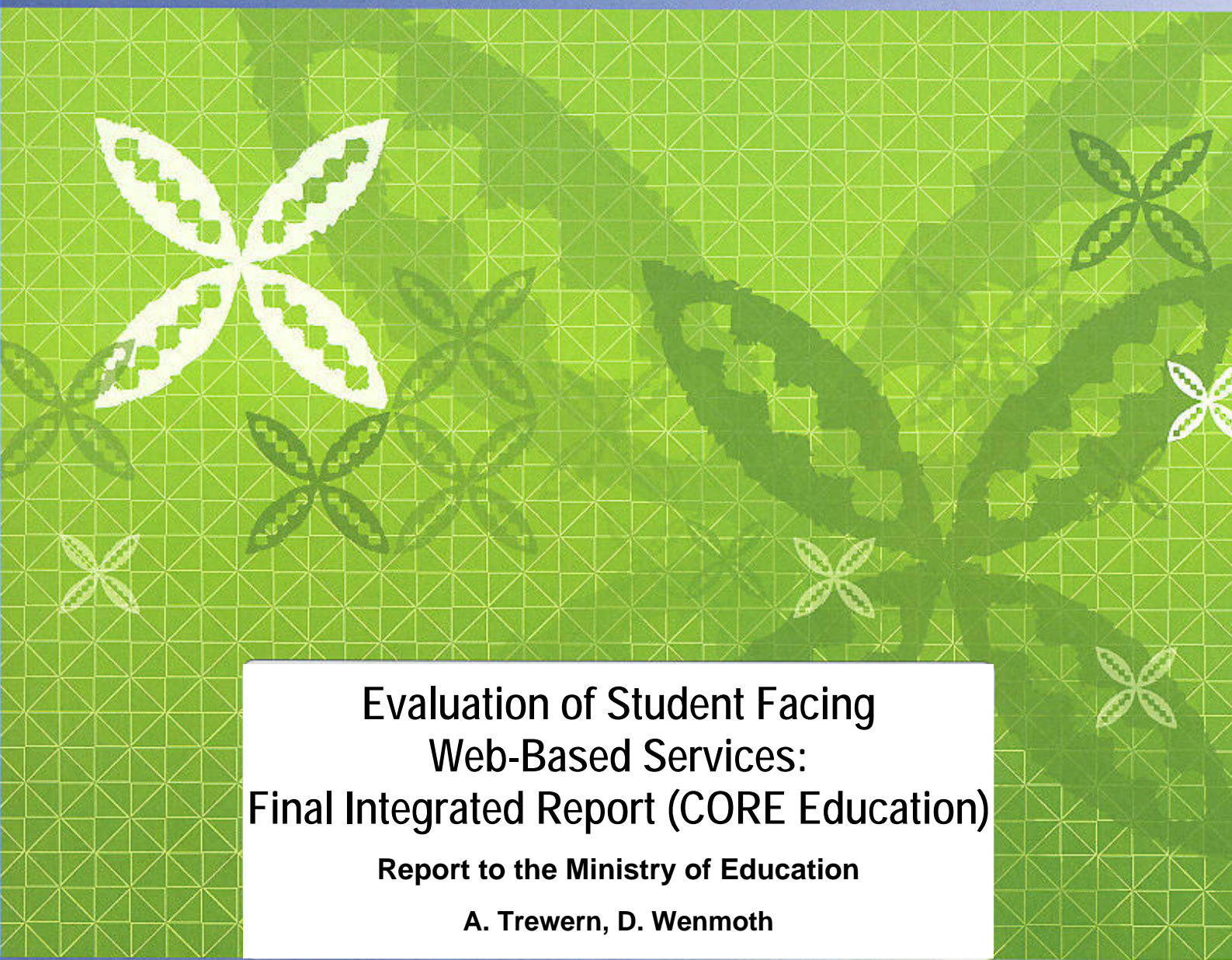




MINISTRY OF EDUCATION NEW ZEALAND

Te Tāhuhu o te Mātauranga Aotearoa



**Evaluation of Student Facing
Web-Based Services:
Final Integrated Report (CORE Education)**

Report to the Ministry of Education

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Final Integrated Report

Evaluation of Student Facing Web-Based Services: Final Integrated Report

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technology | innovation
learning | research

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Executive summary

This Final Integrated Report is based on a meta-analysis of a review of the literature on online learning as well as evaluation data and the findings presented in the six service reports for *AnyQuestions*, *Studyit*, and *WickED* educational web services undertaken by Nielsen/Net Ratings and Core Education for the Ministry of Education during 2006 and 2007. This report provides comment on the overall impacts of the use of educational web services on student learning and the implication for service providers and policy development in this area.

The three services reviewed for this suite of reports are each uniquely different from each other, providing different models of engagement, and using different modes of delivery for different purposes and different groups of learners who have different preferences and different needs. Collectively these services represent and reflect some of the diversity of the online world that is available to young people.

The recommendations that appear throughout this report are based on the systematic analysis of data generated from the evaluations of each service. These recommendations are intended to inform and justify decisions around future funding and development of these and similar services.

Key Findings

The findings below are presented under headings derived from the specific questions posed in the research (see page 5). Where appropriate a specific instance has been provided to illustrate or substantiate the general finding.

1. Overall Impacts

- a) In each of these educational services benefits were most obvious for students, as intended, and were much less obvious for schools and teachers. Services were aimed to attract users with particular needs, for example *Studyit* provided help for students involved in NCEA assessments and all services generally succeeded in attracting the targeted groups.
- b) These services are emergent. The number of students using the services remains small when compared with the size of the potential target group. However *Studyit* is also quite large when considered in terms of online environments where a sustainable learning community is being encouraged
- c) Certain groups were more likely to use the services. These services appeared to be used largely by students who overall felt confident about their schoolwork and who are motivated to seek out and expand their personal knowledge. Self-efficacy is an important asset of these student users. Fundamental learning dispositions of active users of these sites are likely to include students motivated to self-regulate their thinking and behavior and a readiness to inquiry where students are actively planning, monitoring, and modifying their thinking and applying effort to the task of learning.

2. Impact variability

- a) Due to the individualised nature of learning in online environments it is difficult to identify specific practices or conditions that are likely to impact on all users. These services were catering for niche groups of learners rather than all learners. For example, the inclusion of te reo Maori and Pasifika resources in *WickED* were encouraging greater use by Maori and Pasifika students. It is important for services to provide a diversity of ways of accessing the information needed to cater for the different ways different students access their learning. For example in *Studyit* almost twice as many students accessed the onsite information about 'Subjects' than viewed the discussion groups or forums. While 74% of *AnyQuestions* users had used the online chat facility, 24% had used 'Do It Yourself' answers and a further 24% had used the Search FAQs function.(NNR, 2006a, p.18) Use of the onsite information assists also to relieve pressure on experts who are providing feedback.
- b) The majority of student use of these sites, especially *AnyQuestions* and *Studyit*, is from home. These sites are offering help and support for student when they are learning on their own.

3. Comparative Advantages

- a) The nature and extent of the comparative advantages of these services include, the extension of teaching and reference services through a form of extended physical presence into the home or private study area of the students, individualised and personalised interactions with experts and even peers, student anonymity, the control students could maintain over the time and pace of interactions with an expert, and the 'New Zealand-ness' or specific cultural and schooling orientation of the sites for New Zealand students.

4. Curriculum Alignment

- a) All three services align well with the New Zealand curriculum essential learning areas. Server stats and the NNR reports confirm that most students using these services seek help with particular learning areas, and these include mathematics, science and English. All three services provide support in these essential learning when students are working independently although *AnyQuestions* does not, due to the nature of the service, offer strong help with mathematics.
- b) Only *AnyQuestions* and in *Studyit* supported a teaching presence in the form of highly subject specialist teachers and trained librarians for *AnyQuestions* and expert subject teachers in *Studyit*. Observable effective teaching practices in both services included questioning, re-tailoring tasks, modelling, support for inquiry and help with the process of deepening thinking around student driven topics, Other effective practices especially in *Studyit* included evidence of interaction with peers, co-construction of ideas, multiple perspectives, and reflection on problems submitted for discussion.
- c) A number of challenges and opportunities for alignment exist within these services. Although the extent of alignment is variable, these services are well aligned with curriculum and effective teaching processes and practices within specific contexts of operation. For example, *Studyit* supports mathematics, sciences and English for senior secondary students involved in high stakes assessment.

Services are also intended as additional learning support for students that designed to complement the work of schools not replace their role. Challenges and opportunities exist where these services particularly *AnyQuestions* and *WickED* could be more effectively incorporated into school activity structures.

5. Alignment with School Practices

- a) *AnyQuestions* and *Studyit* are aligning strongly with the practices of schools. Both services have clear purpose and process, which is strongly linked to meeting students short and medium term, targeted learning needs. Both provide services that are strongly linked to the support providers have traditionally offered learners. A role of trained reference librarians has always been to support the process of inquiry and in assisting students and researchers in the location of resources and information. Senior secondary teachers have traditionally supported students through the process of high stakes assessment, with programmes of revision of curricula to be examined. *WickED* appears less aligned to the practices of schools. The service differs in that it is not utilising a traditional provider to offer a traditional service to students but is attempting to alter the way learning is perceived by students and teachers through introducing new and engaging activities (interactives) for students and teachers. Challenges and opportunities exist for *WickED* in convincing both teachers and students of the educative value of interactives and the processes utilised in the service. Assuming that schools are the norm the *WickED* content and process needs to align better with the work of schools.

6. Supporting Organisational Objectives

- a) These services support the organisational objectives of the various project partners in varying ways and to varying extents. There is a strong connection between the service provision and the objectives of the project partners evident in both *AnyQuestions* and *Studyit*. For example the aim of the *AnyQuestions* project is to develop an online reference service for all New Zealand school students where they are only one click away from a trained librarian or subject specialist teacher. The challenges faced in realising this aim are both technical and the need for increasing resourcing for service expansion. *Studyit* is part of a range of services provided as part of the introduction of the New Zealand National certificate of Educational Achievement and the service supports students in a variety of ways in this. The challenges faced in realising this aim include the need to expand services into a greater number of essential learning areas while still retaining the educative value of the service. Opportunities exist for both services to include the types of web2.0 services that will improve goals for providers and align with students' expectations for how web tools can work for them.

7. Unanticipated issues

- a) Unanticipated benefits arising for learners, included the immediacy and relevance of the assistance provided, and in *Studyit* the emergence of student voice and knowledge co-construction. Unanticipated benefits were not observed for teachers, schools, school libraries, largely because

these services were not being incorporated into classrooms and schools to quite the extent they could be. Unanticipated benefits for project partners, included online operators and teachers developing a far better understanding of New Zealand curriculum and student needs from working on online environments and feeling that roles were rewarding and satisfying.

- b) Unanticipated issues arising for stakeholders, included the wait times for services *AnyQuestion* and the need to extend the operating times and extend the software affordances to allow for more operators to work concurrently. Although the *AnyQuestions* service works hard at ensuring a safe online chat environment for students there is reticence evident from parents and teachers about the use of online chat. The value of *WickED* for students as a support service and for teachers as a resource for classroom use needs re-examination.
- c) A summary of the implications of unanticipated benefits and issues for service providers and policy making were identified as,
 - o Given the perceived importance of the internet as a learning tool by students and parents there is a need to provide educationally relevant and appropriate learning spaces for a student group with diverse abilities.
 - o Need to expand the reach of the existing successful models.
 - o Need to better publicise the value of the current successful models.
 - o Need to revamp and realign *WickED* so the service filling a clearly defined educative need, curricula purpose, and target group.

8. Learning Preferences

- a) For these services to align well with young people's preferences for their learning, it is important that interfaces are designed to aesthetically suit the targeted age group and that the site is easy to navigate and locate what is needed, and to clearly understand what the important functions are, that are embedded within the service. Also important is the ability of the service to engage young people by meeting their immediate demands for learning which may include the need to be entertained, to socialise, locate information or find help with homework and study. There also needs to be a strong link between school and teacher driven demands and what is available online to help students meet those demands. The ways and extent to which each of these services achieves these preferences varies. Of increasing importance to each of these services are the ongoing developments in softwares that encourage content creation and sharing. These functionalities, known as web2.0, can be aggregated in various ways to alter learning environments in unique ways that give greater control to the learner. Students are encountering some of these functionalities in commercial websites, which is changing and raising student expectations about what they ought to be able to see and do on these websites.

9. Student Access and Management of Learning

- While there is considerable evidence that the internet in general is beginning to change some of the ways in which young people access and manage their learning, there is little direct evidence from the suite of reports reviewed, as to the ways and extent these particular sites are individually changing the learning behaviour of young people to any large extent. There is however for a select and small group of students who are motivated to self-regulate their thinking and behavior, evidence that some learning behaviours have been altered.

10. Student Expectations of Learning and Schools

- These services are still in the early stages of development. The numbers of students accessing the services remains limited. It is too early in the development of these services to state to what extent they are impacting on children and young peoples' expectations of learning and schools.

11. Continued success and sustainability factors

- Learner success with online services is more likely when,
 - Student trust in the quality of feedback from mentor or subject specialist teachers and librarians is assured. This is a very important feature of both *Studyit* and *AnyQuestions*. The information students obtain is well aligned with their studies at school. Maintenance of a high quality of service provision is essential.
 - Students can feel safe and where teachers and parents can feel it is safe to recommend the environment for young students. Student safety underpins all three learning environments and is an important factor in adults recommending the site to students.
 - Young people can depend on access, through the technology, to ask questions at times which suit them. *Studyit* provides a good example of flexible dependable access. *AnyQuestions* ideally needs to be able provide greater flexibility of access to students. There should be no breaks in communication that can disturb or interrupt access.
 - Elements that contribute to sustaining student patronage and ownership include, strong links between school and teacher driven demands, guided services that offer relevance, focus, timeliness, and swift response times, and the provision of online services that are attuned to the design, navigation, linguistic, and communication attractants and repellents for young people.
- Requirements for these services to be successful for learners and sustainable in terms of management include, maintaining a strong connection between specific educative purpose, tasks, and the targeted age groups, and to operate within a highly relevant and contextualised external environment. *AnyQuestions* provides a good sustainable model exhibiting strong project leadership, effective communication channels with stakeholders, and buy in from the different regional libraries involved, transparent management practices and a supportive advisory group.

- Elements that are required for these services to be successful for learners and sustainable in terms of pedagogical development includes the involvement of teachers or guides, evidence of challenge and sustained thinking, and social interconnectedness combined with clever instructional design incorporating web2.0 tools aggregated in ways that encourage greater control over, and ownership of learning by students.
- Requirements for these services to be successful for learners and sustainable in terms of service operation and resourcing include, the need for enough personnel and technical resourcing to ensure ease of access to operators and expert teachers at times that are flexible to student users. Publicity is required to promote the value of these services to users and recommenders alike.
- Requirements for these services to be successful for learners and sustainable in terms of alignment with the wider learning network of young people involve, the design of generative environments in which the creation and sharing of content is not only textbased but includes a range of multimedia and to be able to engage with and critique that content in multiple ways. The building of personal webspaces such as blogs, the collaborative building of content in forums, as can be observed in *Studyit*, or in collaborative wiki development, the sharing of internet page content through co-browsing as in *AnyQuestions*, *RSS feeds* that allow users to subscribe to their favourite websites are a range of tools that young people encounter on commercial sites that are raising awareness and expectations that they can exert some control over these environments. Immersive sites and multiplayer gaming sites that involve strategy and team play are also contributing to raising awareness and levels of sophistication around the type of resources that are available on *WickED*.

Background

This Integrated Report is based on a meta-analysis of a review of the literature on online learning as well as evaluation data and the findings presented in the six service reports for *AnyQuestions*, *Studyit*, and *WickED* educational web services undertaken by Nielsen/Net Ratings and Core Education for the Ministry of Education during 2006 and 2007. This report provides comment on the overall impacts of the use of educational web services on student learning and the implication for service providers and policy development in this area.

