick and I would ask probably a closed question but still figure out what it is you want to know without the session going too long.
>
> If I have a longer time then I would ask an open question because then I could find out more stuff – more than I was actually intending to know.

It must be noted here, however, that this response cannot be assumed to be typical of all students who used the AnyQuestions service.

## Operator Responses

The way in which questions were responded to varied considerably. Factors affecting this include; technical stability, time pressures, experience of the operator and/or operator knowledge of the topic or of appropriate websites.

For the purposes of this research the operator responses were coded according to whether they simply answered the question or directed the student to the answer (low response), or whether they used the opportunity to promote further thinking and/or inquiry on the part of the student (high response). Fig. 3 below illustrates this coding approach:

**Figure 3: Criteria for analysis – operator response**

| | | |
|---|---|---|
| Operator response | High (in terms of facilitating inquiry) | Choose "High" if the teacher response facilitated further discussion and promoted progression in the inquiry process |
| | Low (in terms of facilitating inquiry) | Choose "low" if the teacher responded with minimal levels of provocation or simply provided the answer |
| | No Interaction | Where no interaction occurs choose "no interaction" (e.g. technical testing or technical failure prevents interaction from taking place) |

Assumed within the notion of inquiry was the development of information literacy skills that is a focus of this project.

A typical initial response from operators is to ask a question that clarifies what is being asked, or helps to narrow down a rather wide topic to identify keywords for a search. This is in line with the agreed approach that operators were introduced to in their training. These approaches would usually lead to some further exploration of the topic and be considered 'high' in terms of the coding used.

Most operators looked for opportunities to introduce or explain simple search strategies or tips, such as the use of Boolean logic or alternative search engines that provide a more specialised service etc. Many operators were very skilled in using questions to guide the students to identifying keywords or thinking more critically about what it was they wanted to find out about.

Figure 4 below provides examples of responses made by operators that were coded ‘high’ level, while figure 5 on page 8 provides examples of responses made by operators that were coded ‘low’ level.

**Figure 4: Examples of ‘high’ level operator responses**

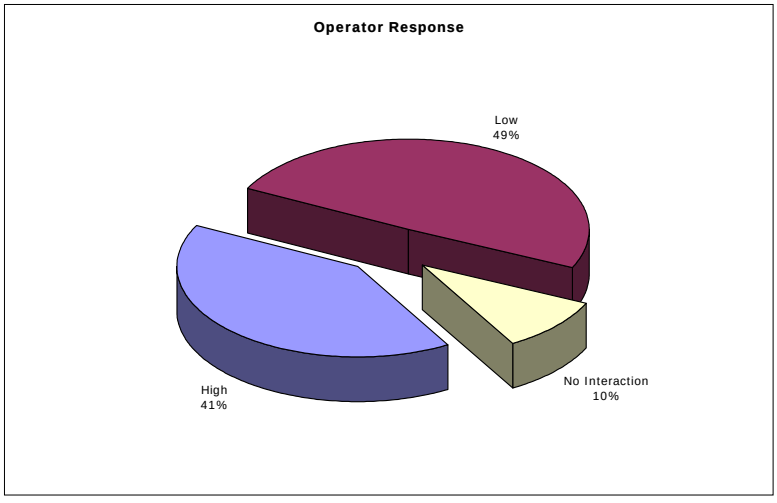
| | |
|---|---|
| Open question – response is to clarify through questioning | *Anita*: how many times does a volcano erupt in a life time?<br>*Operator*: Hi Anita, can you tell me a little bit more about your question?<br>*Anita*: um ok<br>*Operator*: Do you mean how many times does a volcano erupt or how often does it erupt in one person's lifetime?<br>*Anita*: how many times does a hawaiian volcano erupt in a life time (until it is dormant)<br>*Operator*: Great. What do you think your keywords are?<br>*Anita*: um 'how many times in a life time does a volcanoe erupt??<br>*Anita*: i dunno<br>*Operator*: The keywords are just the most important words. Let me help you.<br>Anita: k<br>*Operator*: I think 'volcano' is one.<br>*Operator*: also Hawaii because that is the area you are looking at.<br>*Operator*: Because you want to know how often they erupt I might put in the word 'often' as well.<br>*Operator*: Let's try those three words.<br>*Operator:* Do you want to type them in or shall I do it and you can watch for now? |
| Operator works with student to identify keywords for the search in Google | |
| Open question - series of questions from operator used to clarify and narrow down the search | *Rachel*: well we are researching the migration to New Zealand and have to answer questions about it and I’m researching the Russian immigration to New Zealand in recent times<br>*Operator*: Ok. Is it the impact on Russia you are wanting to find out about, or the impact on New Zealand of Russian immigrants?<br>*Rachel*: on Russia<br>*Operator:* Ok. That may not be so easy to find info about. What I am thinking is that the number of Russian immigrants to NZ would not be very big, so the impact on Russia would not be very great. |
| Working with student through the content of a website, using questions to prompt interrogation of websites being shared | *Operator*: I have typed in farming and exports and markets<br>*Operator*: we needed to put in stats as well<br>*Operator*: if u scroll down to the bottom and try clicking on each type of farming<br>*Operator*: those graphs look good, can u work out the info from them<br>*Operator*: how are you getting on Meg<br>*Meg*: good but I need the info for all of the exports<br>*Operator*: The Graph headed up Agricultural production is pretty good<br>*Operator*: can you see that one?<br>*Operator*: it has a blue background<br>*Meg*: yes that is good but are these exports<br>*Operator*: For example in 1998 wool was about 7.5%<br>*Operator*: how does that look<br>*Meg:* ok. i will use this thank you for your help |

**Figure 5: Examples of 'low' level operator responses**

| | |
|---|---|
| Operator goes immediately to search from an open question – no clarification | *Mitchell:* what causes volcanic acid rain?<br>*Operator:* hello Mitchell. complicated question. I am going to try a Google search initially. Just hang on with me for a bit. |
| Operator goes directly to a web site (rest of transcript comprises simply of 'pushing' results from the website until student spots the answer) | Operator: Welcome to AnyQuestions.co.nz.<br>Kirstyn: what do more porks eat (the owl)<br>Operator: Hi Kirsty, that's a great question!<br>[attempts to set up co-browsing]<br>Kirstyn: yes<br>Operator: It seems we can't get our computers to talk to each other, so I'll have a look on the DoC site and cut and paste the info – OK? |
| Operator takes a question from the queue, but no time to respond. | Jen: Why are emotions important to us?<br>Operator: Hi Jen! This is quite a complex question and we are just closing--do you think you could come back tomorrow? Bye now! |
| Closed question – problems with establishing co-browsing, so operator chooses to simply send URLs to student | Cameron: Who discovered Africa?<br>[attempts to establish co-browsing]<br>Operator: You've got an interesting question - I'm going to have to get our computers talking properly - please bear with me<br>Operator: home.vicnet.net.au/~neils/africa/livingstone.htm this site might give you a clue<br>Operator: It appears that my computer is not working well with yours - I'll send you some web addresses and if you can cut and paste or type them into your address bar, you can do the search ..is that OK |

The overall pattern of operator responses can be seen in the graph below (graph 2):

**Graph 2: Operator responses to the questions asked**



Further analysis reveals only a third (35%) of the low level responses occurred where technical difficulties were experienced, leading us to consider the relationship between the type of question asked and the response given as another way of explaining this high rate of 'low level' responses.

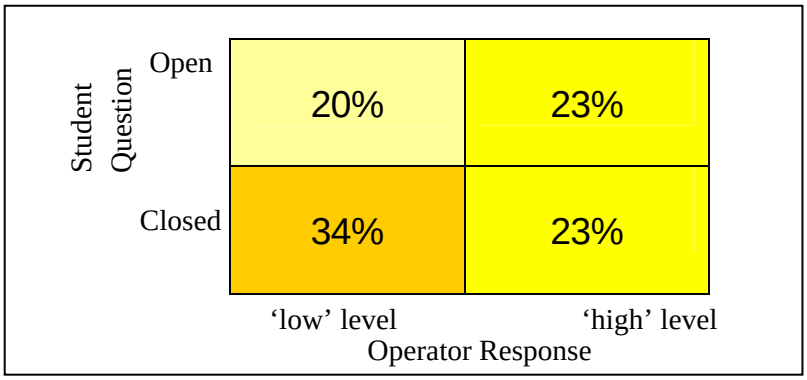
## Comparing questions and responses

While the analysis of questions asked and responses given provides an interesting insight into the exchanges that take place on the AnyQuestions web environment, a more interesting result is found when the relationship between the two is studied.

In the early analysis phase of the project we observed that a significant number of responses provided by the operators appeared to be providing an answer within the first few interactions. On closer scrutiny we observed that this often occurred where the question asked by the student was closed, and didn't provide any strong opportunity for the operator to engage with the student on the process of inquiry. Very often the student identified the questions as coming from a homework sheet they'd been given at school (implying lack of ownership of the question in the first place.)

With this in mind we set about mapping the relationship between the type of question asked, and the type of response given (see examples in fig. 7 overleaf) – the results can be seen in the matrix in fig. 6 below:

**Fig. 6: relationship between questions asked and operator responses**




The results from the total sample confirmed our initial observation that closed questions appeared to be responded to with a 'low' level response, although this represented only 60% of the total number of closed questions asked. The other 40% of closed questions were responded to with 'high' level responses by the operators (23% of total responses) suggesting something about the skill and experience of operators (as illustrated in fig.4).

Of concern were the 20% of questions that were identified as being open, yet received a 'low' level response. Often this appeared to be because either the student or operator were under time pressures, so the simple provision of the answer was easier than going through the process of finding it. In other cases the failure to co-browse limited the opportunity for the operator to provide guidance in an appropriate manner, so he/she simply resorted to sending a URL with the answer.

While these limitations provide some explanation of why these responses were limited, this is an area that should be explored further in view of the stated intention of the site to "help students develop the skills and knowledge to be able to search effectively themselves in an online environment."[2]

However the graph is sliced, there is a clear message here for (a) students to improve their question-asking skills, and (b) operators to become better at generating higher levels of thinking and inquiry.

