



Hybrid Electronic Access and Delivery in the Library Networked Environment

Evaluation Report

PIE Evaluation Phase Two

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This report analyses user behaviour and concentrates specifically on guest users of the PIE. It includes qualitative data taken from the completed questionnaires, and quantitative data taken from the registration forms and PIE Logs.-

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1.0 Introduction

This report analyses user behaviour and concentrates specifically on guest users of the PIE. Guest access to the PIE was launched in October 2000 and guests were able to apply for access using the online registration form. These guests were then invited, but not obliged, to participate in the final evaluation. In May 2000 each was sent an invitation to complete an online questionnaire that aimed to determine user response to the PIE as well as gather ideas and suggestions for improvement. This report includes qualitative data taken from the completed questionnaires and quantitative data taken from the registration forms and PIE Logs. The PIE log data verifies the number of times users accessed the PIE and which PIE(s) they used.

1.1 'Experienced' Student Users of the PIE

In addition to the evaluation of the wider library community's use of the PIE and its attitudes towards hybrid library functionality, the second phase of the final evaluation also looked at use of the PIE by experienced student users. However, despite considerable promotion of the PIE and several emails sent to each of the existing PIE users, interest was low. User groups at the partner institutions were targeted through various media: emails and bookmarks at all the partner sites; training sessions at the LSE; leaflets ('Guides to using the PIE') at the LBS and an online guide for UoH users. All LSE student PIE users were invited to attend one of several training sessions but these were not considered appropriate at UoH or the LBS. It was decided that UoH students would be unlikely to attend training events because of revision and examination commitments and that a HeadLine stand at the launch of the LBS Finance Zone would be a more suitable approach there. All the student PIE users were invited to complete the online questionnaires and offered incentives (Amazon book/music vouchers), but only a few questionnaire responses were received from each institution: LSE (2), LBS (4) and UoH (3.). For this reason the student evaluation report will not be forthcoming but details of the study are outlined below. (For further information on evaluation activities see the HeadLine Final Report: <http://www.headline.ac.uk/public/HL-fin-rep-2001.pdf> .)

The second HeadLine questionnaire contained additional questions to the first, the purpose of which were to evaluate responses to the PIE from experienced users. The additional questions aimed to ascertain:

- Whether or not there were any additional functions users would like included in the PIE
- The types of resources searched for
- Whether or not users had ever saved a search to their default page
- Whether or not users thought the search functionality could be improved
- Whether or not users thought the search interface could be improved
- How users rated the PIE's response times.

The first student PIE questionnaire also asked whether or not there were any additional functions users would like to see included in the PIE. However, whereas the first questionnaire provided a text box for users to enter their suggestions, the second questionnaire listed a number of functions which users could either select or leave blank. In the first phase of the evaluation none of the respondents answered this question so it was thought that a selection of options might help them think which extra functions (if any) they would like to see incorporated into the PIE. These additional functions are listed below in section 5.6 as the same options were suggested to both guest and student users.

The provision of check boxes for the question 'Are there any additional functions you would like the PIE to include?' stimulated a better response from the student users who returned their questionnaires in the second phase than it did in the first. Whereas in the first HeadLine student questionnaire no respondents suggested useful additional functions, most respondents in the second questionnaire agreed that most of the suggested functions would be useful. The functions thought to be the most desirable were facilities for parallel searching within resources and reference linking. It was interesting to see that the student users did not see threaded chat within PIE pages as being a high priority, an opinion they shared with the guest users. Generally, students' responses were comparable with those provided by the guest users and a fuller analysis of guest responses is given within the report.

As the second questionnaire was intended to determine how experienced users benefited from the PIE, respondents were asked about the types of resources they searched for and whether or not they saved their searches. Only One respondent from the LBS saved a search while no one did so at UoH. Reasons given for this were: users did not feel they needed to do so; there was limited time and there were problems connecting to the service. Both respondents from the LSE did save a search although this was done during one of the training sessions offered at the library. However, there is no indication as to whether or not they found this function helpful and would be inclined to use it again.