The report addresses the following questions

1. What overall impacts are these emergent web-based learning services having on diverse young learners?
2. What is the variability of these impacts? – i.e. are particular impacts more apparent for certain users?; are impacts more apparent for all users when certain conditions and practices exist?
3. What is the nature and extent of the comparative advantage of these services? i.e. in what respects are the impacts of these services unique to or more likely in these environments?
4. How do these impacts align with the New Zealand curriculum and effective teaching, and what are challenges and opportunities for alignment?
5. How are these services aligning with the practices of schools and other providers, and what are the challenges and opportunities for alignment?
6. How are these services supporting the organisational objectives of the various project partners and what are challenges and opportunities for alignment?
7. Are there unanticipated benefits or issues arising for learners, teachers, schools, school libraries and project partners, and what are the implications of these for service providers and policy making?
8. How do these services align with young people's preferences for their learning?
9. In what ways does it appear that these web services are changing how young people access and manage their learning?
10. In what ways does it appear that these services are impacting on children and young peoples' expectations of learning and schools?
11. What is required for these services to be successful for learners and sustainable in terms of ownership, management, pedagogical development, operation, resourcing, and alignment with the wider learning network of young people?

The analysis was undertaken by Ann Trewern and Derek Wenmoth, CORE Education Ltd.

Introduction

In a changing world where the access to a computer and the internet is becoming gradually more ubiquitous¹, services such as *AnyQuestions*, *StudyIt* and *WickED* offer a range of alternative ways in which young people can be supported in their learning and can help young people function more effectively and with purpose within the information and communication ‘landscape’ that will increasingly be an integral part of their future. The three websites that are the focus of the study, represent a genre of web services that are being developed to support student learning at school and at home. While the development of these services has been undertaken in response to a perceived need or opportunity there a dearth of literature which supports our understandings about how young people use the internet for specifically school related learning. Some literature relating to the general use of the internet indicates that teen uses and interests are somewhat different from those of younger children and adults implying that web-based learning services need to be organised in specific ways to appeal to specific groups (Coogan 2006). There is some evidence that such specificity relates to quite narrow age bands, and may also relate to individuals educational interests, expectations, and what most motivates individuals within the targeted age band although there is little tangible evidence available in the literature to support this notion.

The three services that comprise this suite of research reports are providing services in quite targeted ways to targeted age groups who have specific educational interests.

AnyQuestions is a synchronous chat-based online library service, provided by trained reference librarians and subject specialist teachers who assist students with their first line inquires relating to school assignments and homework. The service is very specific in focus and provides an online version of the traditional support provided by reference librarians employed in national and local city council libraries. Such freely available librarian support is generally not available beyond the confines of library buildings. Online availability means a greater number of students can more easily leverage this expertise than previously. The service aims to provide a service which supports student’s in improving their information literacy skills and is open to students across all age groups. The Nielsen NetRatings *AnyQuestions* Service Report (2006a p.2) reveals that just two thirds of the users identified themselves as students and that surprisingly some 33% or one third of users were adults of which about half used the site with their children. Half the user group do in fact belong to the originally targeted 10 – 15 year age group with about 12 % of users in the 16 -20+ age group of students.

Studyit is also a highly focussed service both in terms of who the service is for and what it is providing. *Studyit* is an asynchronous online information and interactive self-help resource for senior secondary students studying for NCEA external examinations in mathematics, science and English. The site aims to provide a service for 16 to 18+ year olds and indeed achieves this with the majority of student users (80%) being between 16 and 19 years (NNR, 2006b, p5).

¹ Nielsen NetRatings (2006a, p.10) reports that 67% of all people 10+ have access to the internet at home in New Zealand.

Of the three services reviewed *WickED* appears to be the least stringently focused in terms of the service offered and the age group targeted. Originally the *WickED* service was offered as a support website for a nationally organised 'Digitally Boosted After School Support Centres' initiative (Winter 2005). However this purpose and use is no longer the focus and the site is now offered as an informal learning service providing interactive games and educational themes supported with software-based interactives that are intended to be of interest to classroom teachers for their programmes of work and 7 to 12 year olds. It is interesting that while the site appeals to the age group intended the Nielsen NetRating *WickED* Service Report indicates there is a substantial group of older students who coming into the site as well (NNR, 2006c, p7). The vast majority of student survey respondents (92%) were between the ages of 9 and 15 but 72% were at the upper end of the age group. The appeal of this site is for middle school students (intermediate and junior secondary students) rather than solely those in the primary school.

Overall impacts of the services and ways these impacts vary?

It is clear from a description of the sites and their functionalities that there is variation in educative purpose and in what these service sites offer students, teachers and schools. Each of the three service sites provides different types of support for different age groups for different purposes and each has a different focus. For example *WickED* provides opportunities for students to interact with existing highly visual content and resources while *Studyit* provides opportunities for students to create and work with their own text-based content in the forums. *Studyit* operates asynchronously and within a text-based environment while *AnyQuestions* operates synchronously where students can contact operators and communicate within the immediacy of a chat-room-type environment.

What overall impacts are these emergent web-based learning services having on diverse young learners?

The following list of key findings have been identified from the research reports and from the literature review supporting the reports (Coogan 2006),

- students appear to benefit from using the sites, benefits are less obvious for teachers and schools.
- The sites and services are accessed and used by niche groups of students within the targeted groups.
- Each of the services appear to be supportive of personal learning that meets immediate and medium term goals.
- Learners made fullest use of the site when there was evidence of strong links to school and, or teacher demands.
- The sites provided opportunities for patterns of learning that allow and encourage collaboration.
- These services encourage student involvement and responsibility for interaction
- Levels to which interaction is sustained over time, and frequency of revisiting within these services is variable
- Expanding access to knowledgeable experts in ways that better utilises the technology and broadens the reach of some traditional services for students
- Greater support for students' home-based learning
- Opportunities for student learning are bounded by the stated learning objectives of each site and the contexts within which they operate.

These benefits and who accesses them, varies considerably between the services, are more fully explained in the following section of the report and are considered in relation to the individual services.

The variability of these impacts

In this section the variability of the impacts across the service and for different users are discussed. Whether or not particular impacts are more apparent for certain users and whether impacts are more apparent for all users when certain conditions and practices exist is also discussed. An overview is provided in the summary section 2.4.

Students appear to benefit from using the sites; benefits are less obvious for teachers and schools

As intended the major beneficiaries of each of the services were students, which is consistent with what each of the websites were designed to do. Teachers and schools had a role in introducing the sites and ways they may support learning to students but overall made little other use of the sites.

Although the *Studyit* learning environment was very closely aligned with school content and student incentives for using the site were focussed on NCEA assessment this site was not intended to be a resource for classroom teachers. Teachers were key promoters and recommenders of *Studyit* for students and there was some evidence of teachers recommending and introducing students to the site, and reminding to students to use the service.

There is some evidence that *AnyQuestions* is being used by some classroom-teachers especially as a resource for those developing inquiry approaches in the classroom. These were also often the children who appeared to learn the most from the site. Nevertheless little use could be discerned that integrated the service into classroom practice to any great extent. Primarily those using this site were students who were independently seeking answers to queries that were usually school related.

As with *Studyit* and *AnyQuestions*, the *WickED* service was primarily student-facing but was also more openly encouraging of teachers using some areas of the site, for example, the themes and interactive content in their classroom activity structures. This was supported by a teacher lounge, or forum area where teachers could interact and discuss ways of using the site in their classrooms with other teachers. Although evidence that the site was being used by teachers was found, the CORE research team found it difficult to locate many teachers using the site extensively.

One of the widely identified benefits of using the internet for learning is the extent to which the internet can support individual learners for both formal school activities and for informal and fun activities. Evidence was strong that that these sites were collectively doing just that although not all services were meeting all these attributes.

The sites and services are accessed by particular niche groups of students

Each of these services has been designed to appeal to, and attract the involvement of, a particular age group. *Studyit*, for example has been designed in consultation with student focus groups belonging to the target group. The design and style of the service, and the instructional approaches as well as the language used, have been carefully matched to the specific internet usage needs of an older teen group (Coogan, 2006) and the service attracts members from the designated age group. *WickED* has been designed with many more of

the strongly visual, fun, lively and entertaining features that younger children like (Coogan, 2006) and is also attracting the intended group (NNR, 2006c).

It is interesting however, that each of the services appears to be attracting a specific niche user group within the broader target group, who are using the service wholly or partly.

AnyQuestions was promoted to the senior primary and junior secondary areas of schooling. The reasons for this choice included:

- the desire to involve students at both primary and secondary level
- need to target the pre-exam students(as it was considered that students in the exam years would be pre-occupied with their assessment activities
- need to operate within the constraints of limited resources and budget

The service appears to attract a wider audience than expected with about half the users being within the targeted age group and most of the remainder being older students or adults. The service appears to be used by a substantially greater number of girls than boys. In the targeted age range 76% of users are girls and 24% of users are boys. Even given the propensity for girls to answer surveys compared to boys this represents a considerable difference. Interestingly while more girls may actually use the service a greater percentage of boys seemed to be happier with the service while girls appeared to be more ambivalent. Some Maori and Pasifika use has been identified at 14% and 15% of respondents respectively (NNR 2006a p.25). The service was intended to support individual learners, and was not specifically designed to support group or class research.

In *Studyit*, the greatest impact of the service appears to be on high achiever students. This evidence has surfaced in both qualitative (CORE, 2007b) and quantitative data reports (NNR, 2006b). The latter reported that only 6% of students who responded to the survey did not achieve NCEA Maths, Science and English. Student satisfaction with *Studyit* indicates that comparatively more males than females are satisfied with the service which may be due to the subject areas that are currently available and perhaps also the type of highly focussed content and interaction that is evident on the site. As with *AnyQuestions*, the *Studyit* service was intended to support individual learners.

The impact of *WickED* on students learning is harder to define. Student satisfaction levels with the service indicate that students in lower decile schools have a higher appreciation of the site content than students at higher decile-schools who indicated slightly lower levels of satisfaction (NNR 2006c p 17) Appreciative niche groups also included students who speak Maori at home which is some 5% of the user base. (NNR 2006c p 3 & p.19) and girls appeared to enjoy using the site more than boys. 50% of boys as opposed to 26% of girls indicated they were very unhappy, unhappy or 'in-between' in their satisfaction with some of the interactives such as games quizzes and crosswords. (NNR 2006c p 17). The *WickED* service was initially designed to support a wider-range combinations for learning, that included individual, small group and whole class support.

All three services appear to be attracting particular niche or affinity groups within the larger targeted age group. All three sites are attracting a much larger user base of students who felt they are being successful or very successful at school (NNR, 2006a p 35; 2006b p. 15; 2006c, p.20) as is illustrated in Table 1.

Table 1: Shows that these services were being used primarily by students, who felt confident they were doing-well in their studies.

Service	Percentage of students who felt very confident about school work	Percentage of students who felt they were doing well in most things	Total
Studyit	-	-	-
AnyQuestions	51%	36%	86%
WickED	39%	33%	72%

The questions relating to confidence in schoolwork included in Table 1 above were not asked of those students responding to the *Studyit* survey. However in the case of the *Studyit* service 93% of student users were studying for NCEA and just under half were studying at NCEA level 3, which indicates a high level of school achievement. Indicative results also show that students from lower decile schools tend to be less confident about contributing and participating in the *Studyit* communication areas. (NNR, 2006b p.11)

There are some gender differences evident relating to subject specialisation (for example more boys are involved in maths and science subjects (NNR 2006a, p.38). The differing approaches to learning encouraged by each site appeared to offer varying results revealing the difficulties of generalising specific niche impacts across all services. For example: While girls appear to indicate a greater enjoyment of exploring and browsing for information on *WickED* (NNR 2006c p.17), boys appeared more likely to use the *AnyQuestions* site as a search resource, and are also more likely to be investigating the site for more 'speculative' reasons rather than use the chat function to contact an operator for help (NNR 2006a p.39).

The need for help and guidance in specific subjects could also be discerned from the data for each of these services. To some extent this was being determined by,

- a) the type of support being offered. In *AnyQuestions*, a first port of call for student inquiries relating to locating information, most students surveyed were turning to the site for support particularly in social studies (46%) and in science (40%) and also in English (28%), (NNR 2006a, p. 38). The inquiry approach utilised by the service is a most suitable one for these essential learning areas. The 'Maths Stuff' section containing a number of maths interactives was popular with *WickED* users.
- b) the extent of the expertise the site is able to offer. In *Studyit* subject areas support was limited to science and mathematics with the later addition of English. Over three quarters of students (76.8%) using the *Studyit* site required assistance within the mathematics area of the site. (NNR 2006b, p.39).

It is of interest, that the three traditional subject areas of science, mathematics and English and to a lesser extent the fourth area of social studies are those where students found they required most help and support from these services regardless of age or motivations for study. Even in *WickED* where the resources available span a range of content areas and where subject specialisation is largely blurred, some 38.4% of students visited the ‘Maths Stuff’ section. This was the second most visited area next to games/quizzes and crosswords, which attracted 40% of student users. (NNR, 2006c, p.36).

Each of the services appears to be supportive of students personal and individual learning that meets immediate and medium-term learning goals

Coogan (2006,) found that ‘first and foremost web content and web services need to meet young people’s immediate or medium term goals’ (p. 24) and these needs and goals may include entertainment, socialisation, information or help with homework and study.

These services are best at supporting individual learners and offer services that allow for the immediate and personal learning needs of students to be met in a number of ways that include help with homework and study, providing information, opportunities for socialisation and even entertainment.

All three services offer students help with homework and study within their particular areas. The synchronous aspect of the *AnyQuestions* service is highly personalised with the availability of an operator (in working hours) who, with the support of a text-based chat function and co-browsing facility, can work with students and provide guidance for their individual and highly targeted inquiries. Even where instances of school based use were uncovered by the Core research team, the service provided a highly individualised support service for individuals or small groups of children involved in an inquiry driven programme or project that were making an inquiry independently of the teacher. One of the interesting aspects of the *AnyQuestions* service, highlighted in both the NNR and CORE research reports, was the differing expectations between what students wanted and the process employed by the operators to assist students find the answers. Students frequently wanted an immediate answer to a narrowly focussed question, while the service operators offered much more help to students. Operators clarified what the student needed to know, assisted with setting up an inquiry and then provided guidance in how to find the answer. This role in helping students to a greater extent than was expected was one that engendered some frustration by some students but was appreciated by users returning to the site once they were aware of the learning process. This individualised support for the initial stages of the inquiry process is unique among the help site genre.

Specialist curriculum teachers in StudyIt provide individual support for students who are prepared to ask questions via the forum areas.

The strength of both *AnyQuestions* and *Studyit* is that the locus of control for learning rests with students. The services are well organised to meet student’s immediate learning goals. If students need an answer there is someone there who will either provide it or guide students towards a process of finding it themselves quite quickly. Both *AnyQuestions* and *Studyit* also met students’ medium and even longer term learning goals. As well as offering immediate answers, the *AnyQuestions* operators encouraged students to gain skills in independent search techniques and in planning appropriate approaches to beginning an inquiry. In the *Studyit*

forums, students could be seen engaging in discussion about some quite long-term options that included future tertiary courses and study possibilities once they had finished secondary school.

Learners made fullest use of the site when there was evidence of strong links to school and, or teacher demands

Coogan suggests that in order to engage young people in the internet educationally there needs to be a strong, clear link between school and or teacher driven demands ~ and what is available online to help students meet those demands.

The findings of the *AnyQuestions* report (CORE, 2007) indicates that most students using the service do so because they have a homework activity or assignment to complete that has been set by the teacher. The service provides that strong, clear and conscious link between school and or teacher driven demand that is suggested by Coogan (2006) as an essential element to drive use.