[2] *From AnyQuestions website – http://www.anyquestions.org.nz*

**Figure 7: examples of each type of question and response pairing**

| | |
|---|---|
| Closed question – low response<br><br>(operator uploads pre-determined website and identifies information for caller without explanation) | Kristy: what was the space race<br>Kristy: do you know about the space race<br>Kristy: I mean know<br>Operator: Hello Kristy, I will get you a site now.<br>[co-browsing configured]<br>Kristy: thank you<br>Operator: How does this site look for you Kristy?<br>Kristy: what site<br>Operator: I have put a green pointer beside the information but here is the URL if you are having a problem http://www.thespacerace.com/<br>Kristy: ok thanks bye |
| Closed question – high response<br><br>*(transcript continues for some pages, with discussion about several wars and identification of keywords etc.)* | Lucy: What year did the Crete war start and finish?<br>Operator: Hi Lucy, do you know if the Crete war was in World War II?<br>Lucy: no sorry<br>Operator: Hmm, well there was definitely a battle for Crete in World War II, but there could've been another war as well<br>Lucy: World War II is the one I need!<br>Operator: What class is this for?<br>Lucy: thanks<br>Operator: Ah, ok<br>Operator: I'll take you to the BBC website first up<br>Operator: We'll see if that has enough info for you |
| Open question – high response<br><br>*(questions, clarification, focusing – extract only…)* | Rachel: our class is researching immigration to New Zealand and I'm looking at the Russians coming to New Zealand in recent times<br>Operator: OK, so looks like we need to find out info about immigrants to NZ<br>Rachel: the impact on Russia when the Russians left for New Zealand<br>Operator: I think the impact would be on the immigrants themselves rather than Russia<br>Rachel: and that too we have questions to answer and that's one of them too<br>Operator: there's a huge population in Russia and there would be just a very small percentage coming to NZ<br>Rachel: yes and I'm finding it hard to find much information<br>Operator: Rachel I think you need to go back and look at the question, I know its sometimes hard to understand the meaning<br>Operator: you don't have it in front of you by any chance do you? I may be able to help<br>Rachel: okay I do have them with me |
| Open question – closed response<br><br>*(opportunity for rich discussion not taken – answer provided immediately)* | Denzel: Why did men wear tunics in the Middle Ages?<br>Operator: Hi there Denzel. Have a look at this site and see if you can find the information you need http://www.xtec.es/crle/02/middle_ages/alumne/scene1/punt2<br>Operator: Here is some more information on tunics in the middle ages http://www.mce.k12tn.net/middleages/dress.htm' |

## Evidence of thinking

One of the objectives of this study was to explore the link between students' use of this online environment and the curriculum. For this part we decided to focus specifically on thinking, which is one of the five Key Competency areas identified in The Curriculum/Mauratanga Project (CMP), and is described as follows:

> Thinking is about using creative, critical, metacognitive, and reflective processes to make sense of and question information, experiences, and ideas. These processes can be applied to research, organisation, and evaluation for all kinds of purposes – developing understanding, making decisions, shaping actions, or constructing knowledge. Intellectual curiosity is at the heart of this competency.
>
> Students who have well-developed thinking skills are active seekers, users, and creators of knowledge. They reflect on their own learning, draw on personal knowledge and intuitions, ask questions, and challenge the basis of assumptions and perceptions.[3]

The CMP promotes "all kinds of thinking in all kinds of contexts, so the focus of our analysis here was on the range of types of thinking that are described in the CMP documents, together with the range of essential learning areas that are addressed (covered in the next section).

The criteria for analysis of thinking skills initially focused on 6 key areas that were contained within the CMP key competencies list:

1) **Creative** – evidence of Open-ended, divergent, imaginative thinking; includes fluency, flexibility, originality and elaboration

2) **Critical** – evidence of analyzing or evaluating information, identifying the logical relationships among ideas, the soundness of evidence, and the differences between fact and opinion

3) **Logical** – evidence of focused, organized thinking about such things as the logical relationships among ideas, the soundness of evidence, and the differences between fact and opinion

4) **Metacognitive/reflection/judgement** – evidence of thinking about thinking, contemplation, sense-making, assessing the authenticity, accuracy, and/or worth of knowledge claims and arguments

5) **Discovering meaning in ideas** – evidence of gaining new understandings, definitions, concepts.

6) **Getting below the surface/tenacity** – evidence of thinking that probes beyond simply discovering meaning, but explores cause/effect, relationships, and also evidence of pursuing the development of thought beyond finding an initial answer

(Note: The evidence described above is our own, not from the CMP list)

After initial trialling, it was decided to add a further category: *0 – low level thinking* after it was observed that in many of the transcripts analysed there was no evidence of the sorts of thinking described above. The criteria for coding are shown in fig. 8.

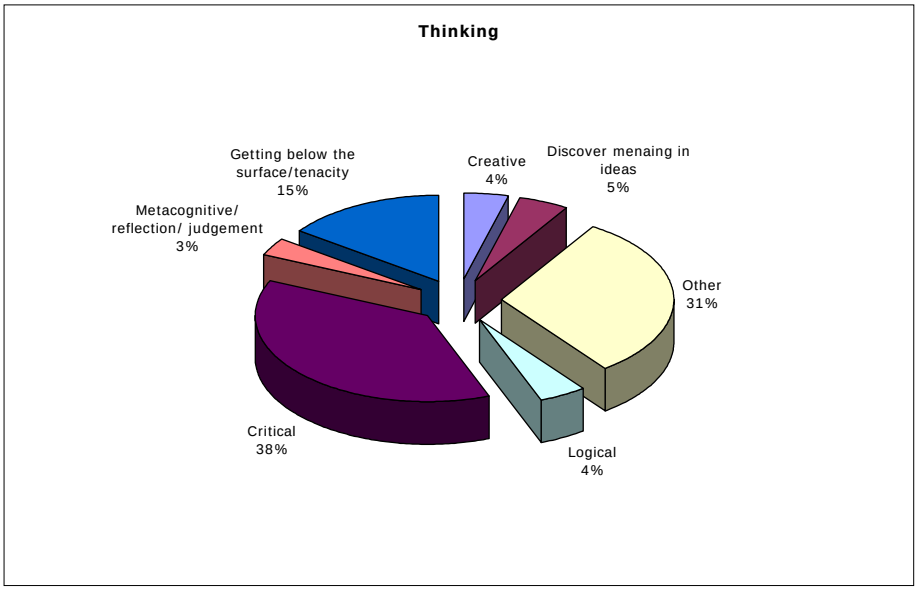
[3] *accessed online - http://centre4.interact.ac.nz/viewfile.php/users/49/1965008477/KCs_April_06.doc*

Figure 8: Criteria for analysis – thinking skills

| | | |
|---|---|---|
| Thinking | 0. Low level thinking<br>1. Creative<br>2. Critical<br>3. Logical<br>4. Metacognitive/reflection/judgement<br>5. Discovering meaning in ideas<br>6. Getting below the surface/tenacity | Enter as many of these types of thinking as you find evidence for – where possible identify the *one* that is prominent.<br>Note – use '0' where there is no evidence of higher-level thinking, and/or the exchange is limited to a low-level question and response. |

The analysis revealed that in almost 60% of the transcripts that were studied there was insufficient evidence of the kinds of thinking in the list for any one area to be identified. Of the other kinds of thinking in the list critical thinking (12%) and getting below the surface/tenacity (15%) come out highest, with all of the other areas scoring 5% or less. These results are illustrated in graph 3 below:

**Graph 3: Nature of the thinking that was exhibited during the interaction**




A key factor in this result may be the level of "ownership" of the question being asked. From many of the transcripts it was apparent that the questions they were coming to the site with had been initiated at school, and of these, the majority would appear to be questions that have been set *for* the students, rather than *by* them.

Questions from homework sheets featured regularly, and many of these questions were very basic, closed questions simply requiring the answer to a factual question. Questions related to topics of study in particular school subjects also featured, however students often revealed little understanding of the context or intent of the question, appealing instead to the operator to assist.

Few of the questions asked appeared to derive purely from personal interest or a non-school related context.

As a consequence, the student's level of 'ownership' of the question appears to be a determining factor in the extent to which these areas of thinking are practiced.

Examples of the range of reasons why students visited the site for assistance are illustrated in fig. 9:

**Figure 9: Purpose for student question**

| | |
|---|---|
| Help with set questions on a homework sheet | *Komal* : Place the following in order of increasing mass 6000kg 10t 40000g?<br>*Operator*: Hi Komal That's a good question. Can you tell me more about it?<br>*Komal* : Its for my maths due on Friday |
| Help with schoolwork of a more general nature – school projects | Jahnavi: who were the original publishers of Enid Blyton's first books? - it's 4 my school project<br>- - - - -<br>*Bobby*: do you know any info about any OTHER plagues? because my friend is doing the black plague and I don't want her to think I am copying her<br>*Operator*: Can you see this page about the Bubonic Plague<br>- - - - -<br>*Teaoma*: I need some stuff 4 a project<br>*Operator*: Hey, what's the project about?<br>*Teaoma*: um... it is about consumer rights |
| Personal Interest – not related to school project or study | *Michaela*: Hi there, I need to know why the whites of your eyes go red when they get bumped<br>*Operator*: hi Michaela, I'll start searching for you now. Is this for a school project? :)<br>*Michaela*: No, my brother threw my father's shoe at me and my eye's gone red<br>- - - - - -<br>[At home I use it ] …just to find out general information that I am just curious about. *(student interview comment)* |
| Preparing for a speech | *Emma*: Do twins think the same things??<br>*Operator*: Let's have a look for your question's answer. Is there anything else about twins you need to know?<br>*Emma*: Anything I am doing a speech about it |
| Swotting for exams | *Emily*: I would like to know some information of Tauiwi-early immigrants from China. 1. Did they miss their country? 2. Were they rich? are some of the things I would like to know<br>*Operator*: Hi Emily. Interesting questions. Are these for homework, or are you just interested?<br>*Emily*: This is for my end of year exam study |

## Use of the inquiry process

A key focus of the AnyQuestions programme was the appropriate modelling and development of information literacy skills. The operators, in their training, were encouraged to use a standard approach (shown in the left hand column of fig. 10) that reflects this emphasis, and were able to clearly articulate this approach in their interview (see columns 2-4 in fig. 10).