When asked about the search functionality, and the PIE's interface and response times, two respondents answered that 'yes', they thought the PIE's functionality could be improved but did not provide any suggestions as to what they would like to see changed. Three respondents also thought the search interface could be improved by making it more 'user-friendly' and simpler to navigate. One respondent also thought that additional icons on the page would be an improvement to the interface design. The question regarding the PIE's response times seemed to elicit the strongest response (again, this is similar to the responses offered by guest users and a more detailed analysis of feedback is provided within the report.) Apart from one respondent who felt that response times were 'good' the general sentiment was that they were either 'satisfactory' or 'poor'. Respondents wrote that pages seemed to take a very long time to load, that response times seemed to vary greatly depending on the time of day, and one respondent experienced problems connecting to the service. To illustrate just how slow the PIE's response times can be, one respondent from UoH wrote: 'I have completed my whole personal beauty routine whilst waiting for pages to load!!!'

Generally, responses provided in the second questionnaire confirmed those given in the first. The design of the PIE interface and its performance speed remain important issues which need addressing and again, frequency of PIE use has remained low. Despite promotion of the PIE to target groups there has not been a significant increase in the number of return users making the assessment of experienced users problematic.

2.0 PIE Log Data Analysis

Guest access to each of the PIEs was launched in October 2000 in order that individuals from the wider library community could try the PIE. Individuals registered as guest users using the web form at and were emailed usernames and passwords which could be used to access any one of the three PIEs, subject to copyright restrictions on certain resources contained within it. The PIE was advertised to the wider community through dissemination activities including journal articles, email lists and conference presentations. (See <http://www.headline.ac.uk/public/diss/index.html> for a list of dissemination achievements.) Registered guest users were emailed and invited to participate in the Phase Two evaluation.

Phase Two of the HeadLine evaluation aims to investigate longer term use of the PIE in order to discover whether or not its usage changes as individuals become more experienced. Phase One concentrated primarily on student users within each of the partner institutions but examined briefly the numbers of individuals who had registered as guests. (See the HeadLine Report on the results of Phase One of the Personal Information Environment Evaluation Programme: <http://www.headline.ac.uk/public/Phase1eval.pdf>) The PIE log data indicates that between October 2000 and January 2001 the actual number of individual guest users was 46. Thirty six of these guests had accessed one PIE, 8 accessed two while a further 2 guest users had accessed all three PIEs. By June 2001 the total number of guest users had increased to 99, 80 of whom had used just one PIE, 16 who had used two and 3 who had used all three PIEs.

3.0 Guest Registration

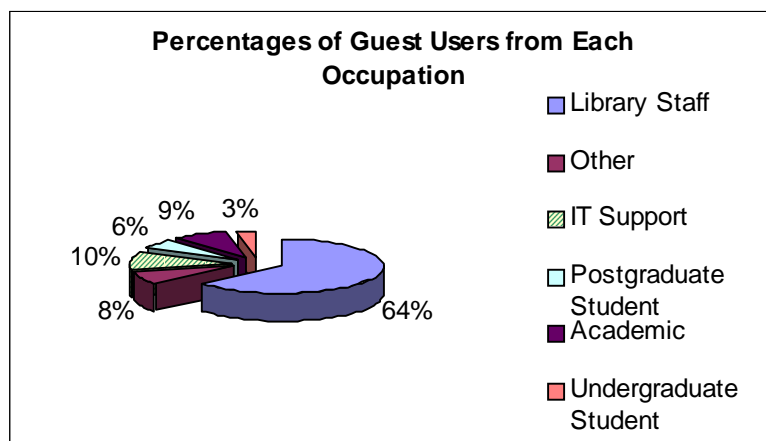
The PIE logs store information on the numbers of users who visited the PIEs and exactly which PIEs they used and when they accessed them. It is also interesting to ascertain how these users found out about the PIE and in which occupations they work. This can be achieved by examining the completed registration forms. These inform us which types of publicity were more successful in attracting guest users to the PIE as well as showing how widespread interest in the PIE has been.

Table 1. Introduction to the HeadLine PIE by Region

Introduction to PIE	Great Britain	USA	Rest of World
Conference	5	0	2
Headline-Users	22	1	0
Other	15	0	2
Website	15	4	4
Other Email List	18	1	3
Search Engine	1	0	4
Word of Mouth	15	1	4
Journal	6	3	16
Newsletter	12	1	0
Total	109	11	35

Great Britain, understandably, had the highest number of guest users but there were also a significant number of users from the USA, most of whom learnt about the PIE through the web site and journal articles. However, considering the greater population of the USA compared with other countries this does not necessarily indicate better publicity in the USA. There was also a significant amount of interest from individuals in Sweden and Australia with five and six guest users living in each country respectively. Generally, users from countries outside the UK and USA found out about the PIE through journal articles indicating that these have been quite successful in promoting HeadLine and the PIE. Within the UK users learnt about the PIE from a variety of sources, but the HeadLine-users list (<http://www.jiscmail.ac.uk/lists/headline-users.html>) reached the most people.