Studyit also provided highly individualised and personalised support that illustrated a strong, clear link between school and or teacher driven demand. The fundamental purpose of the site, to support NCEA assessment is a direct link to schoolwork for the individuals who make the most of the service. Over half of the 261 respondents who said they were regular users of *Studyit*, said they mainly used *Studyit* when preparing for assessments and exams (NNR 2006, p.41). The instructional design of *Studyit* with its carefully developed focus on sharing personal and individualised interactions and making these interactions transparent to all users is a feature of the service that is not only highly suited to the targeted teen user group but is also conducive to a quite different pedagogical approach that is not possible in *AnyQuestions* or *WickED*.

Students using *WickED* reported the site helped them learn and they visited the site to get ideas for school related questions and projects. The goal of making learning fun seems to appeal to younger students who need more entertaining elements and visual content to support them with their learning (Coogan, 2006). Quite a large number of students (74%) indicated in the NNR survey (p.10) they had used *WickED* during a lesson.

However there appears to be less incentive for students to use *WickED* for immediate focused and independent help for schoolwork. The following reasons were apparent.

- a) Both students and teachers commented on the difficulty of finding what they were looking for on the *WickED* site. The need to spend time browsing resources and risk being sidetracked from the direct task is less appealing when a specific answer is required, or specific information needed that can more easily be obtained by asking a person directly as in *AnyQuestions* or *Studyit*.
- b) Clear links between school and or teacher driven demands are less obvious in *WickED* for students unless the teacher has used, or recommended specific resources available on the site or has set specific tasks for students relating to the resources available.

These services present different ways of seeking, sourcing and using information that is likely to appeal to different groups and different individuals within these groups as well as the particular learning situations in which students find themselves. The exploratory and browsing options provided by WickED offer a quite different learning context for the individual student than the much more targeted, directed question, and distinctly targeted approaches encouraged by AnyQuestions and Studyit.

The sites provided opportunities for patterns of learning that allow and encourage collaboration

Developing patterns of learning that allow and encourage collaboration between students and between students and experts or mentors is undoubtedly an area where educational use of the internet is innovative. Coogan suggests that *“young people, especially teenagers, value interaction and collaboration with peers...websites that wish to engage students educationally need to provide for such interaction, with young people taking increasing responsibility for the nature of those interactions as they grow older “* (2006, p.24) encouraging such interaction also encouraged repeat visits to the site and sustaining ongoing interest for those involved.

These services encourage student involvement and responsibility for interaction

Of the three services, only Studyit, offers a range of means and opportunities for interaction and collaboration to occur between mentors and student contributors to the site that is visible and accessible to comment and reflection by all users. The service is highly encouraging of student responses to other student-contributors and there is a clear sense that these contributions that cover skills, knowledge and affective domains are valued.

The Studyit service is succeeding in engaging students educationally and it is clear that in many cases these older teens are taking considerable responsibility for the nature of the interactions that are occurring. It is interesting that two thirds of transcripts analysed involved 3 or more different people in a continuous interaction but what is even more interesting that more than one in three interactions involved 6 or more different people and one in seven interactions involved more than 11 people. A core group of students are quite deeply involved in Studyit and are able and willing to take responsibility for many of the interactions that are occurring. (CORE 2007b).

AnyQuestions provides for one to one interaction between students and a reference librarian or subject specialist teacher but these interactions are not visible to other students coming into the site unless they have been selected as typical of their type and added to the FAQ database. While many users of the service preferred searching the FAQ database to answer their inquires privately rather than contact an operator, there remains a limited sense that collective knowledge building is occurring on the site.

WickED offers forum spaces for contributors but these were not being utilised by students for purposeful learning or purposeful socialising during the period of research.

Levels to which interaction is sustained over time, and frequency of revisiting within these services is variable

The following tables provide an overview of a) The length of time students had been returning to the site (See Table 2²) and b) The frequency with which students had accessed the sites prior to data gathering. (See Table 3 below)

Service	Percentage of students who used the site longer than a year	Percentage of students who used the site for 6 – 12 months	Percentage of students who used the site for 1-6 months	Less than one month
Studyit (16–19 year old data only)	42.5%	33.6%	19.9%	4.0%
AnyQuestions (no data available)				
WickED	16%	3%	45%	36%

Interactions over the longer term and frequent site revisiting were a feature of the *Studyit* service where 76% of the 16 – 19 year old users indicated in the NNR Survey (2006b p.30) they had been using the *Studyit* site for 6 months or longer. While only 2% of student users indicated they visited the site every day, just over a quarter of the 375 students who responded indicated they visited the site at least once a week or more often. A further quarter indicated they visited once or twice a month. First time users of the *Studyit* site tended to be younger than the targeted 16 – 19 age group.

² The Length of time students had been accessing and using the *AnyQuestions* site was not available.

Table 3: Overviews the frequency with which students reponding of the NNR surveys had been using each of the sites.(From NNR reports and presentations)

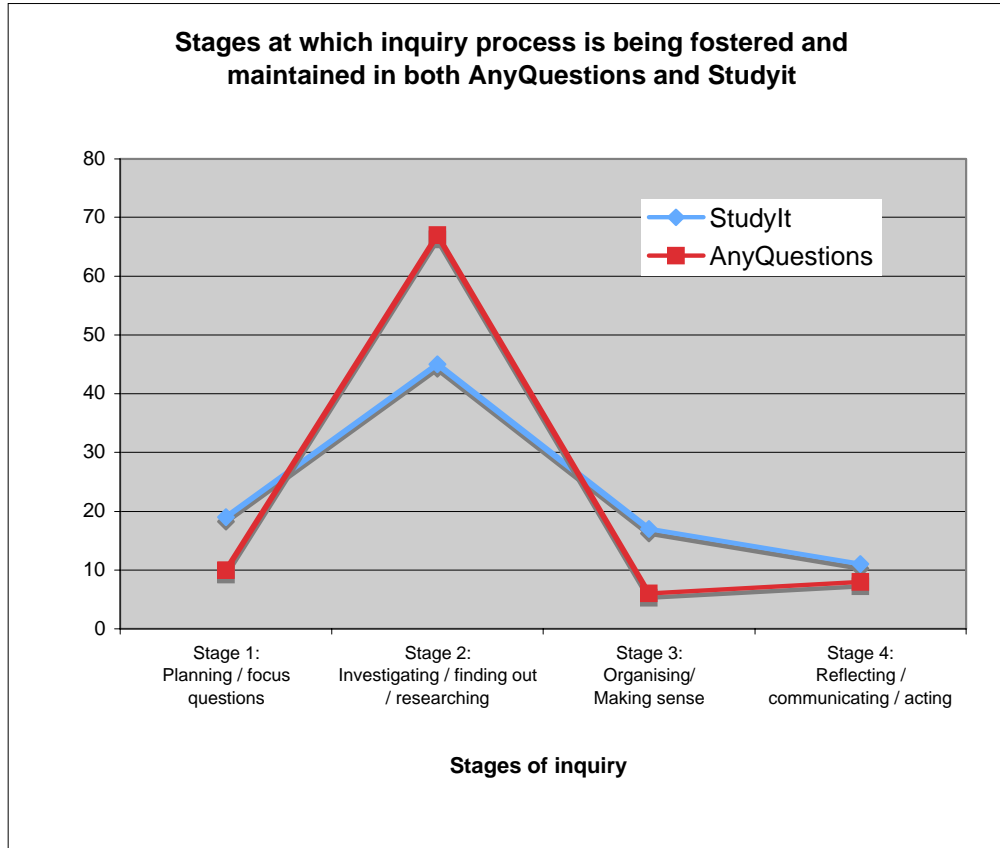
Service	First time visit	Less often than several times a month	Several times a month	At least once a week or more often	Every day
Studyit (n=375)	30.4%	18.4%	25.1%	23.8%	2.4%
AnyQuestions (n=157)	29.0%	27.0%	24.0%	19.0%	1.0%
WickED (n=146)	60.3%	4.8%	8.2%	20.5%	6.2%

There is evidence that there is some sustained revisiting occurring with the *AnyQuestions* service. One in five users were visiting at least once a week or more often. Nearly one quarter of survey respondents indicated they used the site one or two times a month indicated that 44% of users are using the site regularly. Just how long some users had been using the site was not published in the NNR *AnyQuestions* Service Report presentation (2006a) although 29% of respondents indicated that the day they filled out the survey was also the day of their first visit.

In the case of *WickED* the Nielsen NetRatings *WickED* Service Report (2006c) indicates that there was a very high number of first time users entering the site and have ascertained this number at 60% of all students who responded to their online survey (NNR 2006c, p.29) There are very few students who are long-term users of *WickED*. Of the 58 respondents who indicated they were repeat users 36% indicated they had been visiting for less than a month and only 19% (ie approximately 5-6 students) had been visiting the site for 6 months or more. (NNR, p.30) For the qualitative CORE report longer-term users were unable to be located. There was very little evidence of social interaction in the *WickED* site which may have as much to do with the abilities and maturity of the users as the instructional design and the purpose and intention of the site. However these findings are important and do have implications for site design and for learning outcomes.

Both *AnyQuestions* and *StudyIt* transcripts were investigated and the kinds of inquiries students were making were examined for the ways in which the process of inquiry was being fostered and maintained. Four key stages can be discerned from the information processing inquiry models available and these stages are listed in Figure 1 below.

Figure 1: Shows the four stages of inquiry identified in the CORE reports and the extent to which each of these stages are fostered in *StudyIt* and *AnyQuestions*



The majority of users in both *StudyIt* and *AnyQuestions* were clearly using the services at stage 2 of the inquiry process that is for investigating, finding out and researching. This is quite marked for the *AnyQuestions* service where 67% of students were asking for answers to preset questions providing a strong argument for locating the use of *AnyQuestions* in the context of the ongoing programme of learning within school. Frequently *AnyQuestions* operators could be observed taking students back to the initial phase of the inquiry process and helping students to clarify and redirect their inquiries. The majority of *StudyIt* students were also initiating the process at stage 2. However Stages 1 and 3 of the inquiry process could also be identified in close to 1/5th of the transcripts in each case.

For these services to have an impact on learning, users must find them a reasonably essential tool for their inquiry or study, so much so that they will readily return to use the service as a first-port-of-call for help. Sustained and reasonably frequent interactions on a particular topic or problem also need to be observable in order to assume that some form of co-constructed and deeper level learning is taking place. While there is evidence that a distinct and sustained, although also undoubtedly a fairly fluid, learning community has formed around *StudyIt* this is not possible to establish that this is the case for either of the other services where revisiting appears to be more infrequent in nature. In the case of *StudyIt* 61% of interactions by students were return visits to the discussion. Although some evidence of co-constructing knowledge is evident in the *AnyQuestions* transcripts the probing, guiding, negotiating and redirecting of student thinking

invariably happens within the space of a single event and is not normally a learning activity sustained over time and subject to reflection, alternative perspectives and changing ideas.

Expanding access to knowledgeable experts in ways that better utilises the technology and broadens the reach of some traditional services for students

The *AnyQuestions* and *Studyit* services makes it possible for students to ask for study assistance from a much wider field of expertise. There are advantages to students in being able to ask a reference librarian or subject specialist teachers for assistance in how to get started on an inquiry and is part of the traditional role of librarians which has not always been accessible to students. Coogan (2006 p.26) mentions the existence of research evidence indicating that ‘Ask a Librarian’ services generally are likely to be reaching audiences that would not normally engage with traditional libraries.

An important role of the *AnyQuestions* operators is not to simply provide a quick answer but also to assist students by providing guidance on constructing an inquiry and sourcing resources relevant to that inquiry. The NNR report (2006a) indicated good levels of user satisfaction with *AnyQuestions*, as have overseas evaluation reports on similar services, (Coogan, 2006, p 26), with just over one third of students (36%) finding *AnyQuestions* more valuable for school use than any other website and just under a third of students (30%) finding *AnyQuestions* equally as valuable as any other website they used. The NNR report also found that those students who reported having learned information literacy skills within the context of their inquiry were happier with the outcome of their visit than those who simply found answers to their questions (2006a, p. 45).

Studyit students could be observed exploring the nature of different perspectives provided by experts in the form of feedback on English essays, and alternative approaches to solving a problem in Mathematics or Physics. Students were also observed checking the coverage of topics within a subject with other students from different schools. *Studyit* was also of considerable support to students who did not have strong subject support within their school. For example, one of the teacher mentors in *Studyit* commented that the service was a godsend for students who have teachers newly arrived to New Zealand and who do not know NCEA. Many students could be observed checking their curriculum coverage with other students. *Studyit* offers other viewpoints and another alternatives.

Greater support for students’ home based learning

Each of the sites allows for an expansion of services that have traditionally been restricted to schools or libraries into different areas of young people’s lives. All of the services provided considerable support for students in crossing the divide between supporting students both at school and with independent study at home. An advantage area of internet support for students is that time when students are working on homework tasks and they realise they don’t know where to begin, or don’t understand some aspect of the task set.

Any Questions operators are able via the *AnyQuestions* service to support students and teachers in classrooms, as well as students at home. Students without easy access to public libraries can also access this resource. Interaction with an expert on *AnyQuestions* is synchronous so the site is open for specific operating hours, 1 – 6pm Monday to Friday only, implying the service was designed to be used by students in the

classroom as well as at home. The hours of operation were not generally seen as ideal, and were considered by operators to be a constraint on the effectiveness of the service. Operators in *AnyQuestions* felt the service could be extended to be available for longer period in the evenings to cover homework hours for students. Considering the value of the service for out of school support (73% of students used *AnyQuestions* for the express purpose of getting an answer to a homework question or a project (NNR 2006a, p.39), and 70% of students used the service from home compared to 30% for all other locations combined (NNR 2006a, p.29)) this seems to be a reasonable recommendation.

Table 4: Overviews the locations student respondents indicated that had used computers to access each of the services.(From NNR reports and presentations)

Service	Percentage of students using service from home	Percentage of students using service from classroom, computer lab or school library	Percentage of students using service from other locations such as public library etc
Studyit (n=365)	88%	46.7%	8.8%
AnyQuestions (n=157)	70%	23%	7%
WickED (n=146)	47%	70%	18%

Studyit has a particularly high level of home usage. Eighty-eight percent of students use *Studyit* from home although nearly a quarter of students had also used the site from their school library and just over 1 in 5 had used it from their classroom (Nielsen 2006c p.32). The instructional design of the site is orientated to serve the personal and independent study needs students and the site succeeds well in this respect. *Studyit* is available 24 hours a day, seven days a week, and there is a commitment by mentor teachers to respond within 24 hours, so that students can ask for just-in-time help at any time. Teacher-mentors indicated the highest-use-times for posting questions were from after school to 10.30pm and before school in the mornings. The site bridges the gap in supporting study from home with expert help well. When older teens, involved in their homework, and who as one student said ‘hit a rock,’ can and do receive a rapid response to their problem (CORE Report, 2007b). They often have it sorted before the next day’s school lesson. Many students commented that the service helped them ‘keep up’ with their schoolwork and not fall behind. (CORE Report, 2007b).

WickED, tended to have a higher level of in-school usage than did either *Studyit* or *AnyQuestions*. *WickED* was used in school classrooms, computer laboratories or the school library by 70% and at home by 47% of students (NNR 2006c, p.31). It is not clear exactly how students were using *WickED* to help them at home

with their studies as the majority of students interviewed and surveyed were first time users and few students using the site could be found to interview.

Opportunities for student learning are bounded by the stated learning objectives of each site and the contexts within which they operate

The potential impacts on student learning varies greatly from service to service, and from context to context in which it is used. Not all services provide for learning opportunities across all domains – that is cognitive, social and affective. Student use of the sites indicates considerable variability in practice and very different outcomes for very different groups of learners.