**Figure 10: Operator understanding of process to follow:**

| Typical phases: | Operator #1 | Operator#2 | Operator#3 |
|---|---|---|---|
| 1 *Friendly greeting*<br>2 Unpack question<br>3 Modelling of good search term<br>4 Work through search<br>5 Co-browse where possible<br>6 Invite feedback<br><br>Note:<br>Steps 2-5 were described by the project manager as the 4 key foci for operators in their training – steps 1 & 6 emerged through the operator interviews as being important to managing the relationship online, | I start by greeting them, if their question is not really clear to me get them to tell me a bit more about the subject, and check whether they have searched online already<br>Suggest a starting point of a site that I think may be useful to answer the question...<br>Take them there, and either put in, or get them to put in, their search words. See what sort of results come back - talk to them about what looks useful.<br>All the time I am checking back with them what they can see at their end? Is it useful? Has it answered their question?<br>If there are technical problems letting them know what is going on - and if good results found copy/paste the URL of that to them.<br>Then when it seems that we have reached a result that answers the question I check back with them that they are ok with that? And make parting comments. | I always start off with a friendly response, as often it is the first time a student will have used the service.<br>I then try to establish more information about their question, e.g. how much info they require, and if they have found some info already and then if the question is unclear or very broad I will ask a few questions to clarify.<br>At the end I will ask if they think the resource has sufficient and clear enough information and finish with a friendly remark. I also like to invite them back to use the services. | Each encounter usually follows a set pattern, which I have developed from the "reference interview" training –<br>1. Clarify and expand the question.<br>2. Find out what sort of information the client requires – e.g. quick general facts, or a specific aspect of a topic.<br>3. Explain what we are going to search, why and how.<br>4. Search and retrieve information.<br>5. Ascertain whether the needs of the clients have been met. |

In addition to the four key foci identified by the project manager, the operators themselves regarded the relationship with the caller as being very important, thus the emphasis on greeting the caller and checking to see that they were satisfied with the response were regarded as important parts of any interaction.

This pattern of response was evident in most of the transcripts analysed, although factors such as technical stability and time pressures made it difficult to adhere to this in all cases.

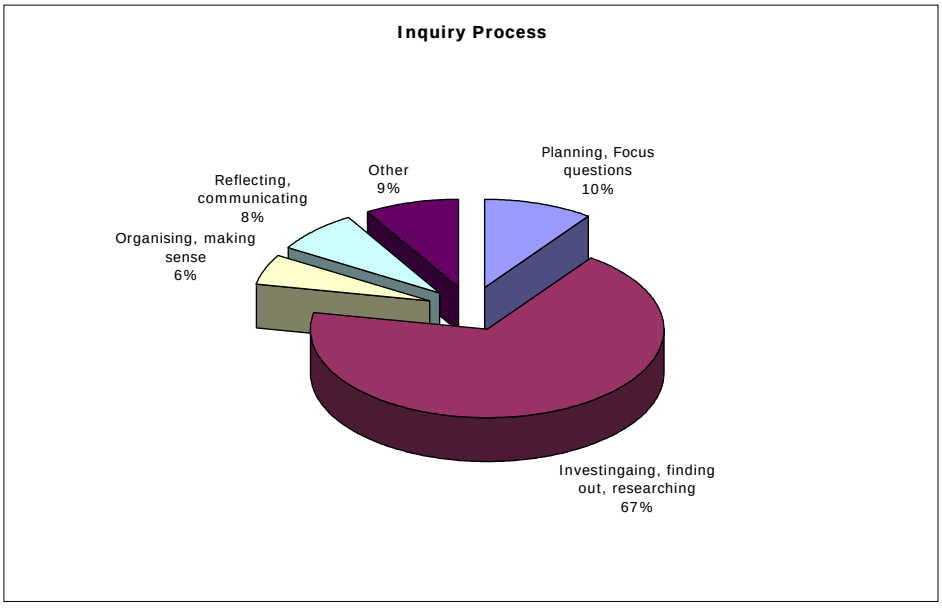
While these phases certainly address the essentials of information literacy, there is also scope to consider the way in which the process of inquiry is being fostered and maintained. In our analysis of the transcripts, we decided to place an emphasis on the inquiry process, identifying four key stages that are represented in most of the models available. (see fig.11)

**Figure 11: Criteria for analysis – Level reached within the inquiry process**

| | | |
|---|---|---|
| Inquiry process | Planning, focus questions,<br>Investigating, finding out, researching<br>Organising, making sense<br>Reflecting, communicating, acting | Choose the *highest* stage in the inquiry process that is reached in this interaction. |

The highest stage of the inquiry process reached by two thirds (67%) of the students involved investigating, finding out and researching, with 10% stopping at planning & deciding on focus questions, and a further 6% going on to organising and making sense. 8% demonstrated some capacity to reflect or communicate what they had discovered, while 9% of the responses were unable to be coded. This figure is consistent with the small percentage of 'others' identified in the sections on student questions and operator responses, and reflects the number of interactions that were left incomplete or affected by technical failure etc. (see graph 4)

**Graph 4: Highest stage in the inquiry process that was reached in the interaction**




This pattern is not surprising, given (a) the focus of the operators, (b) the time available for each transaction and (c) the role of AnyQuestions in the overall inquiry process.

The number of interactions that are within the first two stages in particular (total = 76%) reinforces the value of this programme in assisting students to find the information they need from relevant, quality sources, supporting and complementing what they are doing at school and the other places they may be going to source information.

## Relationship to the curriculum

The essential learning areas of the curriculum form the contexts for each interaction. The criteria in fig. 12 demonstrates how the transcripts were coded for this:

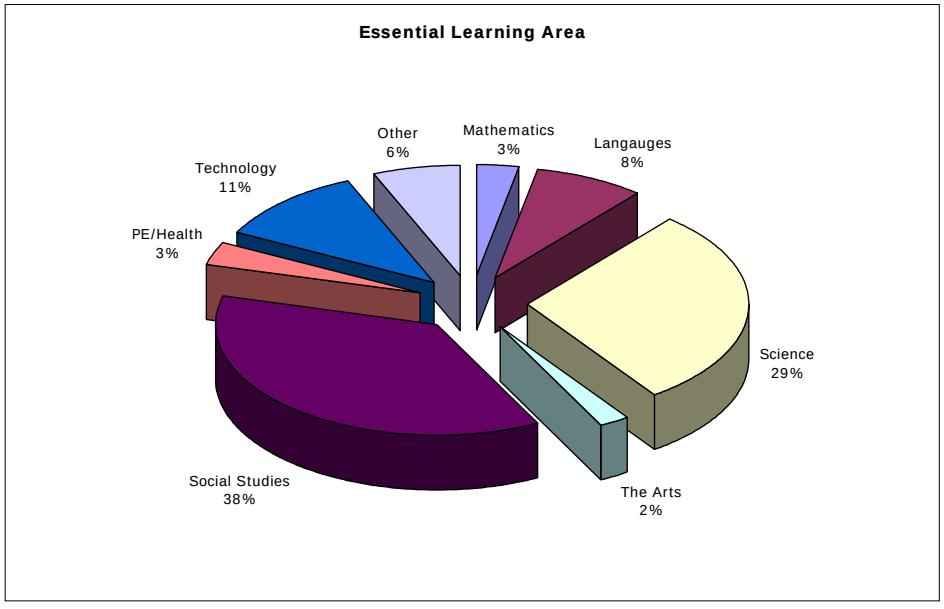
**Figure 12: Criteria for analysis – essential learning area**

| | | |
|---|---|---|
| ELA (essential learning area) | Mathematics<br>Language/s<br>Science<br>The Arts<br>Social Studies<br>PE/Health<br>Technology | Enter something in this field only if left blank by the operator, or if you consider the primary ELA identified by the operator is incorrect.<br>If necessary add to the "trail" in the same way as done by the operators, e.g.<br>Science: biology<br>Science: living world<br>Social Studies: History<br>The Arts: music<br>NB it is the 'top level' that is important here |

All of the essential learning areas were represented in the final analysis, with the largest slice of the pie going to social studies (38%) followed by science (29%). This can be accounted for by the fact that a significant number of the interactions were based on worksheet or project based questions set by the teacher/school, and these tended to focus on areas of current events and general knowledge that were predominantly social studies and science based.

Technology was the only other ELA to make it into double figures (11%), with languages behind that on 8%. Trailing the bunch were mathematics and PE/health, both on 3%, and the arts on 2%. (see graph 5)

**Graph 5: Relationship of the questions asked to the essential learning areas**




The 6% of transactions that could not identify an ELA were again those affected by technical problems or abandoned early because of time constraints etc.

Overall it was encouraging to note that all areas were represented, with the focus on social studies and science expected given the nature and source of so many of the questions asked (ie general knowledge, current events and cross-curricular thematic studies).

