

Learning to use the Internet as a study tool:
How do available resources meet student needs
and priorities?

Carol Bond

Senior Lecturer, Informatics for Health & Social Care

David Fevyer

Demonstrator, Informatics for Health & Social Care

Chris Pitt

Demonstrator, Informatics for Health & Social Care

Institute for Health and Community Studies
Bournemouth University

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Introduction

The Internet can be an excellent study resource, and is increasingly being used by higher education students in the health science and practice areas. The major disadvantage of using Internet based resources is the problem of locating good quality information from within the vast amount of information available.

Various studies have found that students have poor internet skills. Bond (2002) found that nearly half (48%) of new pre-registration nursing students at an English university felt that they ended up with too much information when searching on the Internet. O'Hanlon (2002) found that freshmen at an American university had poor skills in both searching and evaluating web sites.

A survey into the use of the WWW by students at an English university (Slaouti 2002) found that 13% (mainly undergraduates) made no use of the WWW for academic study. Lazonder (2000) found that novice internet users ability to locate websites could be improved by helping them to develop more advanced skills, eg monitoring their search results to improve their search performance.

Once students have found information on the web, Wood (2004) asserts that they lack the skills to critically analyze the information they have found, making the assumption that 'all information is equal, truthful, and has the same value'. He also found that students do not understand or appreciate the reasons for, and necessity of, accurately crediting the information source.

Students need an understanding of the internet and the services it supports, and the skills to undertake effective searches and evaluate the results. Evidence, however, shows that they are not starting higher education courses equipped with these skills. O'Hanlon (2002) further recommends that not only should students be taught Internet skills, but that the skills should be refreshed throughout the course.

There are a variety of resources available to help students understand the internet, and develop their skills, including online tutorials and study skills books, produced by a wide range of authors with differing aims, and for a variety of audiences.

Research Aims

There were two main aims of this project. One was to identify the resources that are available to help students develop the skills that they will need to be able to effectively use the Internet as a resource during their studies. The second was to identify the elements of a study guide

that were of importance to the students and produce a tool to help them select appropriate sources of guidance.

Methods

Identification of resources.

Structured internet searches were carried out through Google and Yahoo to locate web based tutorials and information sites. The search terms used were:

- ✍ Learning
 - ✍ Internet
 - ✍ Study
 - ✍ Tool
 - ✍ Resources
 - ✍ Student
- and synonyms of these words

The 'exact phrase' option was also used with the terms:

- ✍ Internet as a study tool
- ✍ Internet study tool
- ✍ Evaluating internet resources
- ✍ Appraising internet resources

Online catalogues of major publishers were also searched to identify hard copy study guides.

Commercial software packages were excluded from the research partly due to the cost of obtaining a selection of the packages for testing, but more importantly because of the limited availability of these for students, who at most may have access to one package if it is supplied by their university.

Student views of essential requirements

As this research was carried out with students currently on courses within the researchers' institution, the ethical considerations included making sure that no student felt pressurised into participating in the research and assuring anonymity. Considering the ethical position it was felt that focus groups would be a more preferable mechanism than interviews as students would always have the presence of their peers for support. No students declined the invitation to participate, and several commented positively about being asked what they wanted.

Focus groups were the preferred method of gathering student views as it was hoped that within each group there would be a mix of experience and skills, and that students could use other peoples' ideas to help them develop their own. It was hoped that each group would be

able to find some degree of consensus from the developing discussion. Groups were identified from as many courses as practical. The actual sampling was pragmatic, as only groups who were attending sessions at the university when the groups were scheduled were included.

Results

Available resources

In surveying the range of resources available to students wishing to learn how to use the Internet as a study tool, a number of categories emerged into which the majority of resources could be placed. The following category definitions, and their accompanying discussions, were based upon the evaluation of sites found using both a search engine (Google) and a directory (Yahoo). In each case, searching strategies were employed that attempted to mimic those used by web-users of varying degrees of competency and experience, so that some sites were discovered 'easily', whilst others required more thorough, thoughtful searches. The importance of this to the overall evaluation of a resource is discussed later.

Category 1 – University/College Library and Affiliated Services

By far the most prevalent type of resource, and indeed the one most likely to be encountered by inexperienced web users performing basic searches, is that produced by educational institutions, primarily for internal use by their own students. It is not possible to give exact figures, but the results suggest that most Higher Education Institutions have widespread access to the internet, and of these most will feature some form of resource-based support for students in order to enhance their study skills with the internet. As many of these resources have an on-line version, the total number of pages falling into this category is substantial.