Dissemination activities appear to have been successful in reaching the wider library community which was one of the main aims of Phase Two of the evaluation. Library professionals might have different criteria for rating the PIE as a tool as well as a good understanding of what student users are looking for in a library resource. Figure 1. shows that, overall, 64% of guest users were library staff, 10% were I.T. staff, 9% were academic staff and 8% were from other professions. Postgraduate and undergraduate students comprised the remaining 9%.

Figure 1.

Considering that individuals were able to apply for guest access to the PIE using the online registration form and that many were from outside the UK it is difficult to gauge which of the users received instructions on using the PIE and which did not. This might affect their responses in the final evaluation as Phase One found evidence to suggest that training and/or demonstrations were vital to users' understanding of the PIE. Those who had received training were more likely to return to the PIE than those who had received no training at all. However, guest users might have a different approach from that of end-users. One of the purposes of Phase Two is to ascertain which aspects of the PIE interface and performance could be improved.

4.0 The Questionnaire Survey

The HeadLine Guest Questionnaire aimed to determine the following information from guests who had visited the PIE:

- Which country they were from, the sector in which they worked, and their main role within their organisation.
- How they found out about the PIE and the reasons for their interest.
- What type of PC they used to access the PIE, how many times they used the PIE and features they liked best.
- How they rated specific PIE functions, which additional functions they would like the PIE to include and which functions they felt could be improved.
- How they rated the PIE interface in terms of response times.

In addition to questions regarding the PIE, guest users were also asked their opinions on hybrid libraries overall. They were asked:

- Which functions of a hybrid library system they considered to be most important and which aspects particularly interested them.
- Whether or not their institution would find a hybrid library system such as the PIE useful.

All those guests who had not only registered for access to the PIE but who had also actually used it were emailed individually and asked if they would like to complete the web-based questionnaire. 155 users registered for access to the PIE, 94 of whom proceeded to use it. Of the 94 who were contacted, 18 responded, a response rate of 19%. There were no compulsory questions enabling respondents to supply as much or as little information as they felt necessary.

To view the HeadLine Guest Questionnaire use the following link:

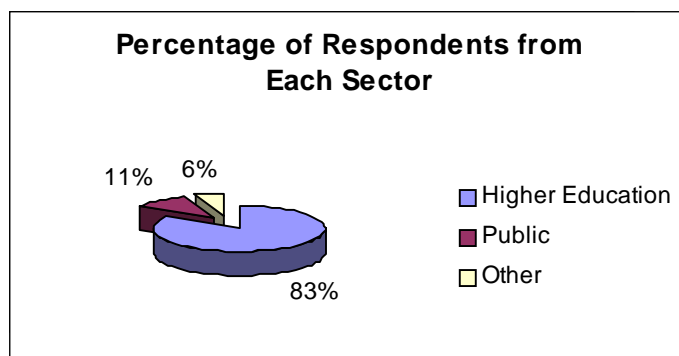
<http://www.headline.ac.uk/guest/guestPIEquire05-2001.html>

5.0 Results and Discussion

5.1 Sector

Individuals who registered to use the PIE indicated on their form which sector they worked in. The majority of registered users (88%) worked in Higher Education while 5% worked in the commercial sector, 3% in Further Education and 4% in other sectors. The questionnaire also asked respondents to state which sector they worked in. Figure 2. displays the results.

Figure 2.



Considering that 88% of people who registered to use the PIE work in Higher Education it is understandable that the majority of questionnaire respondents also work in Higher Education. The questionnaire asked users to explain their interest in the HeadLine PIE and many of the responses implied that the idea of a hybrid library is of particular value to higher education establishments:

'I work on a small hybrid library project at University of Leeds.'

'I am creating MyLibrary at Lund University.'

'It looks to be exactly what many of our Library users want.'