## Technical issues

Technical problems affected a large number of the interactions. Figure 13 reveals the simple set of criteria that were established for coding each of the transactions:

**Figure 13: Criteria for analysis – Technical stability**

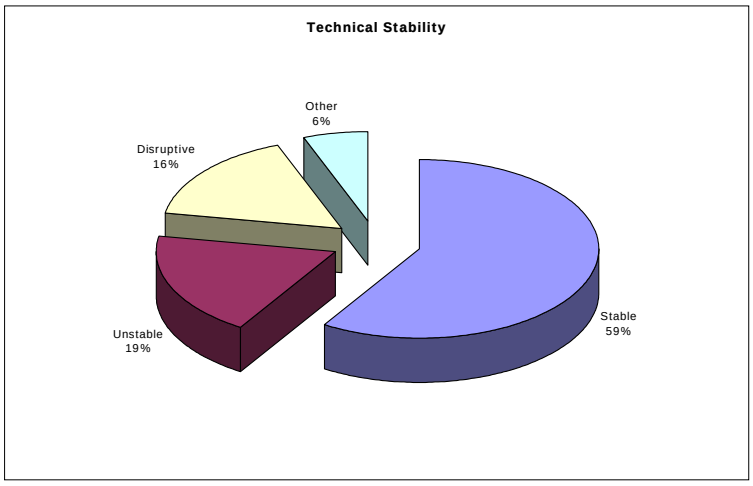
| | | |
|---|---|---|
| Technical Stability | Stable<br>Unstable<br>Disruptive | Choose "***stable***" if the interaction was completed without any reference to the technology being a barrier or unstable'<br>Choose "***unstable***" if the interaction was interrupted by the technical link, but the connection restored satisfactorily<br>Choose "***disruptive***" if the technology failed in some way (e.g. the synchronous link failed) and wasn't restored within the time of the interaction. |

While it was pleasing to see that the majority (60%) of the transactions proceeded successfully, it was the 35% that were unstable or disrupted that are still a concern. Most problematic appears to be the difficulty that many operators experienced in getting the co-browsing function to work properly. Many were able to successfully continue with the session despite this not working by sending URLs via the chat window and talking the student through them.

The most likely cause of the disruptive links is the number of students trying to use the service on a dial-up service. Some of the students interviewed commented that this is the case – citing their experience of trying unsuccessfully to dial in from home after a successful link using the school's broadband connection. Some operators reported anecdotally that they'd asked students what means of access they were using when similar difficulties occurred and very often they found it was a dial-up connection. Data from the NNR research will verify if this is the case.

Graph 6 shows how the impact of technical issues on the programme:

**Graph 6: Way in which the technical environment assisted or hindered the interaction**




The 6% of 'other' shown here can be accounted for in sessions that were cut short by the caller for other than technical reasons, or sessions that were used for testing etc.

It should be noted here that the researchers and the student users considered the issue of technical stability to be more problematic than the graph suggests. We regard this as an optimistic view, and in retrospect would want to examine more closely the interpretation of the criteria used for coding this aspect of the transcripts.

## Question Outcome

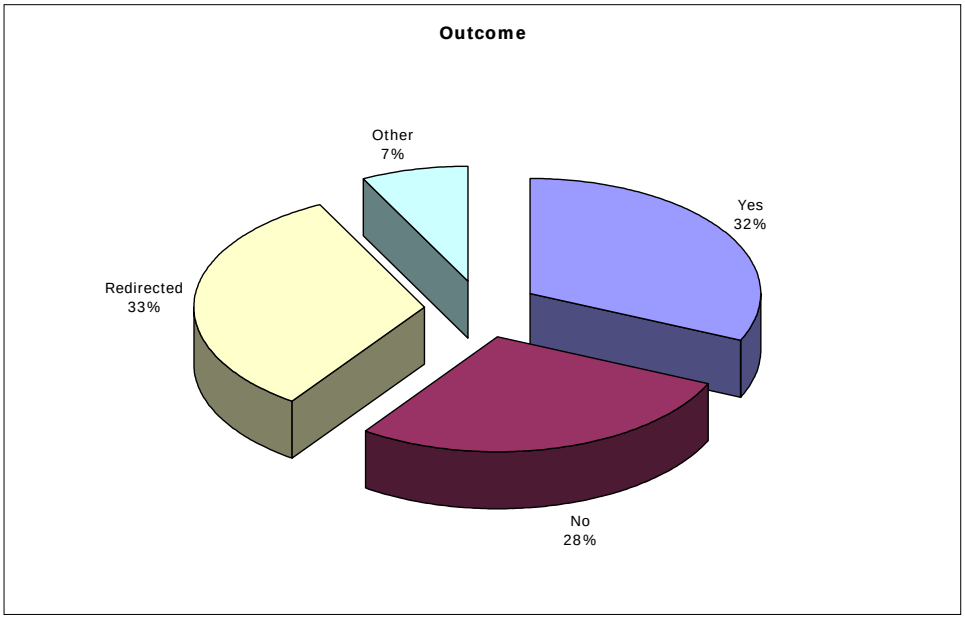
Since the primary motivation for any student using the service was to locate an answer to a question, the final area of analysis focused on whether the question asked was actually answered. The criteria for this are shown in figure 14:

**Figure 14: Criteria for analysis – Was the question answered?**

| | | |
|---|---|---|
| Was the question answered? | Yes<br>No<br>Redirected | Choose yes if the question was answered in this session (i.e. contained in URL, teacher provided answer, student recognized answer etc)<br>Choose no if the question wasn't answered and the student ended the session without any apparent answer or assistance.<br>Choose redirected if the outcome for the student is that they now have a better focus for where to look for the answer and/or a better understanding of the question they need to ask |

The analysis of the transcripts revealed that 32% of the students received an answer to their question during the online session, while a further 30% received sufficient guidance and/or instruction in the search process to feel confident to pursue the answer on their own after the call had ended.

**Graph 7: Extent to which the question was answered**




From a programme success perspective, this means that a total of 62% of the students left the session having found the answer they were seeking, or feeling confident that they could now find the answer themselves.

28% of the students failed to have their question answered, and a number of possible reasons for this have been identified already, among them:

- Technical failure resulting in premature ending of the call
- Time constraints on operator or caller resulting in call being ended early
- Failure on the part of the operator to locate a suitable online resource

It is important to note that there is no qualitative difference noted in these results between those whose question was answered as a result of careful coaching in the inquiry process on the part of the operator, and those who had their question answered as a result of the operator simply sending them the answer in the form of a URL or similar.

## Interview Responses

**School and student perspectives**

The schools visited for interviews were selected from the small group of schools who ranked as high users of the site during the first twelve months. As such, their responses may not be typical of all users of the service, but they do provide an interesting insight into the ways in which the service was used in a school environment.

Of particular note was the fact that in three of the schools that were visited we found that the use of AnyQuestions was linked to the planned use of an inquiry approach to teaching and learning. In one case this was a whole school approach, while in the other two cases it was being used with a particular class or cohort in the school.

Students found out about the service in a number of ways. While information about the service was sent to schools in the form of posters, stickers and bookmarks, it was intended to be distributed directly to the students. This strategy appears to have been successful, although a possible consequence was the failure to engage teachers and schools to the same extent as students. The following comments from students illustrate this (fig.15)

**Figure 15: How did students find out about AnyQuestions?**

| | |
|---|---|
| Materials distributed to whole school | Students had found out about the site from their teachers and from the stickers given out by the librarian or stuck to computers. At [school] the whole school was given stickers. (*researcher comment)* |
| Promoted by librarian | At [school] some students were alerted to it by teachers but more found out about it through stickers put around the library by the librarian |
| Teacher recommendation | Um because last year I was working in the POD [extension] programme and it was a recommended site by our teacher. |
| From a local 'learning centre' programme | I was in the learning centre and one day when Ruth was talking about information and she said here are some really good websites that we could try and she said AnyQuestions. So I ... about a day or two we found the website and we went on it. We started using it to find information. And then I told my friend. |
| Online links at local libraries | At the library I think. [name of] Library. We went to library and they showed us their website and on the website they had a link to it (anyquestions). |
| Peer recommendation | My sister she had a book mark of it – I think she must have taken it from the library. I went in there and I just tried it |
| 'Won" the sticker at a school sports day! | Um, I was at my school last year and we had this sports day and if we were doing well at the sports we got a sticker and the sticker was AnyQuestions. And once I needed help with my homework so I went onto AnyQuestion. |

By contrast, comments from teachers reinforce that many of them didn't fully appreciate what AnyQuestions was all about, or its potential within the school learning environment. One principal interviewed thought the research we were doing was about the Ask Jeeves search engine, while another knew of it because of the marketing done by the school librarian.

Despite this, we did find evidence in some of the schools we visited of an intentional use of the AnyQuestions site by teachers within their teaching and learning programmes, and in one school, evidence of the AnyQuestions site being used as part of a school-wide inquiry-based approach.

A third principal we interviewed, on receipt of the promotional material sent to schools, took note of the potential of this project to support their school focus on an inquiry-based programme, and actively promoted it among the staff – however this approach appears to be in the minority, with most schools simply handing the promotional materials directly to students.

Figure 16 illustrates the range of ways in which students experienced schools promoting or encouraging the use of AnyQuestions:

**Figure 16: How did schools encourage use?**

| | |
|---|---|
| Students generated own questions within scope of larger topic | For both schools, students were completing self-generated questions that fitted into a larger, teacher-generated topic. According to the students, teachers did not see these questions or comment on them prior to their use of Any Questions. *(researcher notes)* |
| AnyQuestions used a resource as part of an inquiry-based programme | The POD programme is an independent learning programme where you choose your own inquiry and um you work alongside the teacher and you do things a bit differently from the class. You work at your own pace, you don't get told what to do, so it is just good to work on your own.<br>[The AnyQuestions URL] was written up on the white board in the interesting site section. We tend to use the computers a lot as a main part of our project. We research lots. |
| Mix of teacher directed questions and student choice | Researcher: Is there a difference when the teacher gives you a question to go away and ask, compared to when you have to think of your own questions – is it a different subject, or a different kind of approach you are taking to find the information?<br>Student: Yeah like sometimes they like tell you what questions to look up and sometimes like when did Jamaica we had to choose some of our own questions that we wanted to look up, or to know about it. |
| Student knowedge and use of site stems from outside classroom | Researcher: How has your teacher encouraged you to use this site in…<br>Student: They haven't. We used knew about the site from the library, I know about it from my sticker |
| School use restricted to breaks and scheduled computer lab time, despite having a computer in the classroom | Researcher: Has [your teacher] given you any time in class to use the computer to ask the questions?<br>Student: Not in class time. We can do it at lunch or when we have ICT in the computer lab.<br>Researcher: Do you have a computer in your classroom?<br>Student: Yep, we can use it before school and lunch times if we ask, the rest of the time it just sits there |

This selection of responses reflects that in the schools visited there was emphasis on students formulating their own questions within the context of a class topic - this would not be typical given the analysis from across the wider group of users.