The structure, and the scope, of this type of resource can vary considerably from institution to institution, as is evidenced by the sites recorded in this survey. Some, such as the University of Albany's (US) resource¹, are simply a collection of short online help sheets, whereas others, such as the University of California at Berkeley (US)² adopt a structured tutorial approach, featuring in-depth analysis of the principals being taught, and containing practical exercises. There is also some variation on the method extolled for evaluating web resources, in that some institutions, such as Eastern Illinois University (US)³, promote specific scoring systems,

¹ <http://library.albany.edu/internet/>

² <http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html>

³ <http://www.ux1.eiu.edu/~cfmgb/web.htm>

whereas others provide a more general framework for evaluation, allowing students to decide for themselves how important a given aspect of a site is based on context. An example is the resource provided by the University of Wisconsin (US)⁴.

Despite these variations, however, the overall scope of these resources is generally universal. The underlying principals remain the same, even though the amount of space and words given over to discussing the subject varies enormously

Category 2 - 'Academics' Pages

The second type of resource is related to the first, but rather than being the product of a centralised, 'official' outlet for research information within a university, consists instead of information produced independently by academics, still provided for student use, and often located on an institution's servers.

An example is 'Virtual Salt'⁵. The site features a mixture of discursive pieces on the theories and principles behind effective searching, evaluating, and other aspects of web-based research, as well as including some helpful, mnemonic-based checklists of things to think about. Whilst this latter aspect of 'Virtual Salt' is similar to the sort of resource provided by sites falling into Category 1, the majority of the site is far more concerned with theory to be considered a framework of practical support. Indeed, 'Academics' pages such as this are more relevant to individuals researching the act of researching for and of itself, rather than students wishing to learn how to perform internet research. As such, they also contain substantial bibliographies.

Category 3 – Government/Institution Funded Resources/Initiatives

Perhaps the most comprehensive, and often the most editorially sound, category is that of government and/or institution funded resources and initiatives. These are often intended for a wider audience than those resources falling into the first two categories, and thus may have less of an academic leaning, but as the principals of good searching and evaluation are generally cross-disciplinary, this is not a major drawback. Indeed, some sites, such as the RDN Virtual Training Suite (UK)⁶, contain general advice as well as subject-specific help.

These sites often have a good range of off-site links that can aid students wishing to read further on the subject, and as the sites are generally part of funded projects these links tend

⁴ <http://www.uwec.edu/library/Guides/tencs.html>

⁵ <http://www.virtualsalt.com>

⁶ <http://www.vts.rdn.ac.uk/>

to be maintained. However, the disadvantage with these sites is finding them in the first place; whilst neither hidden behind authentication systems nor possessing particularly obscure or long-winded URLs, the sheer wealth of Category 1 sites means they do not readily emerge from the sort of searches likely to be performed by an inexperienced user. Sites such as the 'Internet Detective' (UK)⁷ appear many pages into a basic Google search, by which time the inexperienced user who needs to find this resource may have given up. It does appear relatively easily on Yahoo!, but only if a manual hierarchy search is performed using the site's directory structure, rather than its more heavily promoted search feature.

Category 4 – The Lone Gunmen/women

The final category identified accounts for that most classical of websites; the private, one-man-or-woman-authored treatise. Such sites can vary greatly in length, motive, content and of course quality. Some, such as Study Guides and Strategies⁸, which employs user feedback as a quality mechanism and has been translated into more than 20 different languages, are more extensive.

Category 5 – Hard Copy Resources

There are a variety of books, and chapters or sections in books available to help students locate information on the WWW. As with web resources the extent, and usefulness, of these varies greatly, ranging from a few paragraphs in general study skills books (McIlroy 2003) to complete books, often aimed at a specific sector, such as Medical Information on the Internet (Kiley 2003). This latter example although not intended as a student study guide does contain information that could be used in this way. One major disadvantage of hard copy information is its currency. The Internet is still evolving, and Web sites are often dynamic, with content changing, and moving. Even if the information is excellent when it is written it is likely that links to web sites suggested may become out of date quickly, possibly even before the book has reached the bookshops.