However, interest has also come from other areas indicating that the PIE has a broader appeal and might be adapted to other purposes. One respondent from the public sector mentioned that they were interested in the PIE because they wanted to 'know more about information architecture in [a] digital library' while the other explained that they were 'evaluating approaches to portals and "one-stop shopping"'. Another respondent wrote:

'I am interested in the creation of personalised information environments as this is something relatively new to health information which is the sector I work in.'

5.2 From which type of PC did respondents mainly access the PIE?

Nearly all respondents accessed the PIE from a PC at work. Considering that many of the respondents appear to be looking at the PIE with a view to implementing something similar at their institution, this might have been expected. 89% of respondents accessed the PIE from a personal PC at work and a further 11% used a shared work PC. One respondent accessed the PIE both from work and whilst at a hybrid library workshop. None of the respondents had accessed the PIE from home.

5.3 How many times had the respondents used the PIE?

As Figure 3. shows, the majority of respondents had accessed the PIE between two and five times. Just 6% had used it between six and nine times, whilst 17% had used it once. The four respondents who had only visited the PIE once were asked why they had not visited it more often. Their responses appear below:

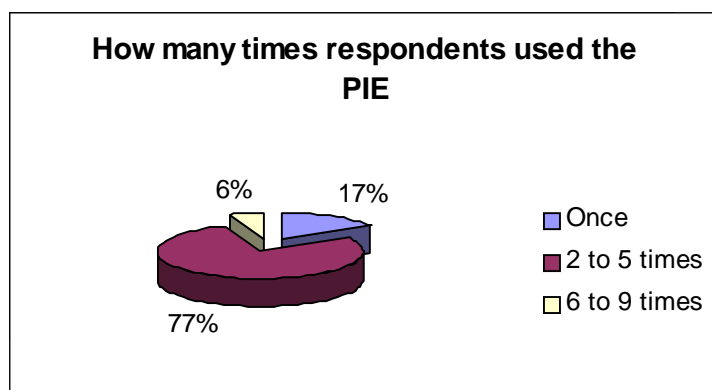
'Limited information set available.'

'Lack of time, forgot about it.'

'Tried it a couple of times really, but only to "take a look".'

It is difficult trying to draw conclusions from these responses as they do not provide much detail. Possibly the reason why the majority of users had accessed the PIE between two and five times is because they are interested primarily in gathering ideas on hybrid libraries and comparing it with other library projects. Unlike students they are not using the PIE to help with locating resources.

Figure 3.



5.4 Which features of the HeadLine PIE did users like best?

By far, the feature most commented on in this question was the customise function. The facility allowing creation and customisation of personal pages to suit the individual's needs was considered to be a helpful tool. Of the 12 users who responded to this question, six commented on the usefulness of this function. Their comments are listed below:

'tailoring of personal pages.'

'Customisability [...]'

'personal portal interface-- customised to user needs.'

'Personal page. Reduces clutter of page and search results.'

'The fact that you can really build up a personal profile, not what someone else has specified for you.'

' [...] Ability to customise lists of resources.'

The search facility also rated as a favourite feature of the PIE, as did the expand/contract function, the HeadLine *Shelfmark & Resource Locator* (SHERLOC), and the content of the PIE itself. Two respondents mentioned that the PIE seemed fairly simple to use and provided easy access to resources. However, another respondent thought this was not the case:

I have looked briefly at the PIE on a couple of occasions. I still am not sure what it does. It seems very unintuitive.

This last comment supports some of those made by student users of the PIE who contributed to Phase One of the Evaluation. One of the conclusions in Phase One was that the PIE was not necessarily very simple to use and required training sessions in order that students could benefit from the different functions. This still seems to be the case for guest users albeit to a lesser extent. This might be because many of the respondents were library staff, academic staff and researchers and so more familiar with library resources than undergraduate and postgraduate students.

5.5. How useful did respondents find each of the PIE functions?

Respondents were asked to rate each PIE function in terms of how useful they found it as a tool. They were asked to indicate whether or not they found each function 'Very useful', 'Useful', 'Not useful' or if they had 'No opinion'. The results are displayed in Table 2.

Table 2.