The final comment in this panel is also interesting, highlighting the fact that some schools/teachers have not yet established a practice that allows for the integration of computer use into teaching and learning programmes.

One further observation from these comments is the fact that a number of the students appear to be using AnyQuestions independently of teacher support or the allowance of class time.

Figure 17 provides more of an insight as to how individual teachers were involved in working with students and AnyQuestions.

**Figure 17: teacher involvement.**

| | |
|---|---|
| Teacher directed use occurred in a number of schools | At [school name], it appears that students were encouraged to use it to research their animal as part of an endangered species project.<br><br>(researcher notes) |
| AnyQuestions used in conjunction with a school-based inquiry learning programme | Student: The POD programme is an independent learning programme where you choose your own inquiry and um you work alongside the teacher and you do things a bit differently from the class. You work at your own pace, you don't get told what to do, so it is just good to work on your own.<br><br>Researcher: So how did your teacher encourage you to use the AnyQuestions site?<br><br>Student: It was written up on the white board in the interesting site section. We tend to use the computers a lot as a main part of our project. We research lots. |
| Mix of teacher-directed questions and student-owned ones | Researcher: Is there a difference when the teacher gives you a question to go away and ask, compared to when you have to think of your own questions – is it a different subject, or a different kind of approach you are taking to find the information?<br><br>Student: Yeah like sometimes they like tell you what questions to look up and sometimes like when did Jamaica we had to choose some of our own questions that we wanted to look up, or to know about it. |
| Use being made independent of teacher knowledge or direction | Researcher: How has your teacher encouraged you to use this site?<br><br>Student: They haven't. we used knew about the site from the library, I know about it from my sticker<br><br>+++++<br><br>For both schools, students were completing self generated questions which fitted into a larger, teacher-generated topic. According to the students, teachers did not see these questions or comment on them prior to their use of Any Questions. *(researcher notes)* |

Student responses to this question reveal a range of practices by teachers, from directing students to use the service through to use being made independently of any teacher knowledge or involvement.

While evidence of student use being made independently of the school/teacher did emerge in our interviews, the overall impression from the transcripts suggests that the majority of use of the service related to school-based tasks.

While the focus of use lies mainly with completing school-based tasks, the location of use varied – with similar use being made at school as out of school. (This result will be more accurately identified in the NNR quantitative analysis of site use)

Figure 18 provides an illustration of this from the student perspective.

**Figure 18: In-school vs. out of school use**

| | |
|---|---|
| Evidence of school use across a range of ELAs | At [secondary school] social studies dominated usage with two having used it for science. Topics included aboriginal people, volcanoes, Greece.<br>(researcher notes) |
| Mix of home and school use reported by student<br><br>Some home use spontaneous – not related to school work | Researcher: Do you use it during school time as well?<br>Student: Yes.<br>Researcher: What do you use it at home for?<br>Student: Just to find out general information that I am just curious about.<br>Researcher: So not a question that has been given to you from a project?<br>Student: Oh yeah sometimes, sometimes. Um just depends on what I have to do.<br>Researcher: What do you use it at school for?<br>Student: The POD [extension] Programme to help me with my wondering questions. |
| Internet access limits home use | I pretty much only use it in school time because at home, my mum only has 20 hours and she doesn't really like me using the internet too much. |

Of note is the last comment that highlights the fact that for while for some the difficulty of access occurs at school, there are still others who have similar barriers to access from home, in the case cited, because of a limited access plan, most likely due to cost.

The most effective use we observed was in the schools and/or classrooms where there was a strong link with an inquiry-based approach to teaching and learning. A particular case is highlighted in figure 19:

**Figure 19: Case study – use linked to inquiry process**

The case study below comes from part of an interview with a student at an intermediate school where a school-wide 'information landscape' has been developed, the centrepiece of which is the use of an inquiry model, "The Big 6"[4].

| | |
|---|---|
| Use the AnyQuestions established within the inquiry process | Researcher: Can you tell be about how you would have prepared yourself with your questions before you go onto the AnyQuestions website? |
| | Student: I would have had a 'what I want to know'. Like I would use the Big Six sheet and used and gone through a number of processes on that and then had that (AnyQuestions) as one of the main resources. |
| Students formed their own questions to ask | Researcher: Did your teacher help you think of the question to ask? How? |
| | Student: Sometimes she kind of gave us a few examples of the who what when why how? And then we kind of had to work with forming our own questions, we had to write lots of questions. |
| Clear understanding of the value of asking open questions | Researcher: Did you have a matrix / graphic organizer to fill out? |
| | Student: Yes and we had to use like questions that would get us an answer not a yes or a no answer through. An open question. |
| | Researcher: Have you done a lot of work on how to form an open question in class? |
| | Student: Yes. Um… we had to ask questions and then at the end ask why? |

**Figure 20: Did using AnyQuestions help you in each area of the inquiry process?**

| | |
|---|---|
| To plan your research | I didn't really use it for that part of the process. Cause like, we thought about what part of the study we really really wanted to know but then when we got up to the next stage – the wonderings we needed to use it.<br><br>No not really. Um.. cause we usually planned it and we would sometimes plan it in our daily plan if we wanted an answer, but it would be quite hard because we would need to do this at the end of the day and at the end of the day it is quite busy.<br><br>Well no not really plan it, we kind of get the question and then we ask it. It doesn't help with the planning because we have done it already. |
| To ask good questions | Yes it did. It explained to me more about how I can make it more understandable, because like it was like two years ago and I wouldn't have been able to find the words to ask the questions.<br><br>Not really because most of the websites they showed me I had already found them and had got good information from there and they hadn't really produced any new information. And then sometimes they would go on that website and search and search around tons and tons until sometimes they would find something on the same website, but it would be different information that I hadn't already found<br><br>We think of the questions and then we just ask them. Sometimes if you don't explain it properly then you need to have thought about the question. E.g. - you might like ask a question about Jamaica and it comes up with a whole lot of information that you don't want to know about the topic, but if you asked a question like traditional clothing rather than fashion like you will get the information that you need. |
| To find out answers to questions | Yes it did because there were quite bigger words in some of the websites and what he said, what the librarian said.<br><br>Yeah – like when it gives us websites we can use for the subjects.<br><br>When they tell us like what website, we just like write it down in our books so that we can go back to it later, and we can tell people about that site. |
| To organise your material more clearly | That was really discussed with our teacher in the exciting ways of recording step. We learned which way you can record things and organize our information into a clear way. So we didn't really need to use AnyQuestions to organize our material.<br><br>We did this in class independently. I knew how I wanted to share my work. |
| To think more about what you were doing? | Um, it gave me some more questions about the topic that I never knew and that I had never thought of.<br><br>Probably yes, because then it would give me more of an idea of where to look and key words for my searches.<br><br>Yeah because sometimes when they give you a website it shows like other things you may want to write down about it. It might have like um.. clothing as a sub title and then underneath it it might have something like subject and you just think about a question about that subject.<br><br>Not really, because we have already found the answer there |
| To communicate the results of your research? | Not really. We used the teachers step of exciting ways to present your work.<br><br>Because I would print off the information and after that I would write it down in my own words, so I would use the information but use my own words.<br><br>Yeah because we like had to write a pamphlet on Jamaica and most of the information was like from what I got from AnyQuestions. Yeah , AnyQuestions helped me write because that is where I got the information from. |

Figure 20 on the previous page provides some insights as to how the students saw the usefulness of using AnyQuestions in relation to their use of the inquiry process. Interestingly these students didn't regard it as useful at the planning stage as most had already done so as part of their topic and question preparation in class before going onto the site. This would not be the norm for the wider group of users (ref graph 4 on page 15). Of equal interest was the fact that these students could identify ways that using the site had assisted them in all levels of the inquiry process.

The use of AnyQuestions as a part of the inquiry process has already been addressed in the previous section (page 14) with the graph showing two thirds of users focusing on the "finding information, researching" stage of the process. The responses in figure 20 appear to reinforce this from the user perspective, with students noting that they'd generally came to use the service having already thought about the question they want to ask and are therefore seeking an answer. What the comments reveal is that the experience of asking the question they have come with may often lead them to think about other questions, or to refine or clarify the question they have come with. The success of this can often be attributed to the operator's skill in prompting or re-directing with questions that engage the student in thinking more deeply (or laterally) about the initial question.

The use of AnyQuestions in this way, as a part of the inquiry process, appears to be very valuable. The important lessons to be gained from this are:

(a) for schools – to ensure that sufficient time and effort goes into preparing students with skills and understandings to ask appropriate questions, and

(b) for operators – to assist students with refining and clarifying their questions as they seek answers through the AnyQuestions service.