AnyQuestions: As already stated the primary purpose of the assisted approach in *AnyQuestions* is not to simply provide a quick answer but to provide guidance for students on constructing an inquiry and sourcing resources relevant to that inquiry. Conversely for 70% of students (NNR 2006a) their goal is precisely to get a quick answer for a homework question or a project. Only 5% of students indicated they had practiced using *AnyQuestions* as a class lesson. The NNR report (2006a) mentions that few students (5%) appear to be being introduced to the concept of *AnyQuestions* as an ‘interactive’ environment so that many students appear to be missing the point of the site. It could be observed from the CORE analysis of transcripts that many students (57%), wanting a quick answer to an inquiry, were asking closed and quite tight questions which operators (in 34% of cases) often found difficult to open out and to guide the inquiry more extensively. Also the operators were experiencing both time pressures from students queuing for help, and pressures resulting from technical difficulties, that meant a straightforward answer to the question was often all that could be achieved.

There was limited evidence of complex thinking observed from the CORE analysis of the *AnyQuestions* transcripts when the attributes of the thinking key competency were applied to the students’ questions (2007a, p.12). Questions from homework sheets featured regularly and many of the questions were of a very basic, closed question type requiring only a simple factual answer and that students often revealed through the transcripts that they had little understanding of the context or the intent of the question and as a result appealed to operators to assist. The CORE research team considered that the level of ownership of student questions was a key factor that determined how extensively students were prepared to ‘dig-down’ with their thinking and learning.

The stated learning purpose of *AnyQuestions*, that is to provide guidance for students on constructing an inquiry and sourcing resources relevant to that inquiry, appears to be being achieved for a good proportion of the students involved. A range of reasons for using the site were indicated in the NNR report (2006a p. 40) by students and these included, getting stuck while searching the internet and needing help, wanting to know more about something, getting ideas for homework or projects, curiosity about the site, and because the teachers told them to go to the site to find the answer. Finding a resolution to queries was the most common learning outcome cited by 59% of survey respondents who said they found direct answers and by 31% of respondents who said they were given a link. While the use of information literacy skills was less commonly cited there were nevertheless a third of (33%) of respondents said they had found out about new sites and search engines, 22% said they learned how to search better by themselves and 17% who said they learned how to choose good search words. The CORE research team found that 67% or about two thirds of

interactions fitted the ‘investigating, finding out and researching’ category of the inquiry process with only a small percentage of interactions fitting the other categories of the process (2007a, p.15. See also Figure 1 on page 17 of this report). Time may be needed to help establish the culture of site use where students entering the site can expect to be guided towards a suitable answer rather than given the answer.

Coogan (2006) profiles literature sourced from overseas and locally that suggests that many students seem to lack the skills to structure their searches so that they can find useful information quickly. He points readers to an Education Review Office report from 2005 that highlights significant weaknesses evident in New Zealand primary and secondary students (p.27) which are also highlighted in both the NNR and CORE service reports as issues that are also faced by the *AnyQuestions* operators. ERO (2005) highlight particularly an emphasis on collecting facts rather than the process of information retrieval and analysis and the lack of ability by students to ask rich, challenging questions which open up learning rather than constrain it.

Studyit: Three hundred and sixty-five students users (of whom 81% were in the targeted age range of 16 – 19) think highly of *Studyit*. This perception is critical to the growth of this service. Four in every five students (79.2%) indicated they were satisfied or very satisfied with the site. It is worth noting that according to NNR (2006b, p 8) this is a strong result relative to many websites evaluated by this group across a variety of industries and audiences. The attributes of the site that contributed to high levels of student satisfaction (all with a mean score of between 4 – 4.47 on a five point likert scale) are the 24 hour, 7day a week availability of the site, the study support value students get from the discussion forums, the ability to pose questions of the teachers, the currency of the site, the relevance to NCEA assessments, ease of use of the site, and how well *Studyit* fitted with students overall study efforts. It is interesting to note that the 16 – 19 year olds also rated the ability to offer support and advice to other students and the communication tools (e.g. the forums) in this group as well. Over two thirds of the targeted 16 – 19 year old group (70.9%) found *Studyit* to be as useful, or more useful than other websites used for schoolwork (NNR p. 16).

Perceived impact of the *Studyit* service on student learning appears to be positive. Over half the students indicated the service had helped with NCEA performance which is strong evidence for a high level of alignment. Nine percent of users declared use of *Studyit* had made a big contribution to their exam results and 45% believed it had made some contribution. (NNR p.15) Interestingly postings to the forums tended to be made by ‘high achievers’ with 41% of those who posted frequently feeling that *Studyit* made a big contribution to their NCEA successes (NNR p.37).

Of the different areas of the site, more than two thirds of users (70.8%) access the subjects area which provides details about topics within a subject and clearly lists assessment criteria. Just slightly more than one in three *Studyit*-users visit and contribute to the forums with just over 14% of students being very active and posting questions and comments a lot (NNR p.37). The use of subject areas and forums offers quite different learning opportunities and different modes of learning. The structure of the forums allows students to take a variety of roles in social situations. Some of these peer interactions roles were examined in the CORE analysis of the *Studyit* transcripts (2007b) and most commonly included students providing other students with a direct answer but also redirecting students to other sources of information, probing through questioning and encouragement and affirmation - something that was more commonly expressed between students than by teachers of students (p.19). The NNR survey provides evidence that only a small percentage

of users make regular posts but that reading the posts (that is non active participation) can be just as satisfying and valuable (2006b, p.42).

The CORE service report (2007b) examined the depth and quality of learning occurring in the forums basing the analysis using the SOLO taxonomy. Two levels emerge from the analysis; the first identifies learning outcomes observed at a more surface level and the second identifies learning that could be observed at a deeper level. Some 58% of analysed transcripts had observed learning occurring at a surface level and 42% of learning observed could be identified as occurring at a deeper level. The overall quality of interactions on the *Studyit* website can be seen to be generally very high and is consistent with the initial expectations of many for a guided answer.

The site encourages students to explore at their own pace with no specific direction provided for 'expected activities to be performed on the site. Students manage their own time and activities on the site and many obviously have considerable ownership of, and longer-term commitment to contributing and participating in site activity structures.

It is difficult to compare the value of the *Studyit* site in terms of learning for the target group with any other existing examples. Coogan (2006) acknowledges that external research about websites set up to support students in high stakes assessment appeared to be almost non existent. In fact it seems that far fewer of these services appear to exist than one would imagine³.

WickED: According to the NNR service report (2006c), the impact of *WickED* on student learning was positive. While the site was predominantly reaching children who felt they are doing well in most things at school, those faring less well at school also felt they are gaining something from the site, especially with aspects of the site that were more entertaining or for amusement, help with school work, help working with other students and being able to work on the site independently (NNR 2006c p.21). Students' mean-ratings of their satisfaction levels for a range of the learning aspects of the site listed above ranged between 3.8 and 3.3 on a five-point Likert scale. Because no archived interaction exists where learning outcomes can be observed and analysed and so few longer-term users of the *WickED* site could be located for interviews it is quite unclear from the qualitative data exactly what overall impact students felt *WickED* had on learning. It was clear that interaction was important to the targeted age group (who suggested higher levels of interaction in such areas as the science stuff area for example) as was the high level of visual material available rather than text material that required reading.

It is interesting that Coogan (2006) notes in his review of younger childrens' educational sites that there are few equivalent websites to *WickED* that could be located or identified elsewhere. One that was reviewed, Scotland's Gridclub, indicated that the service provided assets and interactive learning opportunities that might not otherwise be available for the age group. *WickED* is well positioned to establish and develop greater opportunity for peer interaction and more personalised student control of resources which may help to better position the service as an essential educational asset with a difference for young people. In the

³ Coogan, (2006) in the literature search and review accompanying this suite of research reports lists only three such high stakes assessment support sites. (p.22).

meantime interviewed teachers indicated they tended to bypass *WickED* and use the search engines to find classroom materials and students tended to visit once or a few times and not return.

What is the nature and extent of the comparative advantage of these services? i.e. in what respects are the impacts of these services unique to or more likely in these environments?

What is difficult to ascertain from the data gathered by the research reports into each service is the extent to which use is being made of these resources across the whole of the possible target group. Because these services are emergent in nature it is likely that in each case the user base is quite small when compared to the number of potential users of each service.

However, when taking a closer look into the user groups for each of the services it is evident that there are a number of advantages being offered that are unique to or more likely in these online worlds although this is clearly different for each of the services and variable across the services.

Characteristics that are unique to these particular online services include,

1. The most obviously unique of these characteristics is the extension of teaching and reference services through a form of 'extended physical presence' into the home or private-study realm of student's lives. This is particularly evident in *StudyIt* and in *AnyQuestions* where these services indicated extensive use from home and provided help for when students faced some barrier 'or rock' that stalls progress for them. *Studyit* students commented that *Studyit* helped them keep up with their schoolwork so that they did not feel they were getting behind. Traditional boundaries to what is possible for learners are being explored and negotiated within these services.
2. Unique to these environments also is the extent and nature of the individualised and personalised problem-based interactions that are occurring. This is particularly evident in both the *Studyit* and in *AnyQuestions* services which both provide a social presence in the form of expert reference librarians or subject specialist teachers who are available to interact with students. In the interactions with an expert all inquiries are student initiated and represent the personal learning concerns of the student. Experts are facilitators and generally try to offer guidance for individuals to construct better inquiries or think alternatively or more deeply about the problem the student has presented. The majority of problems are being solved or resolved in some way. This has a 78% success rate in *Studyit* and a 65% success rate in *AnyQuestions* (The lower success rate for resolution *AnyQuestions* appears to be due to time constraints and technical difficulties). It is difficult to compare the extent of question asking online by students with that which may happen in the classroom. It is possible that many of the questions asked in these online environments may remain as 'unmasked wonderings' by many students in busier, noisier and more generally complex face-to-face settings. One student in the *Studyit* context mentioned that when s/he had a problem s/he would ask a teacher but it was usually the *Studyit* mentor.

3. Unique, particularly to *Studyit*, and *AnyQuestions* is the anonymity maintained by the students approaching the expert for help. In *Studyit* anonymity is maintained by the use of nom de plumes, as are other teen help and support sites elsewhere. The site is open to public access (access requires only an automated registration) so the use of aliases is primarily for protection of individuals from disclosure and identification in the archived forums. Other effects of the use of aliases, and reduced importance of physical appearance and how they may impact on social identity, social interaction, relationship formation and learning outcomes within these environments, was not explored with students during the interview process. However it appears that the use of aliases may support higher levels of interaction where students feel they can ask that ‘silly’ question or open students up to critical analysis from peers when they post that full text version of their essay for critique and feedback. This aspect of both the *AnyQuestions* site and *Studyit* would be worth further investigation and is an aspect of the *WickED* site that needs further development.
4. A further unique impact on learning relating particularly to these services but was the generally greater control students could maintain over the time and pace of the interactions. In some *AnyQuestions* transcripts students could be seen to be abruptly terminating interactions when they could quite see where they were going or couldn’t keep up. In *Studyit* questions could terminate at any time in the process. Students often did this by a simple ‘thanks’ note. The need for students to have to write down their problem to put in front of an expert also allows for quite a unique process of thinking through and clarifying the problem that students do not have in face-to-face situations.
5. A unique feature of all these services is their very ‘New Zealandness’ and their distinct relationships with New Zealand ways, means and values. NCEA is a assessment system unique to this country. *AnyQuestions* involves trained librarians and subject specialist teachers in working with and recommending resources with strongly New Zealand themes and values to largely young New Zealand students. Although *WickED* relies on borrowed resources the service also provides some uniquely New Zealand interactives.
6. The nature and extent of the comparative advantages of *WickED* are not as evident as with the other services reviewed. Many of the features of *WickED* are replicated in good online interactive sites elsewhere.

Summary of impacts on diverse learners

The potential impacts of these services will vary according to the service and the user group making the most of the service. User group involvement appears to vary according to age, sex, ability and even to some extent decile grouping. Table 5 below provides an overview of the services and their varying impacts on learners

Scope	AnyQuestions	Studyit	Wicked
Purpose	Extend existing public work of reference librarians to help with inquiries to a wider section of the student community	Provide help for students in high stakes assessment - NCEA	To offer engaging, quality controlled, multicultural learning activities and interactives for students.
Age level	All age groups of students aged 7 – 20+	Secondary school students in particular senior secondary students aged 16 – 18 years	Primary school students aged 7 – 12 years
Availability of services	Site databases - 24 hours a day for 7 days a week. Librarian services 4 hours a day for 5 days a week	24 hours a day for 7 days a week.	24 hours a day for 7 days a week.
Alignment with essential learning areas (ELAs).	All ELAs and cross curricula topics with % usage, <ul style="list-style-type: none"> • social studies (46%) • science (40%) • English (28%) • technology (15%) • maths (15%) • health & PE (12%) • arts(11%) 	NCEA level ELAs with % usage, <ul style="list-style-type: none"> • mathematics (76.8%), • English (53.1%) • biology (42.7%) • chemistry (41.9%) • science (34.9%) • physics (33.1%) • other subjects (totalled = 6.8%) 	All ELAs and cross curricula topics.(Blurring of subject boundaries makes usage difficult to determine with accuracy) <ul style="list-style-type: none"> • mathematics, • science, • social studies, • language, • te reo Maori, • Pasifika, • cross-curricula topics.
Who and what students can interact with	<ul style="list-style-type: none"> • Experts • Site content 	<ul style="list-style-type: none"> • Experts • Other students • Site content 	<ul style="list-style-type: none"> • Site content
How communication is mediated	Synchronous interaction through text-based chat facility	Asynchronous communication through text-based forums	Asynchronous communication through text-based forums is available but very limited use.
Responses can be found from	<ul style="list-style-type: none"> • From reference librarians • Subject specialist teachers • Search of FAQ database. 	<ul style="list-style-type: none"> • From interactions with teachers • From interactions with other students • Site content 	<ul style="list-style-type: none"> • Site content (Interactives including games and quizzes)
Sustaining activity on the site	Satisfaction aimed for in a single visit Some evidence of repeat callers but for a different inquiry	Regular revisiting Ongoing dialogue leading to sustained involvement	High level of first time visitors. Some evidence of repeat visits to familiar sites
Domains where learning is evident	<ul style="list-style-type: none"> • Cognitive • Social 	<ul style="list-style-type: none"> • Cognitive • Social • Affective 	<ul style="list-style-type: none"> • Cognitive

Particular impacts are more apparent for certain users. These services appeared to be used largely by students who overall felt confident about their schoolwork and who are motivated to seek out and expand their personal knowledge. Inquiry would be a fundamental learning disposition of active users of these sites. These services can not be expected to provide for students who do not have a disposition to independent learning. Particular subject areas appear to draw more students and these tend to include mathematics, science and English or language although this did depend on the type of service being offered. For example the approach of *AnyQuestions* towards answering students inquiries using an information processing approach meant that mathematics questions were not so commonly asked of *AnyQuestions* operators.

Due to the individualised nature of learning in online environments it is difficult to identify specific practices or conditions that are likely to impact on all users. These services were catering for niche groups of learners rather than all learners. For example, the inclusion of te reo Maori and Pasifika resources in WickED were encouraging use by young Maori and Pasifika students.

It is important for services to provide a diversity of ways of accessing the information needed to cater for the different ways different students access their learning. Most services appear to cater for diversity within the targeted student group by offering a range of differing approaches to accessing information and resources. *AnyQuestions* offers a chat function as well as a searchable database for queries, and a FAQ database where students who prefer can undertake independent searches. All services offered information resources (as opposed to interactive or communication options) where students could search or browse for information. The NNR reports for both *AnyQuestions* and *Studyit* revealed that the information resources were widely and deeply accessed. For example in *Studyit* almost twice as many students accessed the onsite information about 'Subjects' than viewed the discussion groups or forums. While 74% of *AnyQuestions* users had used the online chat facility, 24% had used 'Do It Yourself' answers and a further 24% had used the Search FAQs function.