Student requirements

In total 10 focus groups were held with students in a health and social care faculty. A total of 60 students (min group size 4 max group size 10) participated in the research. The students

⁷ <http://sosig.ac.uk/desire/internet-detective.html>

⁸ <http://www.studygs.net>

involved represented academic levels C, I and H; and a wide range of experience, including students in the first few days of their course, to students in their final year; students on pre-registration nursing; post registration nursing; BSc Health Studies; BA Social Work and BA Health and Community Development courses.

Skill levels and prior use of the internet varied widely across the participants with most of the groups having a mixture that helped to stimulate discussion. A semi-structured approach was adopted, with students being encouraged to discuss thoughts and suggestions that arose from the answers to the questions as well as to add anything that wasn't covered in the questions.

Students with poor skills or low confidence in their skills voiced concern about being asked to use an online guide, stating a preference for a taught approach. Complete tutorials (Category 3) were seen as something that they may be asked to use as part of a course, rather than something that they would find for themselves. This carried with it an expectation that the tutor would have carried out any requisite quality checks. Slaouti (2002) also found this expectation in her research where students expected that any link recommended by a lecturer should be fully quality checked by the lecturer. There was broad agreement from the students in this study that this type of guide should be introduced to them by the tutor, and that further help or assistance when they encountered problems was an essential requirement for this type of guide.

There was consistency in some areas of content requested, with all the groups stating that any guide used should contain more than just the mechanics of using search tools. All the students wanted help with conducting refined, targeted searches. Ease of access and a simple interface was mentioned by some groups, along with the ability to just use the help that was relevant to them at that time. Some groups thought that any support or tutorial used should be subject specific, along with the expectation that this would include quality checked links to further subject based web sites.

Given their own choice the majority of the students supported problem solving assistance rather than a structured 'work through' tutorial. Helpsheets or help with resolving problems were mentioned by all but one group. IT confident members of two groups were happy to consider help being provided through online means, although this was not supported by the less IT confident members of those groups.

The problem of using online resources to help students develop their online information skills was raised by several of the groups who saw a paradox in that without the skills and knowledge imparted by the online course they wouldn't have the ability to locate the course in the first place.

Discussion

This research had started with the aim of exploring the aspects of an online study guide that health and social care students considered to be the most important for them. Having set out to establish what students wanted in an online resource this study found that what was most wanted was human support when problems were encountered.

The survey of web results suggests that inexperienced users should have no trouble finding general Category 1 sites, but would have problems finding the more preferable Category 3 sites until they had achieved a greater level of skill in searching. This is a serious problem considering the lack of refined searching skills which students looking for such resources are likely to have. Once they have found one of these sites, surfing to others is relatively easy thanks to copious hyper linking (a feature which from this study would seem to be more extensive in the case of UK sites), but for the complete beginner there is a certain 'Chicken and Egg' paradox, a paradox which extends into the area of site evaluation as well. Indeed, the Category 4 sites in particular were prone to a certain lack of rigour in self-evaluation, and several would not be suitable for students to use as a basis for developing their skills. This suggests that until the students have had an opportunity to develop a degree of skills and understanding sites should be checked and recommended by staff.

The students reported the same paradox as the researchers identified. If they had the skills to locate such resources they wouldn't use a study guide to improve these skills, and if they didn't have the skills they wouldn't think of trying to find an online guide to develop them.

Students didn't expect to be left to locate their own online tutorials, rather they expected this to be included in the course, with a recommendation of a suitable tutorial being made. They also expected some training or guidance on using whatever was recommended, and for ongoing support to be available.

All bar one group had already received at least one taught session on using the internet as this is provided early on in all courses. In spite of having received some education about using the internet the skill and knowledge levels varied considerably across the groups. It is hard to tell if having experienced a taught approach influenced the results. It is unlikely as one group had also been given access to a commercial training package on the internet. This group didn't differ appreciably in their views to the rest of the groups who hadn't been given structured access to online materials. It would however be interesting to structure some further research to divide students into two groups, 'taught' and 'online' and then repeat the focus groups.

The presence of ‘institutionalised resistance’ to the introduction of alternative teaching methods, especially when they rely entirely on online methodologies, was identified by Jaffee (1998). This research seems to have found the same effect in the students. One possible reason for this is that the students were all attending taught courses, and that this brings with it a set of expectations. Education can be contextualised according to the type of learning experience offered, characterised by the amount of contact that the student expects to have with the university and staff, that is, its location on the contact continuum (fig 1).