Overall, the students we interviewed were positive about their experiences, and were particularly appreciative of the role of the operators in assisting them – as illustrated in figure 21 on the following page:

**Figure 21: did you find the help you needed?**

| | |
|---|---|
| Web pages 'pushed' to students were helpful, as was operator assistance to refine search [*researcher notes*] | Most students reported that the operator gave them a webpage, which contained the answer but that they had not seen the process the operator, went through to access the answer (through the lack of co-browsing). However a couple of [primary school] students and several at [secondary school] commented that the operator had helped them reframe, refine or narrow their question.<br>++++++++++<br>Most commented that they were directed to a particular page where they would find the information but several [secondary school] students did report that they did get help in clarifying questions and getting them more specific. Only one recalled being shown how to use key words ('stripping away the 'and' and 'the'). |
| Operators helpful in refining search | Researcher: Did the operator work with you to clarify what you wanted to find out?<br>Student: Yes.<br>Researcher: How did they do that?<br>Student: They wanted to know more on what I was asking and um they wanted to know how they could help. |
| Operators provided explanations with sites | The operator sent me onto a few sites that I hadn't discovered yet. The operator explained where they got that site from and how I can get it. |
| Answers not always found<br><br>Operators attempted to assist with search | Student: With my Asian birds flu ones I did [find the answer], but with my Bermuda triangle one I didn't. uh… I did a little bit but when I was trying to show my friends with the pirates it was just a problem, because the librarian asked questions like… do you want previous pirates or future pirates, something like that. Then he would ask past pirates and it would come up with much, it just came up with a thing saying a legend. |
| Understanding of the problems with finding information | Researcher: Did you find it frustrating?<br>Student: Um.. a little bit but I knew it wouldn't be the librarian's fault I knew it would kind of be um the search engines fault, because there are so many websites out there that it would be hard to find a good one. |
| Finding answers the main focus, however some appreciated the value of learning to search | Overall, it was obvious that these students will return to Any Questions to get answers rather than to learn about the research process. However some students did comment that they would have learned to be more independent had they been able to co-browse and actually see what the operator was doing. *(researcher notes)* |

When asked about their overall satisfaction with the service, students were quick to point out areas for improvement that they'd identified from their experiences. These are illustrated in figure 22, and interestingly there is a strong correlation between these and the limitations of the service identified by the operators in figure 27 on page 31.

**Figure 22: Areas for improvement**

| | |
|---|---|
| Delays in accessing an operator | At [school name] all students commented on how long they had had to wait to get an operator online. |
| Delays experienced can be lengthy | Student: I found one little downside. It just took too ages to connect with the librarian, because some of the librarians are not that easy to get to.<br><br>Student: Like um… because you know when you click on and you type in the information - it takes like a while to load and wait for a librarian.<br><br>Researcher: So do you think that that librarian would have been working with someone else and you just had to wait until they had finished with that person.<br><br>Student: Oh no I don't mean a minute, I mean like up to 10 minutes to one hour. I had a whole hour once. |
| Failure of co-browser functionality a problem for some – but sharing of URLS not a problem | At [school name] only 2 students recalled the co-browser facility actually operating (even though they were all using it in the library). Most students in both schools answered "no" when asked whether the co-browsing facility had worked. As is illustrated in the web transcripts, this meant that the operator was really reduced to supplying a url to the students (which was not a problem for the students). *(researcher notes)* |
| More librarians would reduce need to wait | I think they might like to get more librarians in because it can take a while to get the librarians on. .I have had to like 15 minutes. .Sometime you go on straight away, but sometimes they have to go off before you get the answer. |

Equally, there were also words of praise for the service, particularly in relation to the issue of online safety – figure 23:

**Figure 23: Online safety noted as a strength**

| | |
|---|---|
| Experience of the operators valued – incl. taking students to safe sites. | Because you are like talking to a librarian so you are like talking to somebody and they are like guiding you right through - it like easier to use than finding the websites, because they get them for you instead of you going into google and not knowing what to look for - you know that they will find you mostly safe websites and they will take you to good kids websites. |
| Quality of resources and concern for online safety noted | Also the websites they give out are really good.<br><br>It means that the sites are good for us, this shows that they don't just care about out learning they also care about our safety too. |

This was followed up by unanimous support for the continuation of the service from among the groups we interviewed, who offered the following as advice they would give friends and classmates who were interested in using the service:

- [use it] because we can share information about websites – it tells you websites about the question that you asked
- [it's helpful] because google doesn't like have people who can actually talk to you and tell you exactly what to do. Its good because they can give you straight forward answers sort of, or they can give you websites to go to, but with google you just get given choices and it doesn't tell you which one you specifically want.

- plan the question that you need – have some questions that might lead to what you want to know.

**Experiences of Operators (Online Librarians)**

The staff selected to act as online librarians in the AnyQuestions project came from a variety of backgrounds within the library service, including The National Library of New Zealand, Auckland, Christchurch, Dunedin, Manukau, North Shore and Waitakere City Libraries, Rodney District Libraries and the Ministry of Education through Te Kete Ipurangi. Other participants include the School Library Association of New Zealand Aotearoa (SLANZA) and Horowhenua Library Trust.

The selection of staff followed a well-managed process, ensuring an equitable distribution of the load across the various participating organisations, and a rigorous training programme put in place to introduce staff to the online environment and to establish procedures for dealing with inquiries etc.

The operators interviewed for this research shared an enthusiasm for the role, and were able to identify clear benefits for themselves and for the students using the service. Among the personal benefits identified were the development of new skills, learning to deal with young students, and learning to deal with students in a new environment.

The operators had a clear understanding of their role and the process of dealing with callers that were consistent with the key foci of the role established in their training as illustrated in figure 24.

**Figure 24: Operators are clear about their role and task**

| | |
|---|---|
| Adding value to what students already know and can do. | "I aim to add value to what the student could have done for themselves.. so rather than simply repeat a search they could do on Google, I would aim to take them to a more specific website that they might not even think of. " |
| Regarding all inquiries seriously | "All questions are to be taken at face value and answered seriously. (Generally, this approach bores the small number of kids asking inappropriate questions and they tend to log off rather than be taken seriously.)" |
| Clear understanding of the process to follow in responding to inquiries | "I start by greeting them.. if their question is not really clear to me get them to tell me a bit more about the subject, and check whether they have searched online already…" (*from interview response regarding inquiry process*) |

Among the operators interviewed there was a high level of personal satisfaction. They felt well supported in their role, and felt they had learned new skills and acquired new understandings about student's needs and the New Zealand curriculum requirements.

Overall, the operators were positive about the experience, as saw the AnyQuestions project as having great value for the callers (fig.25) and for them personally (fig. 26).

**Figure 25: Benefits to students – operators' perspectives**

| | |
|---|---|
| Students become accustomed to the technology | "I think this is a very valuable service, and will only become more so as time passes. Children today are accustomed to technology. They are used to surfing the net and using chat rooms, so this is a slightly more formal version of something they are already comfortable with."<br>"The service also gives the students the opportunity to use a chat/co-browse environment." |
| Reinforcement of the search/inquiry process | "Good modelling of search strategies ; helping students to find information on the internet that they have not the skills or knowledge to find on their own"<br>"The main opportunity I see for us here is to teach the children to become a little more discerning in their choice of information source. "<br>"To show them good search strategies in a relevant context, when they're actually interested in what they're being shown, means they have a much higher likelihood of absorbing the strategy and perhaps using it again later."<br>"I feel the service is another avenue for students to gain information literacy skills. We can help the student clarify their query and then give help to use search methods suited to electronic resources."<br>"I think that the service is extremely successful in expanding student information literacy skills – the clients learn how to approach and clarify assignment questions and how to search for quality information. They often have no idea where to start, and I think we offer that starting point for them." |
| New resources | "We are also able to introduce them to new resources"<br>"Exposure to websites that students may not otherwise find" |
| Ability to work with an "expert" without having to visit the library | "I think this one-on-one interaction goes some small way towards proving that librarians aren't all scary people behind desks who tell children to be quiet."<br>"Sometimes I have even helped them search the online catalogue for their public library and coached them on how they should approach the librarian (e.g. take your homework sheet with you) so that it would go more smoothly". |

**Figure 26: Operator perceptions of benefit to them personally**

| | |
|---|---|
| Development of new skills | "Many of our operators undertook 'keyboard skills' training. However I did not do this as I am close to being a touch typist."<br>"We had training on the virtual reference interview (as different from face-to-face, or by phone etc), internet search skills (refining what skills we already had), ways to assess the suitability and authority of results of an internet search, and the standards and expectations of the service."<br>"All operators had training on the information literacy approach that we use, and some background in the curriculum framework - to put kids questions into context."<br>"We all had training in the use of the bookmarked e-resources that all operators have as their main 'tool-bag' for using to help students find information on the internet."<br>"I received training in the functionality of the software, reference interview techniques in the online environment and also information on the use of a range of electronic resources."<br>"My searching skills have become more proficient – i.e. I am quicker and better at finding quality information on the Internet, in a fairly pressured situation." |
| Learning to deal with students in an online environment | "Some of this [training] was to cover gaps between operators that were working in a public library context who maybe did not have the same curriculum background as National Library operators."<br>"Previously I have worked in high school libraries and also on reference desks in the Wellington Central Library. Therefore I have had experience in reference techniques, however working in the online environment required an adaptation of these skills." |
| Learning to deal with young students | "I feel I have an understanding of how children/youth will approach a reference enquiry. The initial question often requires further questioning to establish what is required. I have had to adjust slightly while working online, and this was well covered in the training".<br>"I have personally learnt so much about the way young people communicate (I have grown a new vocabulary!). My understandings of the NZ Curriculum has grown and I have realised there is a huge amount of pressure placed on today's young people by their teachers." |

Within the Operator group selected there was a wide range of background experience, including the specific skills of reference librarians through to those with up to date curriculum knowledge and expertise. It was encouraging to note the evidence of this among the operators who were interviewed, and the ways in which working in the online environment with students and with each other enabled the further development of skills in areas they needed to develop. This and other factors led to high level of satisfaction being reported by the operators (fig. 26)

**Figure 27: Indicators of operator satisfaction**

| | |
|---|---|
| High level of personal satisfaction | "I enjoy the interaction - and even if you do not manage to find the answer to a student's question with them, there is often something about the search strategy you used, or a site that you were able to show them, that they will be able to use again for themselves independently. That is really satisfying to see. "<br><br>Sometimes the best sessions have been ones where I haven't actually done much searching at all, just talked an issue through with a student so they can go off and do some research for themselves." |
| Feeling supported | "Our operators have - right from the start - had a buddy on site, as well as myself as their team leader, and there is a lot of learning by sharing between operators of useful search tips and strategies, ways of dealing with questions etc."<br><br>"At [our library] we are fortunate in that we have two co-ordinators on site who have been involved in the service planning since 2003 (or possibly earlier) and who have high expectations of the quality of our service. As an operator I greatly appreciate this." |

Operators did report, however, a number of limitations of the AnyQuestions environment that they feel need to be addressed for the programme to progress further. (Fig. 28)

Not surprisingly, technical issues rated high on this list, with around 40% of the online interactions failing or being disrupted by the lack of stability of the technology (ref. graph 6). Key issues here included the lack of broadband connections, required for the co-browsing function to work successfully. Other technical limitations included the inability of the software to support more than 4 operators working simultaneously, and the inability of the technology to allow for operators to work with more than one caller simultaneously.