However just how diverse the user groups are for these services is a little uncertain. The NNR reports attempted to cover diversity of the service user groups by looking at school decile. Numbers of student-respondents from lower decile schools were lower than for mid and higher decile schools but satisfaction levels in *Studyit* and *WickED* were quite similar for students from diverse economic segments of society. Interestingly NNR survey respondents were asked about barriers to use of the services and a common barrier raised was limited access to both computers and internet connection speeds at home and at school (NNR 2006a, p72; NNR 2006b, p.69; NNR, 2006c, p.66). Services requiring broadband as an ideal connection speed such as *AnyQuestions* means that for many home users uninterrupted access via the co browsing function is difficult. Broadband access remains limited in New Zealand. (In 2005 only 33% of all people 10 and over with internet access at home were using broadband connections (NNR 2006a, p.29)

Close alignment to the aims and objectives of the New Zealand curriculum is evident in all three services especially with providing resources for the essential learning areas and in many of the essential skills areas. Strong linkages with school and teacher demands were evident particularly in *AnyQuestions* and *Studyit* where students could be observed asking quite targeted answers relating to the immediate need to complete set homework questions.

Examples of learning were evident across social, cognitive and affective domains although this varies considerably between services with evidence of all three domains being touched by the interaction observed in *Studyit*. There is also an impact on the type of learning that students can enjoy on these sites. Students can exert more control over the rate and pace of interactions with experts. They can experience just in time and more individualised and personalised learning. The extent of the reach of these services into aspects of student's lives that have never been possible previously are features of the most used and most valued of these services.

Impacts are also evident on operators and teacher mentors who are moderating these sites. However it is clear these impacts are variable, are limited to specific services and cannot be readily generalised across services. Highly effective teaching practices can be observed in *Studyit* especially where co construction of knowledge is happening within the affinity group. While breadth and depth of knowledge building is not so evident in *AnyQuestions* as with *Studyit* there are still a wide range of effective teaching practices happening in this service.

Alignment of services

How do these services align with the New Zealand Curriculum and effective teaching?

Essential learning areas: Some of the essential learning areas of the New Zealand curriculum provide the organisational contexts within which both *Studyit* and *WickED* operate. *Studyit* provides information and interactive forums for NCEA sciences (biology, chemistry and physics) as well as mathematics and English. In *WickED* resources are organised under key areas of science, English, and mathematics.

The *AnyQuestions* service operates under a quite different organisational context - a virtual library. Once students enter the website and log in they can virtually approach their librarian or subject specialist teacher (within operating hours!) as they would in a face-to-face situation. The analysed transcripts revealed that there is a heavy emphasis on questions relating to essential learning areas. A total 94% of all transcripts related to the essential learning areas of the New Zealand curriculum suggesting a strong link with in-school work. There was a particular emphasis on social studies and science as well as technology and language/s. (CORE, 2006a).

Essential skills: One of the important links these services maintain to the curriculum is with the essential skills. Transcript analysis of the student and operator interactions on *AnyQuestions* clearly indicated students using and developing communication, information, problem solving and social skills. Operators could be clearly identified providing guidance to students in these same skill areas.

Transcript analysis of interactions in *Studyit* indicated students were using a very wide set of essential skills including communicating their written queries, showing the full range of numeracy skills in the mathematics and physics areas of the forums, solving problems, and applying self management skills. Also strongly evident in transcripts were illustrations where students were developing understandings about and applying work and study skills and also social and co-operative skills. In fact the level of social skill development in *Studyit* and maturity displayed by these older teen students is of considerable interest.

While illustrations of student use of, and teacher and operator guidance of students in various essential skills areas were made explicit in *AnyQuestions* and *Studyit* these were much less obvious in *WickED*. If students are developing essential skills from their interactions with *WickED* themes, interactives and other support areas, these were not visible to, or observable by, the researchers. (CORE 2007c)

Effective teaching: Effective teaching practices were observed in both the *AnyQuestions* and the *Studyit* services.

The explicit intention of the *AnyQuestions* service is educative, that is to assist students to construct an inquiry and to guide them through the process of locating appropriate answers to their questions using a variety of search methods. The rationale behind using the interactive screen sharing software is so that students can be visually guided through an effective search strategy by an expert, rather than simply be given the answer. The librarians could be seen to be helping students sort out through a process of clarifying and negotiation what information they required and then begin searching alongside the students. Librarians were

able to talk through with students the process of interpreting homework questions, and choosing search directions, and by using co-browsing, show students how to choose and use good key words, use different search engines, and how to gather and sort suitable information from suitable internet sites, a process that many students do not find easy (Coogan, 2006, p. 27). The NNR report (p.45) shows the level of student satisfaction with learning specific information literacy skills from the *AnyQuestions* operators with 89% of students happy they had learned how to use good search words, 86% happy they had learned how to better search for information independently, and 82% happy because they had found out about new sites, search engines and other sources of information. An analysis of the transcripts in the CORE report shows that 67% of interactions with *AnyQuestions* librarians involved students in the second stage investigating, finding out, and researching phase of the inquiry process. (CORE, 2006c p.15). Librarians could be seen supporting students in a just in time role, helping with immediate student learning goals and guiding students and supporting in ways that could provide transfer of learning into other contents or situations.

Studyit also invites student inquiries relating to the specific essential learning areas, science, mathematics and English, and specifically for senior secondary NCEA students. Teacher mentors on the site could also be seen to be supporting students through the inquiry process. What is immediately observable and notable about *Studyit* is the level and depth of discourse in the forum areas. *Studyit* transcripts analysed using SOLO taxonomy as a measure (CORE, 2007b) found that as many as forty-two percent of interactions were occurring at deeper levels of cognitive operation.

Teacher mentors were aware of different pedagogical approaches being applied in *Studyit* and several mentioned that approaches were completely different from those used in the classroom. They enjoyed working with students in co-constructing knowledge where they could concentrate on knowledge building rather than issues of management; and support and improve the quality of collaborative thinking for students through both explicit pedagogical processes (that is the way interactions in the forums are structured and encouraged) and through setting tasks for students to try. Effective teaching could be observed in the forums with examples of reciprocal teaching, cooperation, negotiation, hints, feedback and prompting for questions and elaborations.

Effective teaching through task setting could also be observed with setting instructions, suggestion of domain specific formats of task representation particularly evident in many of the mathematics and physics problem transcripts, re-tailoring tasks so that students can co-perform them in slightly different ways, and modelling of strategies that scaffolded student's domain knowledge construction, as well as developing understanding and acquiring skills.

Effective teaching practices of the sort where students could interact with experts, moderators or peers were not visible in *WickED*. Moderated forum spaces existed, but talk or chat on the site was very limited. Only 3% of students aged 7-10 and 8% of students aged 11-12 had talked or chatted with other students. Only 5% of students had 'published' schoolwork to the *WickED* site. (NNR, 2006c, p. 35). The nature of interaction on the *WickED* site is different to both *AnyQuestions* and *Studyit*. Interaction occurs between the student and the resources, some of which are static and others that are manipulable and include multiple-pathway-interactives and mini-games. These tend to be interactives that are playable within a short timeframe and are good for providing motivation to practice particular focussed skills or they treat only one subject for example

the Hangi interactive, in a small way. (Prensky 2005, CORE 2007c). Nevertheless there is a rapidly growing body of literature available on the impact on learning and the effectiveness of games for teaching a range of skills and knowledge and improving attitudes towards learning especially for those of the student body who are not being reached by traditional methods of instruction. (Metiri Group 2005 in Coogan, 2006).

Challenges and opportunities for alignment with curriculum and effective teaching?

A number of challenges and opportunities exist for each of these services to improve alignment with curriculum and effective teaching practices although these vary from service to service. For each of these services there is considerable value in making strong links with classroom programmes, for schools and classrooms undoubtedly provide the larger context within which these services operate.

The positioning of the *AnyQuestions* service within the educative process is an important one given that from the student perspective the internet is now the most important learning resource they use both at school and at home. The use of search engines by 95% of students as their primary online method of sourcing information (NNR, 2006a, makes *AnyQuestions* role in helping students make best use of search tools, better understand search methods and their own searching techniques, as well as introducing resources to students which may not have been optimized for search, quite a critical one.

A key challenge is the modelling (or lack of) effective teaching in schools, which tends to focus on the right answer, as opposed to using an appropriate process that will allow students to independently find an answer. This creates patterns of behaviour and expectation out of school that were frequently observed in the *AnyQuestions* transcripts. It may also account for the sites appeal to those who feel confident about their schoolwork and are self aware enough to use the service.

AnyQuestions aligns well with current essential learning areas and essential skills given the information literacy based purpose, and the learner centred nature of the service. The greater number of inquiries for help by students (73%) related directly to their schoolwork and predominantly to the social studies, science, and English essential learning areas (NNR 2006a, p.38 & 39). However one of the challenges facing the *AnyQuestions* service appeared to be a lack of awareness by many students, teachers and other adults (parents) that the primary function of the service was assist students to construct better inquiries and to develop and improve information literacy skills within the context of their own personal inquiries. 71% of teachers and 80% of other adult respondents in the NNR survey positioned *AnyQuestions* as primarily a study/assignment help desk and only half the adults in both groups positioned the service as one for improving students overall skills in information literacy. Students too appeared to want to receive a direct answer to their question and this was noticed by both the NNR and CORE researchers. The NNR report on *AnyQuestions* noted that it seemed to take students several visits before they understood the purpose of the librarian support.

While effective teaching practices are evident within the *AnyQuestions* operation the support that can be given enhance effective inquiry-based teaching practices beyond the service is also considerable. A further suggestion is to better position the service as a support service for teachers and students who are undertaking

inquiry-based teaching and learning approaches within their classrooms. The role of the service in supporting students with the investigating, finding out and researching stage of the inquiry process was evident in both the NNR (p.42) and CORE (p.15) reports and for many teachers could become an integral pedagogical support and resource for their classroom inquiry models.

In *Studyit*, opportunities exist for improving curriculum alignment perhaps by gradually extending the essential learning areas that are offered by this service, as only the sciences, mathematics and English are currently offered. The challenges in broadening the number of essential learning areas however involve careful consideration of a number of factors. The first of these would involve understanding the intricacies of practice that is occurring on the site and care that the ways specific domain task structures are handled are safe-guarded. The second is in maintaining the carefully established community of practice and sub communities that exist around the service. The student users appear to have identified with the processes and practices that exist on the site. The site developers have already extended and established the English NCEA area with apparent success. NNR report (2006b) indicated that the English area is the second most popular area after mathematics but that students were more likely to engage in the maths and science forums. Any extension with intent to align more closely with a broader range of essential learning areas may need to be established with care and community of practice built slowly based on the successes of the service to date.

Further opportunities exist for the *Studyit* service to extend its reach by increasing awareness of the existence of the service to teachers and encourage teachers to recommend the service to their students. Teachers are the primary recommenders of the service to their students and there is much to gain by having teachers introduce the functions and intentions of the service to students at school.

Connections and alignment to curriculum for students in *WickED* are tenuous. Much less use of the resource is made from home compared to school use that is classrooms, computer labs, or school libraries. Identifying how it is being used to support teaching was difficult because of the limited data available but the site does appear to be one where teachers choose resources or interactives that support curriculum and then refer students to play with them. Although the *WickED* service provides engaging interactive resources that would cover topics within most of the essential learning areas what students gain from the service in the way essential skills is more difficult to ascertain from the research. The NNR report (2006c) suggests the games and quizzes which are popular with younger users provide opportunities for young students to develop thinking skills and that other areas of content such as Topic (previously 'Themes') can provide students with resources to support their efforts to explore ideas independently, to discover meaning in ideas and to explore below the surface of ideas.

There are several challenges that exist for the *WickED* service within the area of resource provision.

1. Aside from the 'Interactive Games' and the 'Maths Stuff' very little use is made of most other areas of the site (NNR 2006c, p39).
2. There is a noticeable lack of longer-term use of the site by students and teachers.

Opportunities exist for the *WickED* service to extend young peoples' interest in a greater range of curricular topics and skills by considering a variety of options that will lead to an expansion of the sophistication of the gaming platforms (NNR 2006c, p.39: CORE 2007c p.18). While the current 'mini games' and interactives have a place as motivational aids to assist in the practice of skills they also do not lead learners to the deeper learning, creative thinking, collaboration or the challenging interactions of more complex games. The establishment of more complex, educationally-based interactives could include multiplayer games, interclass or regionally-based team games, and problem-based projects and competitions that would also encourage greater communication with peers on the site in order to establish a core group that is committed to the service and will stay for the longer term.

The interactives are listed as links under a general heading such as language games and are presented much like online versions of the commercial software packages of the past. Similarly to the previously available commercial softwares, *WickED* service relies heavily on classroom teachers to establish curriculum connections and to contextualise the resources available to ensure curriculum alignment.

How are these services aligning with the practices of schools and other providers, and what are the challenges and opportunities for alignment?

These services generally appear to be aligning well with the practices of schools although this is occurring in different ways and to varying extents depending on goals and purposes and targeted user groups. These services are not intended to replace what is happening in schools but rather to support and contribute to student learning by supplementing, supporting, reinforcing, and developing further student skills and knowledge. It is also clear that impacts of the services appear to be greater where the link between classroom and online service is explicitly made by teachers for students both in and out of school.

Several aspects of alignment are considered here. These include integration into class practice, and alignment to school practices by adding educational value to independent work and homework.

Alignment with class practice: *AnyQuestions* appears to be well aligned to classroom practice and in some cases was observed to be well incorporated into the classroom activity structures particularly by some teachers who are involved in teaching using an inquiry approach. The service is well positioned to provide a valuable service for students and for teachers by promoting good learning behaviours and complementing and supporting class work in assisting to construct better student inquiries and modelling the locating and evaluating of information from a wide range of online sources that are often new to students. The *AnyQuestions* librarians have access to a wider range of safe resources and databases than teachers may have been able to sort and organise for their inquiry units. *AnyQuestions* is available during afternoon school hours. Nearly one third (31%) of students in the NNR (2006a) report indicated that they had used the service from their classroom during school time at some stage and use of *AnyQuestions* in the school library during school time was indicated by 14% of students. Small numbers of students in the NNR report (2006a) also indicated they were using the *AnyQuestions* site from their school classroom and library during lunchtimes and after school. There is considerable opportunity for the *AnyQuestions* service to expand its availability for schools and teachers that is currently constrained only by the resources available to staff it.

Studyit is a service that does not focus on integration into classroom practice but rather on support and reinforcement of learning for students that has been initiated in the classroom. Where there is evidence of a particularly close fit is from the students who state that the service helps them to ‘keep up’ with their schoolwork better, and if they are stuck they will ask a teacher but it is usually a *Studyit* mentor. Teachers play an important role as recommenders of the site to students and there is a role for teachers in introducing the site and how it can be used to support student independent study. Some teachers had introduced students to *Studyit* in their timetabled computer lab time.

The *WickED* service was originally designed to provide online activity support for teachers and students in the four ‘Digitally Boosted After School Support Centres’ established in 2001 as a part of the DigiOps⁴ programme. Themes and interactives were designed to be used as fun, standalone activities for students and also to be used by teachers with their students although the extent of serious use of these areas within the classroom activity structure was difficult to ascertain. Limited data suggests that they were popular with students, and this may have led to a tendency to use the interactives as time-fillers for early finishers or for rewards for students. Several teachers found it hard to find ways of using the content in their teaching even after they had attended workshops specifically designed to introduce the resource to them.