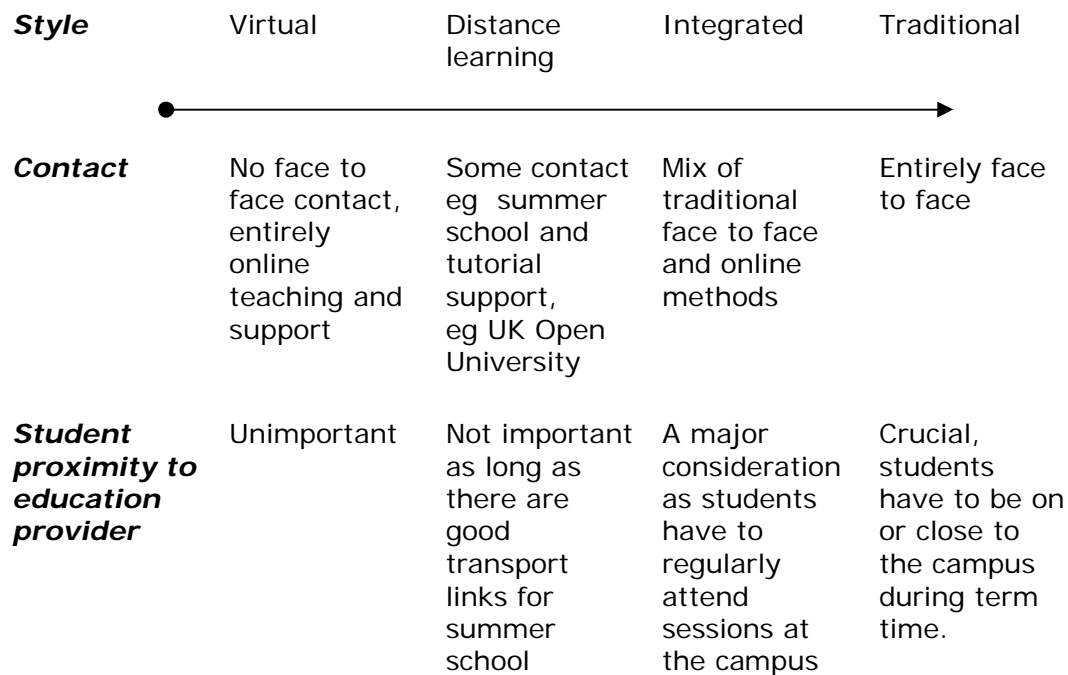


Figure 1.
The Contact Continuum

Students select courses with an expectation of what it entails, and divergence from this creates tension. Had the research been carried out with students undertaking distance or virtual courses a different set of responses may well have been obtained.

Having rejected the notion that students should locate resources to help themselves improve their skills they did identify that, once they thought they had the skills to search for sites, they might use online help that addressed specific questions that they had. Some of the sites located in the search did have a menu of contents readily available. In some cases these contained so much information it is easy to imagine that students who want to quickly locate an answer to their question would be put off. In others, especially more comprehensive tutorial sites where registration was required, this information was after the registration stage and

again students would most likely move on before they found the information they were looking for.

As students identified problems with online resources, using hard copy resources may be an option. These however suffer from a currency problem. The Internet is still rapidly developing, and information that was valid when it was written can become out of date very quickly. Books also fail to meet the students' requirement for information tailored to their specific problems.

The Internet does have the potential to offer the personalised help that students want. This could be through well structured searchable helpsheets, or through message boards where questions could be posted and either a tutor, or other students, could offer advice. No site located in this research however offered personalised assistance. This does not mean that it isn't available somewhere on the web, but if the searching strategies adopted by the researchers didn't locate it, it is unlikely that searches carried out by inexperienced students would.

Conclusion

Students' reluctance to use online resources to help them develop their information skills could result in their missing some excellent educational support mechanisms. Their lack of IT skills, or lack of confidence in the skills that they have, needs to be addressed to enable them to maximise their use of all the resources available to them. The way the resources are introduced also need to be structured within the overall course design. Where online materials are used as part of an integrated learning experience the way they are introduced and supported needs to be congruent with that approach.

A flow chart has been developed (appendix 1) to help students think about where they can find help to develop or improve their searching skills, and where they may be able to get help if they are having problems. Whilst this version is generic it has the potential to be adapted into a local version, for example adding names of staff or details of other course or university specific information to be added.

Recommendations

1. Students need to be supported to develop their skills.
2. Where online tutorials are used they should be evaluated by the tutor, and students should have access to support if they need it.