Limited hours of operation were identified by the operators and the students we interviewed as another area that the service could be improved. The limited time in the school day that the service was available meant that it was often not available at the time students needed to use it. Further, the fact that the service was closed by 6.00pm each evening meant that it was not available at the time when most of the students who reported finding it most helpful were needing to use it (i.e. after the evening meal.)

Resourcing was another issue identified by the operators. The resourcing requirements that allowed staff from the various libraries to participate put pressure on existing areas of demand, causing at least operators to suggest that it would be better to centralise the whole system and put all of the resourcing into a single 'bucket' as a solution.

The need for ongoing training to address the emerging needs and to induct new operators was another area of need identified, again constrained by the level of funding and resourcing available.

**Figure 28: Limitations of the service as perceived by operators**

| | |
|---|---|
| Technical | The limited number of operators that can be online at one time (maximum 4) means that more students try to log-on than can be helped at any one time. This is a barrier, and may act to put them off re-visiting<br><br>The low uptake of broadband in NZ means that the software does not always work as it should... particularly if students are coming online via dial-up - and this is where the operator can find that they are unable to 'show' the student the search, but needs to send the results to them<br><br>In the past, I was able to occasionally take on two students at once when the queue got too long, and handle both transactions. Now, I simply cannot trust the software to handle it. We "lost" too many sessions in the past due to software failure and I fear this has frightened children off trying again. Or they've waited so long they've given up in disgust. If we had more reliable software, or a fix to the current software, we could give a better service.<br><br>I think the software is the biggest barrier – that fact that we are able to rarely co-browse and that we have to configure the computers before we start searching in almost every session – this slows things down immensely. |
| Hours of operation | I think it's vital that we expand the hours as soon as possible. The service currently closes at 6pm. This means that most children are only just getting ready to log on as we log off. We need to be "open" until 7 or even 8 in the short term, and maybe even later in the long-term. We also need to consider weekend staffing. |
| Resourcing | I personally would love devote hours to this each week because I am very excited about this initiative and what we can offer to the students. Unfortunately I am at the mercy of the goodwill of my manager who is paying out of his own budget for me to do this. |
| Training | I think that the training for new operators should be more intensive. Those of us who began training a year before go-live had plenty of time to become accustomed to the software and prepare. It was still a learning curve when we went live, but I have spoken to some of the newer staff (especially ones who only came on board this year) who do not seem particularly familiar with anything out of the ordinary in terms of the technology. This is unfortunate since in my experience you only get a "perfect" session once in ten transcripts or so. The rest of the time, it's up to the operator to make an imperfect session run as smoothly as possible. |

# 4. Quality of Service Provision

## Partnership arrangements and project management

The success of this project has depended very much on a team approach, with strong leadership underpinned by an effective project management methodology.

Partnership arrangements were an essential part of this, and operated at many levels - between libraries, the government and those in the information and education sectors - and were essential to the success of the programme.

The decision to make the service a distributed one (as opposed to centrally operated) was based on a strong philosophical belief held by the managers and reference group that this would most appropriately model the sort of environment that the service is seeking to develop.

Arguments for a more centrally operated service were based largely on issues of resourcing and consistency of approach. It is the view of the research team, however, that there is merit in the distributed approach as it:

(a) strengthens partnerships between and among various library jurisdictions

(b) builds a wider and more diverse pool of operator expertise and experience

(c) provides greater opportunity for the service to become a part of a future-focused, overall approach to reference services in libraries (ie virtual and face-to-face)

The development of these partnerships has added strength to the project through the contributions of the various parties, and it is apparent from the feed back from operators for instance that the benefits have been reciprocated.

## The knowledge and capabilities of online mentors

The staff selected to act as online librarians in the AnyQuestions project came from a variety of backgrounds within the library service. The selection of staff followed a well-managed process, ensuring an equitable distribution of the load across the various participating organisations, and a rigorous training programme put in place to introduce staff to the online environment and to establish procedures for dealing with inquiries etc.

The operators interviewed for this research shared an enthusiasm for the role, and were able to identify clear benefits for themselves and for the students using the service. Among the personal benefits identified were the development of new skills, learning to deal with young students, and learning to deal with students in a new environment.

As a result of this involvement there was a high level of personal satisfaction expressed by the operators. They felt well supported in their role, and felt they had learned new skills and acquired new understandings about student's needs and the New Zealand curriculum requirements.

The operators also identified areas where improvements could be made that would improve the overall quality of the service, including addressing the technical constraints experienced by many, the limited hours of operation, issues of resourcing (particularly for the smaller public libraries) and some issues to do with the level if initial training offered to new operators.

## The technological platform

Much time and effort went into the selection of the technology that is used to underpin the AnyQuestions project. The online environment was specifically selected for its capacity to allow for synchronous interactions, including a chat feature and co-browsing functionality. The co-browsing functionality was regarded as an essential part of the environment, allowing the operators to interact with the caller in the most effective manner.

The project manager reported having an excellent relationship with the developer of the software, although change requests were not always as immediately acted on as might be hoped.

The experience of both students and operators of using this environment was mixed. The transcript analysis revealed the platform remained stable for 59% of the interactions, but caused problems for the remaining 41%, either by disrupting the interaction or causing it to fail altogether.

The key area of concern as far as the technological platform is concerned is the failure of the system to begin the co-browsing function in a significant number of cases. This immediately limited the nature of the interaction, often causing frustration at a time early in the interaction causing students to lose interest or become impatient.

Many of the operators became quite skilled at continuing the conversation without the co-browsing function, by simply using the chat function and talking the student through the search. For many of the students we interviewed this wasn't seen as a problem, they were appreciative of the fact that they had someone there to talk to, and that they could control the search themselves in response to the prompts from the operator.

One of the key factors affecting the performance of the platform is bandwidth connectivity. The experience of those on broadband connections appears to be largely satisfactory, while those on dial-up tended to experience the most difficulty.

Despite the setbacks, the general intention of using a synchronous solution that allows for co-browsing to occur and archives a record of the interaction is seen as important to maintain as the project moves forward.

## The operational characteristics of the service

The operating hours of the AnyQuestions site are from 1pm to 6pm, Monday to Friday. Students are thus able to access the site during their afternoons at school, or in the afternoon and early evening from home or a local library.

The decision to provide the service at these times was based on the amount of resource that was available to run the programme, and, given the time available, to ensure that there would be equal opportunity to experience the use of the site both in school and out of school.

The timing issue is identified as the main factor affecting student use of the site. Some staff reported that having it only available in the afternoon meant that it limited the opportunities they could create for students to access it in relation to their current studies – particularly when they may be working on them in the morning, but also if they need to book a lab for this purpose. Both of these factors limited the "just in time" advantage of using the AnyQuestions site, particularly for the age group of students for whom the service is intended. Often with limited time or opportunity to use the service at school, many students found the service had finished for the day by the time they settled to do their homework.

Staffing is another key issue to be considered here. This is where the strength of the cooperation between the different parties was evident, with staff from different organisations being rostered to ensure a continuous service for students calling in.

There was a limit to the number of operators available at any one time, however. Because of software limitations, only four operators could be available at a time, which mean that at the peak times many students had to wait until an operator became available.

The site designers have attempted to address this through the provision of other things on the site that the callers can look at – including the FAQ section etc.

The positive side of the staffing issue is most certainly in the area of collaboration and cooperation involving the range of libraries and other centres involved, and the way in which this project provides an opportunity for these people to interact and learn from each other. Most staff appreciated this fact, and felt that they had learned a great deal through being involved.

A few staff commented on the fact that participation in the programme placed demands on their 'business as usual' work, and on the resources available at their local end. For this reason, and despite finding the experience of being an operator on the programme personally fulfilling, one operator suggested that the programme could just as easily be run out of a central agency (National Library) and that being online, it doesn't need to be run on a distributed model as it is currently. The majority of those interviewed however did not share this view.

## Internet safety measures

Internet safety concerns have been given high priority in the programme design of AnyQuestions. Thought has been given to all aspects of the student experience when using the service, and attention paid to areas that may be considered to put the student at risk of communicating with someone with whom they should not be communicating, or being directed to view material that is not appropriate.

The AnyQuestions website contains a strong statement for parents, teachers and users of the service, advising that it is not a 'chat room' environment, and that students only have contact with one librarian during a

session. Students do not have contact with anyone who has not been pre-approved and trained by the operators and that all librarians have also been trained to communicate with young people. In addition, all of the librarians go through the process of police vetting to ensure that students are not exposed to any unacceptable risk.

The service has also developed a set of student and librarian safety, referrals procedures and service guidelines. In addition, there is set of acceptable behaviour guidelines available from the home page of the service.

The service operators went to considerable lengths to ensure that the sites made available to students were 'safe' and appropriate for school-aged students. A list of selected sites and online resources has been compiled and is available for the operators to choose from, and this is frequently updated.

Although not mentioned by any of the principals or teachers involved, the attention to online safety was recognised by some students as a valuable aspect of the service.

# 5. Immediate Learning for Young People

From the evidence provided in the earlier part of this paper it is clear that this programme provides immediate learning for young people in a range of areas.

This can be clearly seen in relation to the project objectives which state that the service is designed to help students find the relevant information themselves and to help develop their research skills.

Operators received training in how to respond to student questions in a way that promotes inquiry and fosters the development of research skills. This approach is evident in the analysis of transcripts, although operators had considerable difficulty to contend with where a high number of 'closed' questions were asked (59% of the total).