Both teachers and students found locating specific resources on *WickED* difficult. Several indicated a preference to find what they wanted using a search engine to target specific information over a much broader base than that offered by *WickED*. Some teachers felt constrained by the limited extent of resources and links on a topic and felt that a broader range of links to resources on a topic needed to be made. Several teachers indicated they had difficulty incorporating the website content into their inquiry units. Some teachers indicated that they would like to have prior information about planned themes and programmes being developed so that they could prepare to include new *WickED* themes. Some teachers were encouraging their students to make use of *WickED*. Nearly one third of 11 – 12 year old students indicated they used *WickED* because their teacher had told them to, although this was much lower for other age groups. Nearly a quarter of 13+ aged students used *WickED* to help them answer school questions although again this was much lower for other age groups. (NNR 2006c p.35)

A major challenge for the *WickED* service is the question of ownership of content, that is who decides what that content is and how it is presented. Teachers felt the need to have the content more closely aligned to what they were doing in classrooms and have better connections with the developers to effect that. Teachers also saw the need to better tie resources to curriculum levels and essential learning areas within the site. It is interesting that students also desired greater ownership over, and creation and control of content and presentation.

Alignment to school practices by adding value to independent study and home work: All three sites offer alignment to school practices by offering support for students studying independently.

⁴ <http://www.digiops.org.nz/projects/pastprojects/index.html>

For students using *AnyQuestions* the service is the same whether it is accessed as part of their classroom activities or utilised as a support service for student's independent study. All interaction with a reference librarian is user driven and utilises a problem-based approach. Both aspects are strong motivators for use. Seventy percent of students indicated they accessed the service most frequently from home and their predominant use of the site was to source answers to homework questions (73%). Thirty percent of users also indicated they used the service to get ideas for a homework question or project (NNR 2006a). What is worth noting is this service is offered to the public in general and that students form only two thirds of the user base.

Studyit is primarily intended as a support service for independent use, supporting NCEA students in personal study. As with *AnyQuestions* all interaction is user driven and for the greater part utilises a problem-based approach. On a 5 point Likert scale measuring levels of students satisfaction with aspects of *Studyit*, the relevance of subject information to what students do at schools was rated as 'satisfied' (mean score 3.99) along with relevance of information to NCEA assessments (mean score 4.09) and how well *Studyit* fits with personal study efforts (mean score 4.00). There were high levels of home use of *Studyit* with 88% of students having accessed the service from home this was largely after school and in the weekends.

WickED is also providing support for younger students with independent study. On a 5 point Likert scale that measured levels of student satisfaction with aspects of *WickED*, students rated being able to work independently as between neutral and satisfied, (mean score 3.76), along with help to improve learning (mean score 3.46), and help with schoolwork (mean score 3.41). A large number of 7 – 12 year old users (87.1%) indicated they had accessed *WickED* from home. Unlike *AnyQuestions* and *Studyit* the interactions on the site are not user driven and are not problem based. Motivations for use of the service are for fun, and enjoyment of existing school-related activities. These motivations may not be a pressing as seeking help for problems and finding solutions that may be more encouraging of site revisitation and reuse.

Challenges and opportunities for alignment of these services with the practices of schools and other providers

An opportunity provided by each of these services is the ability to connect students to other providers beyond teachers and schools; a sense that online services can offer effective education outside the classroom and by other professional groups. With *AnyQuestions* there's a strong intention to advance the position of libraries as key resources to support student learning. With each of the other services - *Studyit* and *WickED* a third party is attempting to provide educational support for schools that is widening the educative experience of students.

A challenge for all three services is to increase awareness of teachers about the supporting role these services can provide students when they are working independently and in need of help. It is not clear to what extent any of these sites have been previously promoted to schools and individual teachers through the normal educational avenues or to students through more fun advertising approaches such as for example stickers for class and school-library computers and bookmarks and so on. In *Studyit* several mentor teachers commented that the service 'didn't seem to be out there' – that students didn't really seem to know about the service. There is also a challenge to engage more students who are less confident in *Studyit*.

A primary role for teachers is to introduce these services and recommend them to their students. While this clearly happens, teachers could quite easily incorporate *AnyQuestions* into their classroom activity structures especially where students were in the initial planning and research stages of carrying out inquiry programmes or individual projects. In the case of *AnyQuestions*, few student survey respondents reported having visited *AnyQuestions* actively as part of a school lesson (NNR 2006a). Schools could also be encouraged to be more actively involved by making links available on school intranets, use of posters, signage and stickers around library computers and encouraging more information spread to teachers.

The NNR reports indicate that a large number of respondents to their online surveys were in fact first time users. This was 29.3% of *AnyQuestions* users; 60% of respondents in *WickED*, and 30.4% of respondents in *Studyit*. (See Table 3 page 16.) Keeping these users hooked into returning to the activities available on the site is a challenge for all services.

All three services offered a range of specific services that were may need further promotion.

- In *WickED* for example only ‘interactive games’ and ‘maths stuff’ appeared to be used by students. There is relatively little use of themes indicating a need to promote use of the themes with teachers and advertising a programme of development so that teachers could plan for themes incorporation into class activities was suggested by teacher users as a way of increasing usage. The *WickED* forums found under ‘homework talk’ were also poorly supported. The challenge for *WickED* exists in accurately identifying and focussing more closely on the needs of students and teachers within the niche group of users.
- In *AnyQuestions* only ¼ of students had used either the FAQs or DIY Answers options on the site. Additional marketing of these sections to students would help to alleviate pressure on the online chat portion of the site, and would encourage more self study activities (NNR 2006a, p.33)
- In *Studyit* students appeared to be making use of a good cross section of the site functions. It is interesting that although the forums area in this service is very well patronised by users only 34% of students contributed to or browsed the forums. The value of the forums to students and the role these can play in learning needs further promotion.
- Expert teachers in *Studyit* had also encountered challenges in the process of supporting students where this appeared to conflict with information given to students by the class teacher. One expert teacher felt you really needed to know more about some aspects NCEA, than classroom teachers, at times.
- When students have the opportunity to gather ideas and resources from a large variety of sources there are challenges for classroom teachers in assessing the work as students own unless teachers can assess the process of student thinking and learning rather than the published product.
- General challenges for the alignment of these services with the practice of schools and other providers also relate to access both for students using the services at home and at school.

- For students accessing *AnyQuestions* from home, access to broadband offers more successful opportunities for co-browsing than a dialup access yet two thirds of students did not, at the time of the NNR research, have access to broadband.
 - Given the percentage of students accessing *AnyQuestions* from home (refer to Table 3, p12 earlier in this report) there may be some benefits in altering or extending the hours of operation to be more encompassing of students homework hours.
 - Access to these services can be restrictive from schools as well. In the case of *AnyQuestions* there can be waiting period to access an operator on a bust day. Students often do not have enough time in a class period available to wait for san operator and then proceed with the inquiry process.
 - Access to computers can be frustrating at school for many students and teachers who may have to book computer rooms, or who may need a data projector to share interesting online resources with their classes.
- Opportunities for the alignment of these services with the practice of schools and other providers include
 - Support for interaction between and amongst knowledgeable experts and participants while allowing for spatial and temporal independence.
 - Enabling personalised learning opportunities.
 - Provide relevant feedback for individual students based on their immediate needs.
 - Support for class programmes with topic or themes based resource (as with themes in *WickED*) as well as skills (for example setting up an inquiry, or improving speed with times tables in an interactive.

How are these services supporting the organisational objectives of the various project partners?

Services are supporting various educational objectives on behalf of supporting project partners.

AnyQuestions is a collaborative pilot project between libraries, the government and those in the information and education sectors. Staffing for the project is funded by: The National Library of New Zealand, Auckland, Christchurch, Dunedin, Manukau, North Shore, Waitakere and Wellington City Libraries, Rodney District Libraries and the Ministry of Education. Other participants include: the School Library Association of New Zealand Aotearoa (SLANZA) and Horowhenua Library Trust.

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 trained librarian. Project partners have joined forces in recognition of the need to provide a consistent and holistic approach for children across the country involving the use an agreed information literacy approach to help school students identify the information they need and help guide them through quality resources. *AnyQuestions* focuses on supporting the New Zealand curriculum, and is accessible from any Internet connected computer anywhere.

The use of skilled reference librarians in this way may have potential to broaden their reach to people in rural communities, and those in urban communities who experience difficulties in getting to a library. Although the service is advertised as a free service to New Zealand school students it is interesting that one third of the users of this site who responded to the NNR survey (2006a) are adults and that of those who indicated they are students some 12% are 16 years and older. There were even a small number of respondents under ten years of age. This is a service that is accessible to a wide range of people and interests and indicates the service is fulfilling a greater community need than for the compulsory schooling sector alone. The service strongly favours the learning needs and queries of New Zealanders and one that needs serious consideration for further building and development.

Studyit is part of the range of support services for the introduction of the New Zealand National Certificate of Educational Assessment (NCEA) by the New Zealand Ministry of Education through the Digital Opportunities initiative funding. Under the Te Kete Ipurangi (TKI) Joint Venture partnership, CWA New Media and Multi Serve Education Trust⁵ are responsible for the upkeep and updating of the site. *Studyit* was initially designed as an NCEA revision resource for Science and Mathematics students only. However, demand was such that in 2005 English was added to the site with the support of Ministry of Education Digital Opportunities funding. The service provides senior secondary students with a forum to seek help, ask questions and have work critiqued by New Zealand-registered, specialist science and maths teachers and also provides an open forum to discuss other related topics such as study techniques, sitting exams, and dealing with stress. This emerging and increasingly well used service is an effective partnership between Ministry, the TKI joint venture partnership, and students and teachers and one that needs serious consideration for further building.

WickED was started in 2003 by CWA New Media and was initially designed as a supporting website for teachers and students in the ‘Digitally Boosted After School Support Centres’ which no longer exist. The primary purpose of *WickED* has changed since the initial conception of the service so that this project is gradually ‘morphing’ into an online resource with a quite different shape. Although the service has been extended to appeal to a broader student and teacher user-base, it would appear that the original intention to provide engaging activities of a highly interactive and visual nature remains as a primary objective. *WickED* is a partnership between Ministry, and the TKI joint venture partnership.

⁵ Now known as Cognition Consulting Ltd

What are challenges and opportunities for alignment for supporting the organisational objectives of the various project partners?

Table 6 below lists the services and the supporter and partners involved in the project.

Table 6: Lists the project partners for each of the services			
Service	AnyQuestions	Studyit	WickED
Project partners	National Library and local public libraries	The TKI Joint Venture partnership, CWA New Media and Multi Serve Education Trust are responsible for the upkeep and updating of the site for the Ministry of Education.	CWA New Media for the Ministry of Education

AnyQuestions: Challenges and opportunities

Challenges

- Operational issues include the number of librarians that can simultaneously operate the system and the 2 – 6 pm operating hours of the service are limitations. A challenge for school-based use of the service can be the wait time for students to connect with an operator.
- Technological issues include the need for users to ideally have broad connectivity to maintain the smooth functionality of the synchronous interactions. The number of interrupted sessions was quite high at 64%
- The service complements each school's library by providing another channel for their students to find information. Challenges exist to encourage schools and teachers to use and publicise the service to their students as well as to raise students' awareness about planning inquiries, effective use of search engines, and search techniques for finding appropriate information.

Opportunities

- *AnyQuestions* is a traditional service provided by librarians that has been translated into a web environment with some success. It is also part of the larger commitment by national and local libraries to making national and public library collections more widely available to school aged children through the web.
- Widen the reach of national and city libraries as essential services for students and their communities who are located in areas that cannot support such services particularly suburban and rural areas.

Studyit: Challenges and opportunities

- The service complements curriculum particularly in senior sciences, mathematics and English by providing another channel for students to help with solving problems or finding out about NCEA subjects and assessment criteria. Challenges exist in encouraging schools and teachers to use and publicise the service to their students as well as to raise students' awareness about how the forums can be effectively used to support their learning.
- Challenges exist for the extension of the service into other subject areas and how the development of new services may be funded. At any one time the service has a high level of guest users that browse the site compared to the number of members that are logged in. Many students are happy to purchase paper resources that will help them especially with external assessment. Whether this is a service the remains free to users is a foreseeable challenge.

WickED: Challenges and opportunities

- A considerable challenge for this service is to aim for closer alignment so as to better meet the learning needs of young students and assist young students meet the demands placed on them by teachers and schools. Most student use of the *WickED* environment is from school, which is a different situation from either *AnyQuestions* or *Studyit*, where most student use is from home. Both *AnyQuestions* and *Studyit* have student support systems built into the instructional design of the environment so as to support students learning independently from home. *WickED* does not. It was initially designed as a activity site for the study centre environment where students were to be supported in their learning by study centre teachers. There may be challenges in better aligning wickED service for students' home use, should it be develop for this purpose.
- The service is already set up to whet the interests of younger students. However the service does not hold the interest of these young people for long and site revisiting numbers are low. A further challenge for the service to develop means of holding younger students interests and encourage return visits. There is an opportunity available in matching younger student expectations of online websites where they can personalise the site and take greater ownership of the site content while still providing quality educational content that more closely meets learning needs. Meeting the expectations held by young people of online websites which are raised by commercial sites such as Bebo and this is also both a challenge and an opportunity.
- A further challenge is the need to deepen the educative content particularly of the interactives that are available and are such a popular feature of the site. The challenge is to design or develop interactive activities that encourage multiple players or participants in task based, or problem based activities, that are closely aligned to curriculum.
- A challenge to *WickED* is the stretching of services to be inclusive of both teachers and students may be placing the service in a position where it is hard to achieve everything for everyone. Extending and providing more sophisticated services for one or other group may need to be considered.

Are there unanticipated benefits or issues arising for learners, teachers, schools, school libraries and project partners, and what are the implications for service providers and policy making?

Unanticipated benefits for learners, teachers, schools, school libraries and project partners:

Unanticipated benefits for learners:

The immediacy and relevance of the assistance that came from *AnyQuestions* and *Studyit* increased learner satisfaction. For example *Studyit* after exams discussions were observed to continue that were not about the subject listed on the forum header. The strength of the committed community sustained conversation beyond the immediate need created by exams to incorporate future study and career plans.

The emergence of student voice and evidence of leadership in *Studyit* was an unanticipated benefit for learners. *Studyit* was set up within a quite didactic view of how discussions would occur. But there is evidence there was much more co-construction of ideas emerged than was expected.

Expert teachers and students appeared to offer a considerable amount of emotional support to other students in *Studyit*.

What was unanticipated was that participation appeared to be greater for students with greater level of confidence and who were higher achievers. Less participation by lower achieving students was unexpected and requires more study to understand.

Teachers, Schools, School libraries:

For teachers in general, the benefits of these services are not being made the most of. While these services are intended to directly support students with their schoolwork and are generally not, apart from *WickED*, intended to be integrated into instructional strategies there nevertheless remains a role for these services in classroom programmes. *AnyQuestions* presents the possibility of bringing the reference librarian right into the classroom especially for teachers undertaking inquiry approaches with students and could be a valuable resource indeed for students needing help with constructing inquiries and for researching and locating appropriate information and developing the skills of inquiry. Use of *AnyQuestions* in this context appears to be limited. With expanding and greatly more flexible timetable options in the senior school where students are provided school based study periods there could be a role for *Studyit* where students are not supported by a teacher with the science and language expertise they need.

For teacher and reference librarians involved in the delivery of these services a number of benefits have become apparent.

- The *AnyQuestions* operators commented that they have developed a far better understanding of New Zealand curriculum and student needs from their work in the online environment. They felt rewarded and satisfied by their online experiences with students. There is a lot of learning by sharing between operators of useful search tips and strategies and ways of dealing with questions.
- Feedback from the *Studyit* teacher mentors indicated teachers developed a deeper appreciation and understanding about how students were thinking about NCEA requirements, as well as a better understanding of their approach to study, stresses of external examination pressures and future aspirations. They were impressed by the value of *Studyit* for students and the opportunities this online environment offered. They were also deeply impressed by the maturity of these students and their preparedness and ability to help solve each other's problems.
- Teachers considered it a career opportunity to be able to work in different ways with these students.

Project partners:

The nature of the *AnyQuestions* and *Studyit* services in particular allows for 'third party' providers or non-school providers a direct access to students without the mediating influence of teachers and schools.