	Add Resource	Change Default Name	Add Web Link	Add Pages	Share Pages	Search Resources	Available Off Campus
Very Useful	56%	11%	61%	33%	33%	39%	56%
Useful	33%	44%	33%	44%	33%	50%	28%
Not Useful	0%	28%	0%	0%	11%	0%	0%
No Opinion	0%	11%	0%	17%	17%	6%	11%
No Response	11%	6%	6%	6%	6%	6%	6%

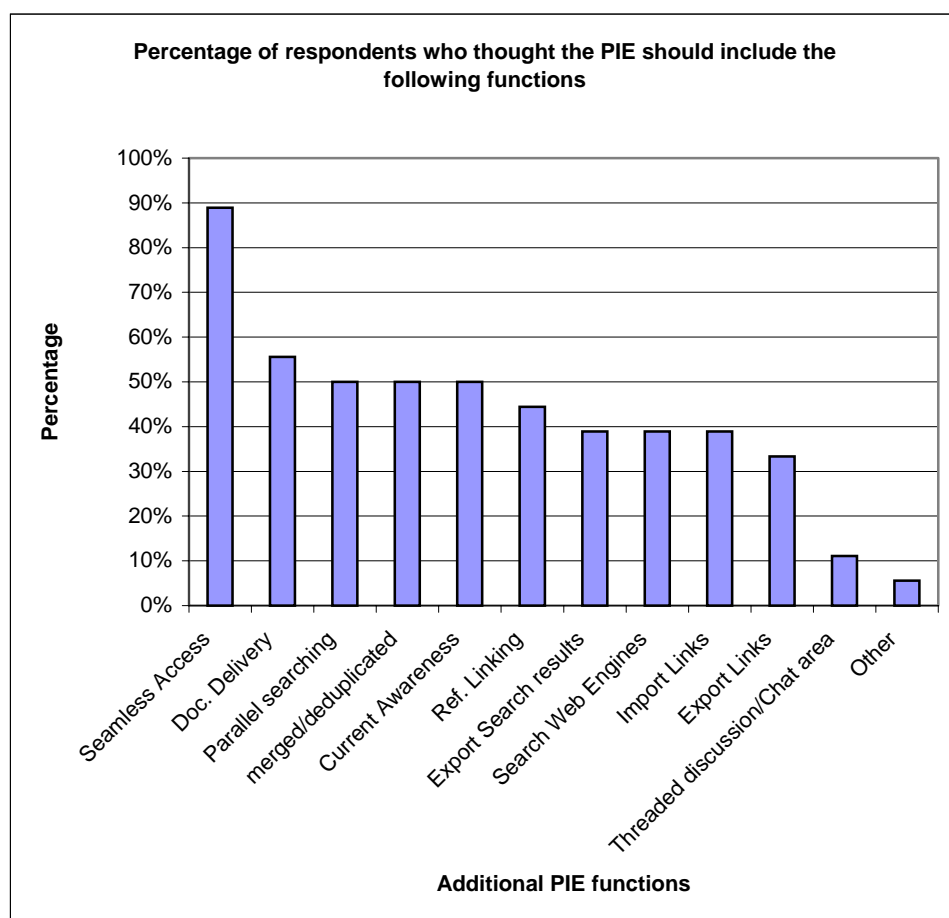
Generally, most respondents found all the functions either 'Very useful' or 'Useful' but the functions deemed most useful appear to be: 'Add resources to you default page'; 'Add your own web links to your default page' and 'Available off campus'. Adding a web link to the default page was considered the most useful function with 94% of respondents finding it either 'Very useful' or 'Useful'. 89% of respondents found adding a resource to their default page either 'Very useful' or 'Useful' and 83% liked the option to access the PIE from off campus. Changing the name of the default page was the least popular of all the PIE functions with 56% finding it 'very useful' or 'useful' but with 28% finding it 'Not useful'. The option to share pages with other PIE users was also seen as less useful than most other functions with 11% saying it was 'Not useful'. However, 67% of respondents still thought this was 'Very useful' or 'Useful'. There was quite a high response of 'no opinion' for some PIE features particularly for creating additional pages and sharing pages. Three out of the 18 respondents had no opinion on these functions but this might be because these functions are more likely to be useful with more long-term use of the PIE. In particular, sharing pages with other PIE users requires knowing at least one other PIE user with similar information interests which may not have been possible for the guest users.