For many of the students it was clear that their initial expectation of the service was that they'd simply be given the answer to a question – frequently from a teacher-directed homework sheet or similar. Across the board there was little evidence of learner-initiated inquiry on the part of students, those pursuing questions of purely personal interest. The great majority of questions were directly related to school-based learning.

For the more frequent users, those who were the focus of our interviews, a more developed view of the importance of asking open questions was evident. These people saw the advantage of engaging in synchronous interaction with a librarian who could assist with the process of their inquiry rather than simply give the answer.

This is supported overall by the data which revealed that while 32% of the interactions showed the student receiving a direct response to their question during the interaction, a further 33% of the students left the session feeling confident that they could now find the answer themselves, having been re-directed in their search.

The criteria used in this evaluation relating to the use of the inquiry process and of thinking skills may have been a little ambitious, given the constraints of time and available for each transaction, and the expectation of many students to simply get an answer. However, it has highlighted the potential for AnyQuestions to be regarded as having an important role in the "locating information" stage in the inquiry process, and has also highlighted ways in which schools can best prepare students with the skills of question asking to prepare them for using the service.

The larger percentage (58%) of interactions where the thinking involved was at too low a level to be identified within any of the categories reflects the level of expectation that many users had of the service. Typical of this would be the interaction where the student would ask a question and simply wait for the answer, not engaging with or responding to any of the prompts or leads the operator may have given.
A key factor in this result may be the level of "ownership" of the question being asked. From many of the transcripts it was apparent that the questions they were coming to the site with had been initiated at school, and of these, the majority would appear to be questions that have been set *for* the students, rather than *by* them.

Another factor influencing the thinking skills analysis is that, in attempting to develop a framework based around the emerging key competencies approach, we found it difficult to establish any form of taxonomy of thinking skills that could be applied easily. The list of descriptors that we adopted from the current curriculum documents proved to be difficult to apply in this context, as there is still room for interpretation and overlap.

In summary, the immediate learning for students using this site would appear to be the value of interacting with an experienced and knowledgeable online librarian, who is able to promote skills of inquiry and information literacy, and who can be trusted to provide resources that are safe in an online environment.

# 6. Alignment and transfer of learning for young people

## The bigger picture

AnyQuestions represents a departure from the traditional web-based Q&A sites that have been developed for students (e.g. Answers.com – http://www.answers.com, or How Stuff Works – http://www.howstuffworks.com). The focus on providing a synchronous interaction with an 'expert' (experienced librarian) is characteristic of the way in which the web environment is being used by an increasing number of young (and not so young) people. The use of chat and the co-browsing functionality of the online environment that AnyQuestions operates are familiar ways of operating for many in this world.

At another level, however, the AnyQuestions service is simply taking what is a valuable part of the libraries service to its users, and making this available to a much wider audience in a way that retains the integrity of the interaction. The potential for the service to become a truly 'anywhere, anytime' service is constrained only by the resources available to staff it.

In this sense, AnyQuestions is representative of a number of online "helps" that schools and students are able to take advantage of, and is well positioned to provide a valuable service in terms of the way in which it promotes good learning behaviours rather than simply providing the answers.

In doing so it will be important that it strives to maintain its point of difference from other services, and is developed to complement other online and offline services, rather than expand to incorporate them.

## Support for wider educational goals/landscape

The development of the World Wide Web and the use of the online environment is one of the key drivers for change in the way that we think about learning, and the consequent role of schools and schooling. Traditionally students went to a school because that was the place where the knowledge (information) resided in the form of texts and the teacher.

As access to this sort of knowledge (information) becomes increasingly ubiquitous in an online environment there is a recognition that learning of the kind that was previously confined to schools is now taking place at all times of the day and night, in all sorts of contexts.

AnyQuestions fills an important role in crossing the home-school boundaries of learning. The patterns of use illustrated in the transcript analysis and the interviews with students reveal that there is an equal amount of use made of the service inside school hours as out. More significantly, the majority of outside of school use relates to the completion of tasks that were initiated at school.

This supports the intentions of the recently released Schooling Strategy in New Zealand, which recognises the importance of family/whanau in supporting learning and the learner, and also the goal of supporting life-long learning, where the ability to take responsibility for ones own learning is increasingly important.

## Relationship to broader curriculum in schools

As the Ministry of Education in New Zealand continues to develop its revised curriculum based around key competencies, the ability to access, manipulate and share information will become increasingly important. A focus on the development of information literacy skills and the disposition and skills of inquiry will be fundamental to learning and succeeding in all essential learning areas (ELAs).

It was encouraging to see that all of the essential learning areas were represented in the final analysis, with the largest slice of the pie going to social studies (38%) followed by science (29%). This can be accounted for by the fact that a significant number of the interactions were based on worksheet or project based questions set by the teacher/school, and these tended to focus on areas of current events and general knowledge that were predominantly socials studies and science based. Clearly, however, the AnyQuestions service can be used to support all of the ELAs in some way or other.

AnyQuestions clearly has a role to play in the development of skills in the initial stages of the inquiry process (planning & focusing, and investigating, finding out & researching). These areas accounted for three quarters of the use of the AnyQuestions site in the initial period.

The relative success of the service to engage students in working through the inquiry process depended very much on the nature of the initial question asked, and that in turn appears to be affected by the extent to which an inquiry-based approach is promoted within the school/classroom.

An excellent example of this was seen at one of the intermediate schools we visited where a school-wide approach to the use of an inquiry model had been adopted and was actively promoted and used by students and staff. A case study for this school is included as figure 19 on page 23 of this report.

The service provided by AnyQuestions has an important support role to play in the successful implementation of the key competencies-based curriculum in New Zealand schools, where emphasis is being placed on learning to learn, with one of the five key competencies being thinking skills:

> Intellectual curiosity is at the heart of this competency.
>
> Students who have well-developed thinking and problem-solving skills are active seekers, users, and creators of knowledge.

# 7. Learning for providers, teachers and schools

The scope for exploration of the themes and issues touched on in this report are enormous, and in undertaking this research the team had to make many decisions that would enable them to work within the time and resource constraints they had. The comments below are therefore written as indications, based on the data available from this research, and may provide the basis of further, more extensive work in some or all of these areas.

## Impact on school and teacher practices

One of the most significant themes to emerge from this evaluation is the advantage to schools and learners of establishing a more explicit link between the use of AnyQuestions and the learning intentions of the classroom.

For the many students who used the service to complete a homework task, or simply answer apparently random questions from a homework sheet (as an alternative to using a newspaper or an encyclopaedia as the source of information), the impact on school or teacher practice was nil or minimal. Many teachers were unaware that their students were using the service to help them in their learning.

The real impact could be seen in the schools and classes were there was an intentional use of an inquiry processes, and information literacy skills were well taught and practised. Students in these schools demonstrated superior skills in asking questions, and benefited from the operators efforts to model and teach them more about how to search for information in an online environment.

## Positioning as learning environments by teachers and schools

There was a great deal of variation in the way AnyQuestions was positioned as a learning environment by teachers and schools, and this was reflected in the uptake and use by the students themselves.

This can be most clearly seen in the data collected from staff and students, which reveal that in a number of cases, neither the principal nor teachers themselves had any idea of what the service had to offer. Several teachers were unaware that there was a synchronous component to it, and has assumed that it was purely another website where students could go to find answers.

Some teachers went a step further and actively promoted the use of the site by directing students to it as a source of information for answering homework questions or work related to classroom topics.

Managing access to the internet-connected computers within the schools appears to have been a problem in some areas, with the physical location of the computers and issues associated with timetabling being cited. Timetabling was an issue for schools in two ways – gaining timetabled access to computer labs being one, and the hours of operation of the service not coinciding with school timetables being another.

The most effective and most powerful use within schools was clearly where there was ubiquitous access (in the classroom or in the library, for instance), and where students had the necessary pre-requisite skills to ask open questions, which enabled them to use the service more effectively. In these cases there was also evidence of the home-school divide being less of an issue in terms of how the site was used.

## Learnings for front-line service providers and the partnering organisations

A number of learnings have emerged for the service providers and partnering organisations that relate back to the assumptions that were made when the programme was developed. Some of these can be listed here:

- Targeting advertising directly to the students was effective in terms of bringing students to the service, but failed to adequately involve the teachers in schools who emerged as key promoters of the service to students. The key here is the difference between raising awareness and promoting effective use. The stickers, posters etc were effective in raising awareness and getting students onto the site, but the role of the teachers working in inquiry-based classrooms made a big difference in terms of effective use.

- The use of the co-browsing function, while highly desirable and often very effective, was not critical to the success of the interactions. Many operators worked successfully in working 'blind' with students in the synchronous environment, by 'pushing' URLs to the students then talking them through them. While this may not have been the idea, it was not a problem for many students, and a number commented on how effective it had been for them in that it forced them to do the searching, and not simply watch the operator control the co-browsing environment

- Time is a key factor in determining how the session will go. Many students were constrained in terms of the time they could spend in the online environment – at school or at home, for a variety of reasons – and this had a big impact on the nature of the interactions within the sessions. It may be worthwhile considering another step in the process that operators are trained to follow, which involved quickly questioning the student to find out how much time they have available to participate in the session.

The most significant learning for the front-line providers that has been identified from this evaluation relates to the way in which they respond to the questions students ask. Figure 6 on page 9 provides a clear picture of the relationship between the nature of the question asked by the student, and the response provided by the operator.

There is clearly a difficulty for operators to address in terms of the number of 'closed' questions they are asked. It would appear that, in addition to finding ways of encouraging students to ask open questions, there is room for improvement in terms of how the operators respond so that they are indeed working with students to help them develop the skills they require for searching themselves, rather than simply providing the answer.

Overall, however, the evidence suggests that the operators did an excellent job within an unfamiliar environment and in working in an emerging service provision. Much of the credit must go to the project manager for the way in which the whole project has been managed, and information flows to the participating libraries and organisations maintained, as well as to the managers within the local libraries and organisations who have supported their staff to participate.