Others can readily be part of the educative process and this can include parents. It was noticeable in the NNR *AnyQuestions* report that some adults were monitoring their younger childrens' involvement in the 'chat room' with the librarian and in the process were themselves being introduced to good practice in search techniques.

Students use family members (89%) and internet search tools (88%) as the first ports-of-call for finding out about a topic or question independently of school. While school libraries are high on the list of places students choose to go for help, public libraries are not so important to them. This is different for teachers, librarians and other adults who continue to rate offline resources such as books, school and public libraries, and people in the community very highly as sources of information for students (NNR, 2006a, p 58 & 65). Providing national and public library support for young students via online services and through means that young people can value and should be an effective way to strengthen the place of libraries in the lives of a younger generation.

Unanticipated issues arising for learners / teachers, schools, school libraries and project partners:

Unexpected issues include,

The need to extend resourcing of the *AnyQuestions* service by extending hours further into children's homework time. Having school class time available by the service is a good idea but more teachers need to be encouraged to trial this as a class-based resource for independent student inquiry as well as use as a home based resource.

The need to extend resourcing of the *AnyQuestions* service by looking at ways of extending the software affordances to allow more operators to work concurrently. *AnyQuestions* operators need to be able to spend quality time with young learners as they take them through the information inquiry approach and not feel time-constrained by waiting queues. There are issues for all student users and providers here.

Some public safety concerns appear to exist around the synchronous chatroom functionality of *AnyQuestions*. There was evidence in the NNR report that some parents were sitting with children when they were using the text based chat function. In the CORE report there was evidence that there were some limits placed on access to chatroom functionality by schools. Teachers had warned children not to enter chatrooms for safety reasons. A similar finding occurred with the forum areas of *WickED*. Children interviewed were listening to these warnings and avoiding these services.

The value of *WickED* for students as a support service and for teachers as a resource for classroom use. Some re-examination of the goals and purposes of this service is essential and repositioning of the service to better meet the needs of both groups or the student group on its own, may need to be considered. Younger New Zealand students are, on average, spending 3.5 hours a week for school related activities at home. Overall 50% of these younger-student respondents (data from the *WickED* report, NNR 2006c p.45) are spending up to two hours a week using the internet at home for their schoolwork. Also interesting is that students in mid and lower decile schools spent 62% of their home internet use time doing schoolwork. A well-structured, school-linked, active support area is an opportunity to support students to develop as independent learners.

Implications for service providers and policy making:

Need for appropriate educational spaces for students:

The internet is playing an ever an increasingly and larger role in supporting students' educationally both within and beyond school. Educators who are more aware of the internet support services available to help students working on their own could more readily direct students to appropriate services and provide opportunities for their students to understand how these services work.

Need to expand the reach existing successful models:

- Services such as *AnyQuestions* and *Studyit* appear to provide an important link between school expectations and independent learning.
- Effective student driven learning processes and effective teaching practices are underpinning elements of both services and other services could well be modelled on their successful attributes.
- These sites have considerable merit and educational value and need to expand their reach to a much greater extent into the student population than they currently do.

Need to revamp and realign WickED to better suit the student user group and advance the reach of this service to diverse groups of students:

- *WickED* could play an important role in attracting the younger primary and teen group who need safe places in which to explore and engage with online interactive and communication elements in educationally relevant ways.
- *WickED* could provide activities and functionalities that may attract and engage those children in the mid to lower decile school range who spend considerable time on the internet as well as offering more sophisticated interactives for the slightly older teen group it is currently attracting. To a certain extent *WickED* is already attempting to attract these groups, but with apparently limited success.
- There is a need to stay true to agreed objectives and not try to be all things to all people. It may be important to target the learning needs of young students who are emerging as independent learners more closely, rather than also try to provide a service for classroom teachers.
- Some revamping of this service to better suit its targeted student user groups is advocated. There is a need to take notice of the patterns of behaviour, use and expectation of younger users in a Web2.0 environment. More research may need to be carried out with young New Zealand students on this aspect of internet use and how it may be linked successfully with their school related learning needs.

The services need to retain their commitment to be student centred while keeping close links to curriculum, the work of schools and therefore relevancy to students. The importance of developing notions of student ownership and some student control may need to be considered by *WickED* providers.

Further work is required regarding the use of inquiry models in online services. There is a need to understand the place and role of these sorts of services and create opportunity to link with New Zealand compulsory schooling curriculum.

Impacts of these services on learning

How do these services align with young people's preferences for their learning?

Young students preferences and dispositions to use online environments are different from adults and therefore different from what adults, teachers, parents and providers anticipate they may want or may be suitable. The main characteristics of the new era in Internet, known as web2.0, are the constant development of infrastructures that allow for the delivery of services expressly tailored to the needs of each user. These include options involving more dynamic user participation, social interaction and collaboration through access to social networking sites, wikis, and communication tools. In his review of the literature for this suite of reports Coogan (2006) identifies a series of factors that are likely to ensure sustained student patronage of educational web services, and these factors are considered in this section in relation to the services reviewed.

- *Web services need to meet young peoples immediate or medium term goals. These may range from a need to be entertained, for socialisation, for information or for help with homework and study* (Coogan 2006, p 24). Collectively all three services attempt to cover these needs. *WickED* provides young people with entertainment and opportunities for engaging and fun learning. Both *AnyQuestions* and *Studyit* provide opportunities to meet students' immediate needs for information through both static information pages and interaction with an expert and help with homework where there is a focus on content, and the option to 'talk' with an expert about students' immediate and particular needs.
- *To engage young people in the internet educationally there needs to be a strong link between school and teacher driven demands (including self directed inquiry) and what is available on line to help students meet those demands* (Coogan 2006, p 24). Both *AnyQuestions* and *Studyit*, in particular, provide opportunities whereby young people can seek assistance for help with issues they are encountering with class homework activities. *AnyQuestions* operators noted the direct connection between homework sheets and many of the questions students asked for help with. *AnyQuestions* operators frequently provided help in interpreting or clarifying assignment questions and helping students construct an inquiry where students did not understand quite what was required or in which direction to pursue study (CORE 2007a p. 30). High stakes assessment drives much of the relevancy for students involved in *Studyit*. The service focusses completely on NCEA requirements within particular subjects as well as study advice and support. The service provides relevancy for older teens who, as a group, Coogan (2006) noted can be quite hard-headed about such demands. Both *AnyQuestions* and *Studyit* provides such a clear and obvious connection to school that students will use the sites without direct teacher intervention.

WickED links to school and teacher driven demands are more tenuous for students unless their teachers had encouraged the use of *WickED* during class lessons (NNR 2006c, p. 29). While student motivations for independently visiting the site were to learn and for classroom use (NNR 2006c, pp 10 &15) students were slightly more likely to value the site for their ability to use the site independently, to enjoy the amount to do on the site and to have fun than for improving learning or helping with schoolwork

(NNR 2006c, pp. 12 & 13). Sustaining frequency of use and ongoing student engagement in *WickED* has been difficult to achieve. Indicative of the low frequency of use of this site is the finding from the NNR report (2006c, p. 29) that just over one quarter of student respondents (n= 146) visited once a week or more frequently. Indicative of the low sustained patronage of the site is the finding from the NNR report (2006c, p. 30) that of the 58 repeat users 19% indicated they had patronised the site for longer than 6 months.

- *There is a growing demand and expectation from young people to be able to create, shape, share, and critique content and those websites which enable this are those which flourish.* (Coogan 2006, p 24). Both *AnyQuestions* and *Studyit* manage the demand for students to control and to a certain extent shape the content by allowing for student centred problems and questions to drive much of the interactive content. In *Studyit* the level of student ownership is enhanced further by the ability to interact with other students through the forums, allowing for the sharing and critiquing of comment by peers. Student comments about how to improve *WickED* indicated a desire to increase interactivity both in some of the more static areas of the site, and increase awareness of the ability to communicate on the site. There was also a desire to include more customisable options (CORE 2007c, p.8 &10).
- *Those providing web content and services for young people need to be highly attuned to the design, navigation and linguistic attractants and repellents for young people* (Coogan 2006, p 24). *Studyit* provides a good example of attuning site design to suit the targeted age group. Preparatory work with focus groups of students relating to features of design, navigation and website wording contributed to the final design and development of the site. Students indicated they wanted a plain site that was easy to navigate to the spaces required. Considerable time was spent in the design of the words and names of features to retain a close link with notions of school and teachers but also to be distinctly separate from them as well. The NNR (2006a) report indicated the need for the *AnyQuestions* introductory pages to clarify wording in such a way as to adequately explain the process of developing information literacy skills, that students will be taken through. *WickED* students also indicated a no nonsense desire to circumvent introductory sign in features so they could get straight to the interactives. Many students and teachers also found navigation of the *WickED* site more complex than necessary (CORE 2006b, p8).
- The literature suggests that the uptake of these services by students, is influenced to a large degree by how the design and operation of these environments meets and addresses young peoples preferences. Coogan (2006) suggests in his list of factors encouraging of young peoples' patronage of educational websites that,

Young people, especially teenagers, value highly interaction and collaboration with peers. Those websites that wish to engage students educationally need to provide for such interaction with young people taking increasing responsibility for those interactions as they grow older (p 24).

Some evidence to support the argument that teens prefer interaction and collaboration tentatively exists within the older-teen (16 – 19 year old), user group of *Studyit*, a core group of whom are regular contributors

to the forums (40.5% of this group said they had ‘used’ to the forums though in what way ie read or contribute was not clear). Younger users, those in the 10 - 15 age group were much less likely to ask a question or engage in the *Studyit* forums (only 10.7% of this group had ‘used the forums’ this according to NNR 2006b, p.36) but specific reasons for why this was the case were not clarified in either the NNR report or the CORE report on this service. Data on the size of the login group in *Studyit* or server stats to ascertain the number of hits on this site was not available. The majority of teen *Studyit* users, enter the site as guest users, preferring to read the forum contents without contributing, and to use the information pages. The NNR report (2006b p.35) indicates that the forums were used by one in three student respondents and that the greatest use of the *Studyit* site is for information about ‘Subjects’, and ‘Study and Exam Advice’ (which are used by almost twice as many students as the discussions) as well as checking out ‘NCEA Requirements’. (NNR, 2006b p.34).

The importance of interaction and collaboration with peers is much less clear when *AnyQuestions* or *WickED* are considered. Peer interaction has not been designed to be a part of the *AnyQuestions* service and it is hard to see how it could be, when this has not previously been a part of the traditional service provided by reference librarians. While the opportunity for peer interaction has been included in the design of *WickED* (in the form of forums) this function has been little used. Neither the NNR report nor the CORE report were able to clarify, with any degree of specificity, why students were not using the *WickED* forums. Feedback from students suggested they would prefer to see *WickED* meeting their learning needs through other forms of interaction that they could personalise and that they had encountered on commercial sites like Bebo.

It is unclear from the data in these six service reports, just exactly how important interaction and collaboration with peers is to the process of ensuring sustained student patronage of educational web services. It is difficult to assess whether this functionality is preferred by students or not or whether other factors such as links to schoolwork are equally or more important. Data on the sustained use of the *Studyit* site indicates a long-term commitment to the site by 16 – 19 year olds. 76% of this older user group had been visiting the *Studyit* website for 6 months or longer. Data on the sustained use of the *WickED* service over time indicated that 19% of students had been using the service for 6 months or longer. There was no comparable data available for the *AnyQuestions* service.

In what ways does it appear that these web services are changing how young people access and manage their learning?

While there is considerable evidence that the internet in general is beginning to change some of the ways in which young people access and manage their learning, there is little direct evidence from these reports as to the ways and extent these particular sites are changing the learning behaviour of young people. The reasons include,

- The reach of these services and the frequency and sustained use of the services remains confined to a small student group in each case. NNR data was collected from 293 *AnyQuestions* users; 375 *Studyit* users; and 204 *WickED* users. NNR netted a considerable number of first time users in each of these surveys further reducing the numbers who are using the services in a sustained way: 30% in the case of *AnyQuestions*, 29% in the case of *Studyit* and 60% in the case of *WickED*.

- In their current state these services occupy a very small proportion of learners needs across the educational landscape.

For a select and small group of students there is clear evidence that some learning behaviours have been altered. For the *Studyit* student who stated that she would ask a teacher if she had a problem and that would most likely be a *Studyit* teacher there has been a considerable change. For this student, *Studyit* provides the option of leaving the problem, until she has more time at home. For other *Studyit* students there is value in writing down and presenting the problem to others, itself a valuable activity encouraging greater thought and clarity around the problem. For other students there are advantages in taking a problem to an asynchronous environment where interested peers and expert teachers can assist the student asking the question to reflect on the problem by providing multiple perspectives. Asking for help with problems is done under the umbrella of anonymity and can be more comfortable for students who feel more vulnerable in the open classroom. For most of the students who make use of these sites these are resources that are now included in a repertoire of resources and supports such as internet search tools, family members, public libraries, study guides and others.

These services are not individually responsible for changing the way students learn but may be making a valuable contribution towards changing patterns of behaviour that enhance independence in young New Zealand learners. These services are appropriately designed and are meeting (with various levels of success), the target group preferences for online participation and interaction for those growing up immersed in these online environments.

In what ways does it appear that these services are impacting on children and young peoples' expectations of learning and schools?

There is some evidence that the internet in general is having an impact on young people's expectations of learning and schools. Both younger and older students are spending more time on the internet each week and much of that is for school related work. Overall, however, there is little evidence currently, that these sites are having an obvious impact on children's expectation of learning or schools for the reasons listed in the previous section.

- Students are becoming aware that where learning is happening independently from school, this can be supported via interactive web tools. Students appear to want guides.
- Students are also aware that these services are not replacing existing ways of doing things but are supplementing, adding to, and expanding upon existing strategies and resources.
- For a certain group of well-disposed students ,learning continues beyond the physical bounds and timetable limitations of schools

What is required for these services to be successful for learners and sustainable in terms of ownership, management, pedagogical development, operation, resourcing, and alignment with the wider learning network of young people?

What is required for these services to be successful for learners and sustainable in terms of elements that encourage sustained student patronage and ownership:

Learner success with online services is more likely when,

- Student trust in the quality of feedback from teachers and operators is a very important feature of both *Studyit* and *AnyQuestions*. Maintenance of a high quality of service provision is essential.
- Young people can depend on access, through the technology, to ask questions at times which suit them. *Studyit* provides a good example of flexible dependable access. *AnyQuestions* ideally needs to be able provide greater flexibility of access to students.
- There is better student and teacher understanding of inquiry based services and the processes that are supportive of learning in these environments.
- Students can feel safe and where teachers and parents can feel it is safe to recommend the environment for young students. Student safety is worked hard at in all three learning environments.
- There are no breaks in communication that disturb or interrupt access.
- The information students obtain is well aligned with their studies at school.

Elements that appear to contribute to sustaining student patronage and ownership include,

Strong link between school and teacher driven demands: For students to patronise these services, there needs to be a strong link between school and teacher driven demands (including self directed inquiry) and what is available from the service to help students meet those demands. For these services the links with schooling need to be clear and obvious for users and not be dependent on teachers specifically directing students to the site to undertake particular activities.

Guided services that offer relevance, focus, timeliness, and swift response times: It is the student need to have questions answered and problems solved that drives all activity within *AnyQuestions* and *Studyit*. Such services need to offer relevance, focus, timeliness, and swift response times. It is important for many students to feel there will be someone available to listen and respond and they are likely to have resolution to their inquiries. For many students who do not wish to engage directly with an expert these sites provide other avenues whereby students can independently seek answers to questions. The *AnyQuestions* databases and FAQ sections are built from previous student inquiries and the *Studyit* information areas including ‘Subjects’

and ‘Study and Exam’ advice areas and the ability for all registered users to read the forum postings also provide ways for students to independently seek answers.

Online services are attuned to the design, navigation and linguistic attractants and repellents for young people (Coogan 2006 p.24).