5.6 Additional functions users would like to see included in the PIE

Respondents were also offered a list of possible additional PIE functions and asked to tick those they would like to see included. These were:

- Parallel searching within resources
- Merged and de-duplicated (parallel) search results lists
- Seamless access to resources contained within the PIE (so that once logged into the PIE you can access restricted resources without having to enter a username and password)
- Threaded discussion/chat area on particular pages (e.g. on shared pages, subject pages, pages set up for particular courses)
- Current awareness services (e.g. for particular resources or web links)
- Reference linking
- Document delivery service
- Import links from your web browser's favorites/bookmarks to your PIE
- Export links from you PIE to your web browser's favorites/bookmarks
- Export search results in bibliographic format
- Search web search engines from within the PIE search interface

Figure 4 shows how respondents answered.

Figure 4.

As is clear from the graph, the most popular additional function respondents would like to see included in the PIE was seamless access to resources. 89% of respondents thought this should be included. A document delivery service was also regarded as a useful additional function with 56% of respondents highlighting this in the questionnaire. Parallel searching, merged/de-duplicated search results lists and current awareness services rated quite highly too among 50% of the respondents. A facility for reference linking scored 44% and 'export search results', 'search web search engines' and 'import links' scored a little lower with 39% each. The ability to export links was less important scoring 33% and the least important facility for guest users was the inclusion of a threaded discussion/chat room area on particular pages.

Seamless access to resources and document delivery services both engage with problems associated with authentication, and HeadLine has been working on providing a single point of authentication to resources. This also seems to be an issue of concern to many of the guest users in this evaluation who are working on similar projects. HeadLine found that library users want to concentrate on as few services as possible when searching for resources and also want to be able to access the full text of articles whenever possible. It is feasible that respondents to this questionnaire have had similar findings at their own institutions. Comments from respondents included:

'Interested in providing digital library services to distance learners.'

'Carrying out a research project in setting up an electronic course materials service.'

'Working on DNER project - researching background info on hybrid libraries.'

'Involved with HyLiFe and our own electronic access to resources.'

A possible suggested additional function was threaded chat within PIE pages. The guest users did not see this function as a high priority. 'Group-working' functionality is perhaps straying for what (users think) is 'library territory'. Although PIE users are able to share pages with other PIE users, none of the guest users had done so (perhaps none of them knew another PIE user) and only a few student users had done so. The results of the Phase One and Two questionnaire surveys indicate that an appreciation of 'group working' functions by all PIE users appears to be limited. This is possibly due to a lack of PIE users. There has to be a large number of any type of users in order for there to be users with shared interests.

See [What do Users Want From the Hybrid Library?](#) (pdf format) for further details on library user requirements at the LSE.

5.7 Improvement of PIE features/functions

Respondents were asked which features or functions of the PIE could be improved and 12 respondents offered suggestions for improvement. On the whole, respondents found the interface confusing and difficult to navigate with comments such as: 'interface and instructions could be made clearer for beginners'; 'Maybe there is a way to make the page more intuitive without long help screens' and 'I found the interface difficult to navigate. I had to print out the help pages and read them as I used the interface.' Clearly the design of the PIE interface is still an issue which has yet to be resolved.'

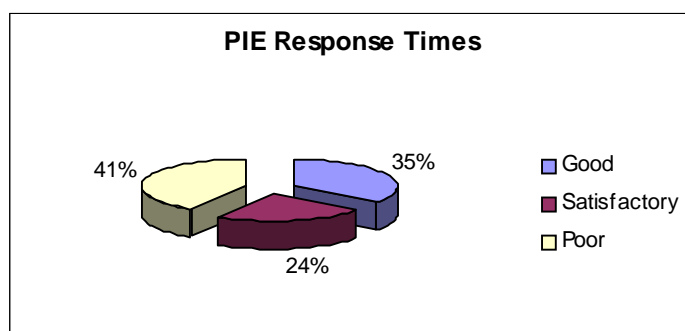
Other respondents provided some useful ideas on ways in which to improve the PIE. One respondent thought it might be useful to offer 'translation into other languages'. They were no more specific than this so it's possible they are suggesting a function which could translate full-text articles into other languages. They may however be suggesting that the PIE itself be available in other languages. Another respondent had this to say about the improvement of features/functions:

1. Search results off the screen.
2. Indicate search resulted in no hits
3. Include pub date in results list.
4. Better distinction between searching for resources (PIE) and searching the actual resources.
5. Indicate how user gets resource--a doc. delivery or place-a-hold function.
6. Improve adding and deleting resources and description of resource.