3. Students need to be given clear understanding of where on the contact continuum their learning experience will fall.
4. Consideration should be given to developing an interactive online help facility

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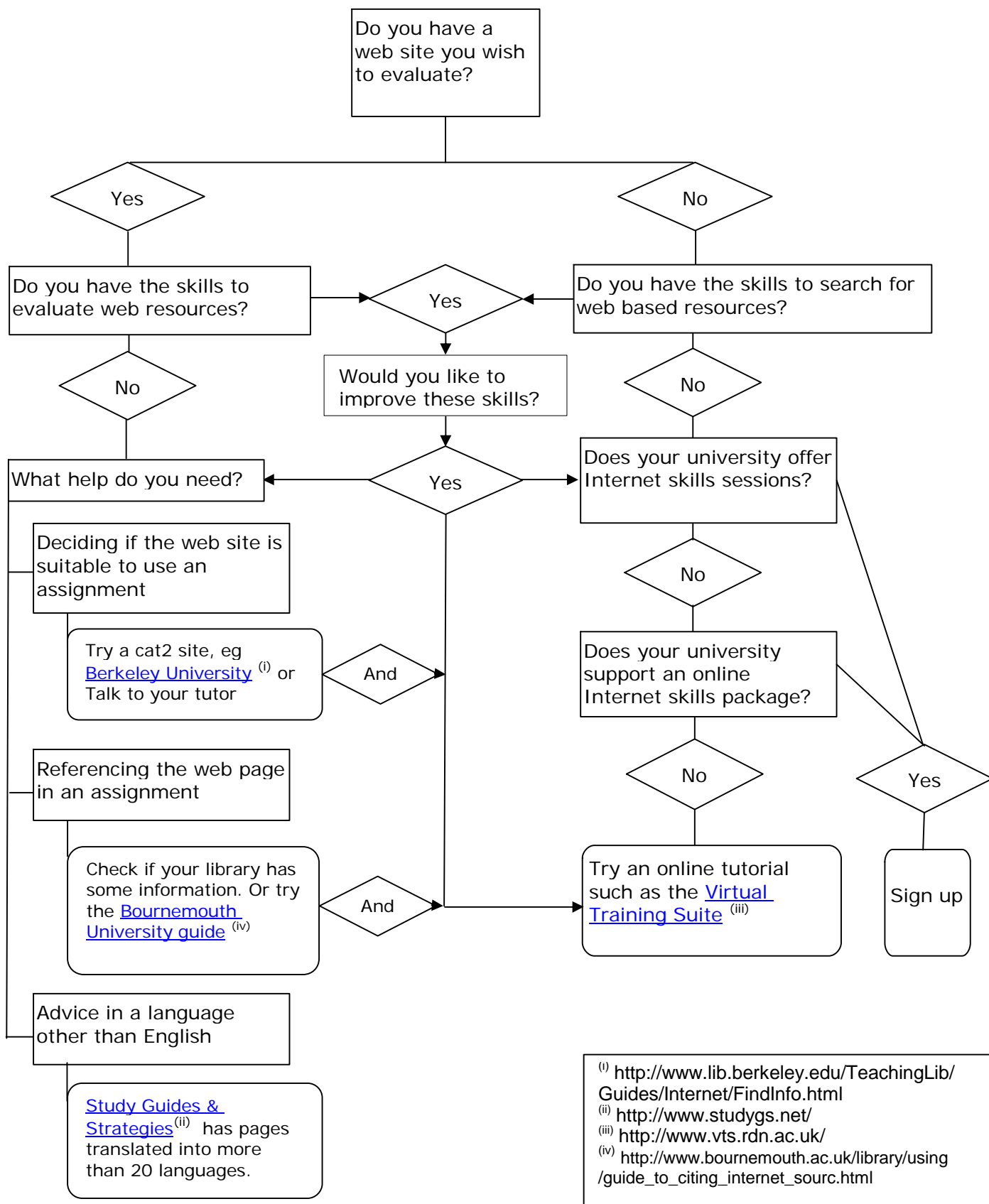
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Appendix 1

Student Support Decision Flowchart



This flow chart may be adapted to reflect local support mechanisms however the authors and the LTSN must be acknowledge. An MS Word copy can be supplied by the authors on request, who would appreciate a copy of any adapted charts Authors email - ihcs.helpdesk@bournemouth.ac.uk