- Ease of access with limited need to sign in or login, plain and ‘no frills’ introductory pages, and easily found and located materials were what students required most. These attractants were obvious in *AnyQuestions* and *Studyit*.
- Students commenting on *WickED* made it clear that unnecessary and confusing graphics and unnecessary sign-ins were aspects that needed improvement (CORE 2007c p.8 &9)
- Younger students talking about *WickED* made it clear that their expectations about this site was being raised by what could be achieved on some commercial sites. *WickED* may be more valuable for students if it had the capacity for users to “favourite” and “theme” resources and build personal collections that they could point students to.
- Interpersonal relationships are features of the interactions occurring on the *AnyQuestions* and *Studyit* services. Collaboration with peers is a feature of the interactions of *Studyit* and it is probable that this peer interaction, contributes to the high level of sustained involvement in and long term use of *Studyit* by a core group of users. Coogan suggests that, ‘*those websites that wish to engage students educationally need to provide for such interaction with young people taking increasing responsibility for those interactions as they grow older*’ (p 24). This would appear to be the case with *Studyit* where contributions to the site increased with age and length of time the individual had been visiting the site.
- The role that anonymity plays in the interpersonal relationships and social dynamics of the *AnyQuestions* and *Studyit* services was not followed up in the data gathering from students for these reports and is an area that requires further understanding.
- The feature of the interactions in *WickED* is that students’ relationships are with the content and this is consistent with the literature relating to what younger children like. Younger children see the web as more a source of entertainment than homework help or communication with peers. They enjoy animation and sound effects and love interactivity (Coogan, 2006, p.35). Sites such as *WickED* may always hold a short-term interest for students who once they have visited the site on one or several occasions and have completed activities and interactive of interest, they may want to move on.

For these services to be successful for learners and sustainable in terms of management of these services they require,

- The maintenance of a strong connection between specific purpose, tasks and the targeted age group.

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- To be operating within a highly relevant and contextualised external environment. *AnyQuestions* has taken a traditional educational front desk enquiry service for students into an online world. Operators are highly trained in winking out resources and information and have added the world of the hidden internet, bibliographic and resource databases to their expertise at all levels of education. *Studyit* also operates within a highly contextualised external need for students – the desire to achieve well in high stakes assessments. Resources have always been supplied in this area to students needing more help by teachers, schools and publishing companies. The original *WickED* support provided a partnership focus and context with the four original study support centres.
 - Effective partnership arrangements that can add strength and diversity to the operation of these services. In management the National Library provides a good sustainable model for *AnyQuestions* in the following ways,
 - Strong project leadership
 - Effective communication with stakeholders
 - A trusted advisory group
 - Stakeholder buy in is evident with the different libraries involved
 - There is a transparent management process in place that includes ongoing analysis of the tools sets that being utilised and development of ongoing strategies for future development.
 - Broader stakeholder involvement does not appear to be part of either *Studyit* or *WickED* currently. The elements of good transparent project management could be applied to all three projects.
 - Who has control of what is learned and how the process is managed so that students feel they have some ownership of what is learned may be a factor which impacts on sustainability. Both *AnyQuestions* and *Studyit* have strong inquiry based pedagogical processes in place which allow for students to drive the content or specifically what is they need to learn. In *WickED* neither the students nor teachers are making decisions around control of content.
 - Clear lines of communication with schools are required.
 - It is important to maintain quality services. *AnyQuestions* operators and *Studyit* expert teachers are required to be content knowledgeable and capable in a range of skills. Selection of staff has in both *AnyQuestions* and *Studyit* followed a well-managed process ensuring equitable distribution of load across organisations or staff, and training and support programmes and policies to introduce staff to the online environment and to establish procedures for dealing with inquiries. Staff have developed new skills, and learned to deal with young students, in new ways and in a new environment. Skill

development involves facilitation and guidance based on young peoples needs and interests. This can be challenging and requires considerable flexibility in approaches used.

- Increasing the value of the educational experience for students is pivotal for support services. This can be achieved in online environments where the design of the services allows for a convergence of social, cognitive and teaching presence. These elements can be observed to be present to varying degrees in these services.

What is required for these services to be successful for learners and sustainable in terms of pedagogical approaches

It is difficult to assess, from the evidence collected in these reports, to what extent pedagogical processes alone are affecting the success (in terms of sustained patronage) of these services. Those elements that appear to the authors reviewing these reports to be important, can be identified as follows,

- *Teaching presence:* The presence of teachers provides structure and process and can take the form of a person or a resource. Teachers, operators in *AnyQuestions*, and mentors in *Studyit*, play an important part in facilitating discussion, setting the climate of individual exchanges, contributing to and maintaining the established climate across the service, and guiding and often selecting the content to be considered and negotiated. Teachers can respond flexibly to a great variety of student problems and circumstances. Involvement of teachers acting as guides and supporters of students learning allows for individualisation of student learning and greater control of that learning by students. Resources are an important feature of both services and supplement the information-dispensing role of teachers.

The teaching presence, that is the structure and process underpinning *WickED*, occurs completely through the presentation of resources. Games and interactives can be pedagogically effective if they include cognitive challenge and interaction between players.

- *Cognitive presence:* *AnyQuestions* and *Studyit* operate within particular and to some extent similar general cognitive contexts. They are ‘help services’ and generally operate around a problem-based approach to learning. In *Studyit* people and resources are geared towards helping NCEA students with high stakes assessments and deal with all the specific subject problems, misunderstandings, and angst that accrues around that context. In *AnyQuestions* people and site resources are geared to towards helping people into the information age, and to deal with all the specific problems around information literacy, and use of the tools and skills that are necessary to manage their way through a new and different environment. The cognitive context for *WickED* is not so clearly definable.
- *Social presence:* The social contexts within which these services operate vary greatly and are the defining difference pedagogically between these services.

The social processes operating in *Studyit* are intended to be group orientated. While the majority of interaction occurs between a mentor and inquirer the forum system allows for the opening up of involvement of other students and an encouragement of multiple perspectives on a problem.

The social processes operating in *Studyit* for increasing student contribution to their own, and others learning, are interesting. The service supports students in taking increasing responsibility to contribute and support the learning of others as can be seen in the increase in contributions to the forums by the 16 – 19 year old group compared to the younger 10 – 15 year old group (NNR 2006b) and the number of interactions that involve a number of contributors (CORE 2007b) This is achieved to a certain degree through open access to the archived forums where interactions are modelled.

The social processes operating in *AnyQuestions* are not group orientated. Interaction occurs between an operator and inquirer and is not open for the involvement of others or inclusive of other perspectives in the way that *Studyit* allows. The service does aggregate interesting questions and responses that may be asked by future inquirers into an FAQ database so that some sharing occurs and allows for independent searches. The type of social interaction occurring in *AnyQuestions* is completely adequate for the task and aligns well to the traditional tasks of reference librarians.

Social presence has not been developed in *WickED*.

- *There is also alignment with wider learning networks of young people; which is cognizant of student learning occurring both within and beyond school and the concept of the 24/7-flexible-time learner who has greater ownership of learning.*
- *The convergence of pedagogical practices and an emerging web2 environment that allows for learner centred practices to proliferate online.*
- Alignment with new wider curricula and consistency with current pedagogical practices that relate to inquiry, co-construction, participation and reflection.
- Aligning pedagogical practices and strategies with emerging web2.0 tools where students create content, collaborate with peers through mechanisms such as blogs, Wikis, threaded discussions, RSS feeds and others to form a learning network with distributed content creation and distribution of responsibilities. These tools when aggregated into learning environments within contexts relevant to learners can enhance inquiry, co-construction, participation and reflection.

What is required for these services to be successful for learners and sustainable in terms of operation of these services:

Ready accessibility to expert help: From student responses regarding the Studyit site which is based on asynchronous interaction, it is clear that they valued highly the ability of the service to have someone available to ‘listen’ and to respond within 24 hours to forum inquiries. Students could post inquiries at any time and responses were generally swiftly actioned. The synchronous nature of interaction in *AnyQuestions* meant that students could interact with an expert only during the hours of operation, which were limited from

2pm to 6pm on afternoons of schools days. Many students mentioned encountering 'wait time' for upwards of an hour in order to talk to an operator. Operators themselves recommended longer hours of operation especially into the evening when students were working from home and more operators to alleviate the issues for students.

Reliable and rapid connectivity: For AnyQuestions, addressing technical constraints emerged from the research studies as an issue for operators and users. The co browsing facility ideally requires broadband and drop off or inability to connect with students often occurred where students were on dial up connections. Lack of resolution for student inquiries often resulted from this reason. Also where operators could not connect with the student to use the co browsing facility the modelling of the information literacy trail that was central to the AnyQuestions approach was often not possible and operators would provide an answer or send a link to a URL where a student could find the answer.

Older students in particular indicated a preference to have plain sites with 'no frills' and minimal visual effects. These were preferred only where they were purposefully used to further explain text. WickED users indicted their dislike of the hosts and the sign in feature of WickED.

It is interesting that the NNR reports noted that most students saw the greatest barriers to these services as being student access to computers both at home and at school.

What is required for these services to be successful for learners and sustainable in terms of resourcing of these services

The AnyQuestions and Studyit services need increased resources for publicity to further widen the student user group and perhaps target new students users and draw them into using the services. Further publicity is needed in schools to highlight the value of the services. Teachers have an important roles not only as introducers and recommenders but in developing better understandings of appropriate use of inquiry and how students can learn by actively interacting and participating with other learners in these services.

Additional resourcing Is required to enhance the services offered by AnyQuestions . The service needs to

- Increase capability of the co browsing software to allow more operators to work at the same time.
- Increase operating hours to include more student homework time.
- Resources may need to be extended to allow operators to be able to work from home if operating hours are to be extended beyond the hours during which libraries are normally open for business.

The extent of additional resourcing suggested as required for *WickED* is very high and is contingent upon establishing clear agreement on the need, the audience and the service provided. Understandings of what is of educative value on the internet for younger teens has almost bypassed *WickED*. A comment made to the CORE research team was that *WickED* was based on what was now considered 'old technology'. Further development is needed both with inclusions of various elements of web2.0 functionality and with deepening the educative value of the interactives for student learning.

The key thing to note in the discussion in this section is that as teens already have their own social networks, there is now little need to replicate these unless the context in which the service operates is completely relevant to students' needs and well contextualised within existing educational services. For example *Studyit*, which is established as both highly relevant and well contextualised, could be enhanced with RSS feeds and aggregation capability.

What is required for these services to be successful for learners and sustainable in terms of alignment with the wider learning network of young people.

Young people make extensive use of the internet for homework and school projects. There is evidence that the internet helps to motivate and engage students in their school work. Young peoples' preferences for particular activities, and the style and ways information is presented varies with the age. Coogan (2006), suggests that older teenagers are,

goal orientated internet users who value clear organisation and discoverability of content along with interactivity and visual appeal. They dislike graphics for their own sake, poor discoverability and content that has a condescending tone and language...[they] are drawn to social networking sharing and content creation features afforded by a range of technologies which are central to the user driven iteration of the world wide web (p.3)

Studyit is a good fit with the preferences of the older teen and young adult age group that comprise its targeted users. The purpose of the site is orientated around student examination goals, and the site navigation is clear and well organised. There is a good mix of clearly presented webpage information and interactivity. Visual information is minimal but the site is attractive and with neutral colourings. Time in the design and development stages of the project had been spent in working on the tone, and language used on the site. Opportunities for content creation and sharing are available for the particular group of students who wish to engage with the content as well as socially and emotionally in this way. A positive and enriching discourse-culture is maintained by mentors and management. There is also a good fit evident between the goals of students and the services provided on the site. There is a strong connection between school expectations, students goals to achieve, and the people and static information resources available.

AnyQuestions is also a reasonable fit with the preferences of the age group targeted by the service, that is the younger 10 – 15 age group, although the goal orientated approach of this service also attracts a small group (12%) in the 16 plus age range (NNR 2006a, p.8). The targeted age group fits between the older teen group and a younger group who are identified as having different preferences. The purpose of the site is orientated towards providing help for student inquiries relating to schoolwork and school projects and utilises a chat room technology that should be familiar to a number of students within the age range although it was interesting that several students commented that the service provided them with the skills to use a chatroom. Interaction with an operator had been used by 74% of survey respondents (NNR 2006a, p. 18).

Clarity of information about how the service worked especially for new users was questioned in the NNR report (2006a, p 34) as there was some mismatch evident between what the service operators provide in the way of guidance towards locating appropriate resources and students who expected quick answers of the service. Better information has been included in the pages providing information about the service to users

but there is a role for schools and teachers to encourage more awareness of the process of inquiry in students, which would also change student expectations over time.

Opportunities for content creation and sharing as in web2.0 learning environments, are currently limited to interactions between inquirer and operator only, in the *AnyQuestions* service and wider sharing occurs only if the question and answer are made available in the searchable database. This is a user driven service and given the importance placed on the internet and search engines in particular to assist with schoolwork, *AnyQuestions* provides an important and necessary service for students. There is, as in *Studyit*, strong connections between school expectations, students' goals to achieve, and the *AnyQuestions* resources available.

According to Coogan (2006) 'younger children view the internet more as a source of entertainment than do teenagers. They value multimedia content, games and interactivity, as well as clear navigation and simple restricted use of language' (p.3).

The *WickED* service provides games and fun, multimedia, interactive, content should provide a good fit with the targeted age 7 – 12 age group. *WickED*, is however, is attracting a slightly older group and the service may need to adjust content and approach and as suggested by students themselves incorporate more user control, user driven and either social networking or immersive aspects of the world wide web into its resource structure.

The three services reviewed for this suite of reports are each uniquely different from each other, providing different models of engagement, and using different modes of delivery for different purposes and different groups of learners who have different preferences and different needs. Collectively these services represent and reflect some of the diversity of the online world that is available to young people.

References

- Coogan, P. (September, 2006). Learning Online: A literature Search and review of international practice in Web-based learning services for young people. Unpublished report for New Zealand Ministry of Education. CORE-Education, Christchurch.
- Ingrey, M., and Marlow, T. (Nov 2006b). Evaluation of Web-based learning services for children and young people: Studyit. Unpublished report for New Zealand Ministry of Education. Nielsen//NetRatings.
- Ingrey, M., and Marlow, T. (Dec 2006c). Evaluation of Web-based learning services for children and young people: WickED Unpublished report for New Zealand Ministry of Education. Nielsen//NetRatings.
- Ministry of Education, (2006). The New Zealand Curriculum Draft for Consultation 2006. Wellington Ministry of Education. <http://www.tki.org.nz/r/nzcurriculum/pdfs/curriculum-framework-draft.pdf>
- Nielsen//NetRatings.(May 2006a). AnyQuestions.co.nz Online Survey Results: Findings. Powerpoint notes for presentation to the Ministry of Education.
- Wenmoth, D., Coogan, P., Derham-Cole, C., & Gibson, J. (April 2007a) AnyQuestions Final Service Report: An Evaluation of Web-based Learning Services for Children and Young People in New Zealand. Unpublished report for New Zealand Ministry of Education. CORE-Education, Christchurch.
- Wenmoth, D., Coogan, P., Derham-Cole, C., & Gibson, J. (August 2007b) Studyit: Final Service Report: An Evaluation of Web-based Learning Services for Children and Young People in New Zealand. Unpublished report for New Zealand Ministry of Education. CORE-Education, Christchurch.
- Wenmoth, D., Coogan, P., Derham-Cole, C., & Gibson, J. (August 2007c) WickED: Final Service Report: An Evaluation of Web-based Learning Services for Children and Young People in New Zealand. Unpublished report for New Zealand Ministry of Education. CORE-Education, Christchurch
- Winter, M. (2005). Digital Opportunities pilot project (2001- 2003): Evaluation of digitally Boosted Study Support Centres. Report to the Ministry of Education. Christchurch, New Zealand. Ultralab South.