These suggestions include quite standard features which other search engines/bibliographic and full-text databases already contain and which could quite reasonably be accommodated within the PIE. They are worth considering should the PIE be embedded into existing library facilities and used as a full library facility.

5.8 PIE Response Times

Respondents were also asked to rate the PIE in terms of response times. They were each asked to indicate whether they considered the response times to be: 'Very good', 'Good', 'Satisfactory', 'Poor' or 'Very Poor'. They also had the option to indicate they had 'No opinion'. The distribution between 'Very good' and 'Good' on the one hand, and 'Poor' and 'Very poor' on the other is quite even, and Figure 5. combines these responses. The chart shows the percentage of respondents who thought the PIE's response times were mostly good and those who thought it mostly poor as well as showing the percentage of those who thought it satisfactory. No respondents indicated they had no opinion.

Figure 5.

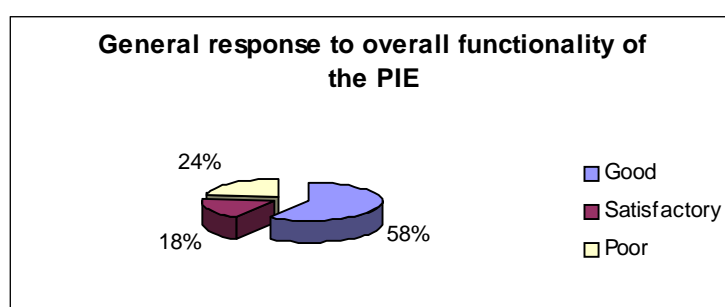
The chart shows there to be quite an even split between each available answer but, overall, respondents thought response times poor with 28% saying they were 'Poor' and 12% answering 'Very poor'. 12% also thought response times 'Very good' however, and a further 24% thought them 'Good'. 24% of respondents answered that response times were 'Satisfactory' implying that, although open to improvement, they probably weren't so slow as to deter users. One user who answered 'Satisfactory' wrote: 'Too slow, but not so slow that I quit.' Another user was more specific about response times and wrote:

Takes at least 10 seconds before any response is registered on the screen. Can be as much as 1 minute for longer lists of resources. (even from my university 10Mb link).

This is worth exploring and improving as users seem to find the response times quite frustrating. It is important that users get the information they require and that they get it quickly, otherwise they are less likely to make return visits to the PIE and use it on a regular basis.

5.9 Overall Functionality of the PIE

Respondents were then asked how they rated the function of the PIE overall and Figure 6. illustrates how they responded.

Figure 6.

Again, respondents were asked to rate the PIE's functionality using the following criteria: 'Very good', 'Good', 'Satisfactory', 'Poor', 'Very poor' and 'No opinion'. Figure 6. combines the percentages of those who found responded with either 'Very good' or 'Good' as well as those who responded with 'Very poor' or 'Poor'. No respondents answered with 'No opinion'. Overall, 58% of respondents that thought it was good with 12% of these rating it as 'Very good'. A further 18% rated it as 'Satisfactory' and 24% as 'Poor'. However, no respondents felt that the overall functionality rated as 'Very poor'. None of those who rated the PIE as 'Very good' or 'Good' offered comments on the functionality but there were a few comments made by some who said it was either 'Satisfactory' or 'Poor'.

1--The page is really long, but most of the real estate is repeated. Search results are always off the page. 2--Try to clarify the search results. 3--I think the basic idea is good.

It appears to manage large numbers of resources that should be useful to 'internal' users. Not much reason for 'external' users.

Poor at present. With further improvements to interface, response times and search facility would add up to a good package as a 'front-end' to a library's e-resources.

In response to these comments it's worth noting that the problem with the PIE listing resources twice in the search results field has been rectified. It was, however, still repeating results lists twice at the time of this study. It is also fair to note that each of the PIEs contains resources aimed at specific institutions and courses, many of which are available only to members of those institutions. This means that although guest users can access any of the PIEs and search the database, they are not necessarily able to access the resources. It is quite reasonable therefore to comment that there is less to attract 'external' users than users within the participating institutions.

5.10 Hybrid Library Systems

Finally, respondents were asked several questions inviting their opinions on hybrid libraries in general. These questions were:

- In your opinion what are the most important functions of a hybrid library system?
- Is there any aspect of hybrid library functionality that particularly interests you (e.g. personalised interfaces, cross searching of multiple databases etc.)?
- Do you think that other members of your institution would find a hybrid library system (such as the PIE) useful?

Seamless authentication and ease of access to resources appeared to be a priority for most respondents, emphasising the need for the PIE to improve its response times. Unsurprisingly, actual content and presentation of content were also mentioned. For a hybrid library to appeal to users it needs to have a broad range of useful resources which are instantly accessible, or it needs to provide the means with which to access them. Some of the comments are included here:

Clarity of purpose and usability. Seamless authentication to resources.

Ease of access - this is crucial as response times and having one gateway to many resources will encourage people to use it again and again. Also, being able to access different kinds of resources, from different providers is important although should be seamless to users.

Access to useful information regardless of physical format.

To manage the similarities and differences between "paper" libraries and "electronic ones, through a consistent interface.

The features which interested most respondents were the cross-searching function and the personalised interface. From the 12 respondents who entered a comment in this section, seven mentioned they were interested in the ability to cross-search and five said that they were particularly interested in the personalised interface. One respondent mentioned that they were

looking specifically at reference/citation linking while another said they were interested mainly in the idea of a 'single sign-on'. The same respondent also noted that they would like to see services, such as the PIE, integrated with Virtual Learning Environments and online catalogues. In response to the last question, this respondent offered more detail regarding this idea. Answering that yes, their institution would find a hybrid library system useful, the respondent went on to say that it would be useful:

As part of a wider University picture: integration with virtual learning environments and developing University portals. Need to include full range of 'information' sources used by staff/students i.e. reading lists, course notes, exam papers, model answers, etc. !

In the 'further comments' field, another respondent also mentioned that a hybrid library system such as the PIE would be useful 'as part of the wider service of a Managed Learning Environment' and another stated that 'this would be extremely useful in the NHS', highlighting the possibility for a system such as the PIE to be transferable to other types of institutions.

6.0 Conclusion

Phase One of the HeadLine PIE evaluation outlined some of the areas that required further investigation some of which were then included in the Guest PIE Questionnaire. The Phase One evaluation concluded that both the design of the PIE interface and its performance speed were issues that needed addressing and so questions in the Guest PIE Questionnaire aimed to assess whether or not users from the wider library community also experienced problems with these features and how they thought they could be improved. Although the final evaluation was intended to include feedback from both guests and experienced student users of the PIE, the results of Phase Two rely predominately on guest responses to the questionnaire. However, information gathered from student users during the First Phase of the evaluation will still inform how the PIE could be developed in the future.

The results of the Guest questionnaire show that the PIE has stimulated a significant degree of interest amongst the wider library community. However, the PIE failed to attract frequent visits and usage by guest users. Library professionals, working on similar projects, visited the PIE to view its functions and features, but did not return to it more than a few times overall. However, guest users are possibly less likely to become frequent users of the PIE because their reasons for using it would be different from those of students. It's probably that many of the respondents were accessing the PIE in order to make comparisons with other projects or to assess how well certain functions work.

Like the student users in Phase One, the guest users also found that the main areas in need of improvement are the PIE interface and the response times. It is necessary for the response times to be quick otherwise users will become frustrated and perhaps turn to a different service. The interface needs to be more accessible; although help pages can assist with navigation, users want to be able to search for and access information with minimum distraction and inconvenience. Several respondents offered specific ideas on how the PIE could be improved, including: more intuitive navigation and interface design (particularly the provision of the PIE interface in other languages), the provision of holdings information within search results and document request facilities. The ideas will help inform the development of future hybrid library systems.

Comments from several respondents suggest that a hybrid library system such as the PIE could be integrated within existing library services. Also, as mentioned earlier, one respondent thought the PIE would be useful as part of a Managed Learning Environment (MLE). The two services, operating together, could provide full online access to learning and information resources for users. Organisations outside of Higher Education could also benefit from the PIE; a hybrid library system contained within their own institutional 'environment' (their intranet perhaps) would allow employees to access all they needed from one place. These organisations (which could include charities, government institutions, law firms or pharmaceutical companies) might also appreciate an MLE as many provide internal training programmes.