

# SOCIAL CLASS AND GENDER AS PREDICTORS OF INFORMATION LITERACY SKILLS

## REPORT OF A RESEARCH IN PROGRESS

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### Abstract

The concept of information literacy and the desirability of acquiring information literacy skills are considered. A report is given on the progress of the partnership project between the University of Teesside and the University of Wales, Aberystwyth. The aim of the project is to create and test a toolkit which assesses depth and durability of learning following a programme of information literacy skills, with special reference to gender and social class. The partnership is noteworthy as it brings together samples from Teesside, a university with a special commitment to widening participation and Aberystwyth, one of the leading providers of Information Professional education in the United Kingdom. The practical outcomes of this collaboration should be transferable to other populations. Some initial findings on social class and gender from analysis of the quantitative data are discussed.

### Keywords

information literacy skills, digital literacy, social class and information literacy, gender and information literacy, Emerald Research Project

## 1 INFORMATION LITERACY

Information literacy skills are a core requirement of the knowledge-driven economy. As stated in the OECD Report *Scoreboard 2001: towards a knowledge based economy* (OECD 2001) it is the countries with knowledge-intensive activities who will be the winners in terms of future wealth creation. Similarly, the 2002 Chartered Institute of Library and Information Professionals' Report, CILIP in the *knowledge economy: a leadership strategy* asserted that information sits at the core of the knowledge economy, and thus there is, and will continue to be «a fundamental need for information skills» (CILIP 2002). Moreover, this is an issue of global concern. Webber outlines developments in information literacy in Australian universities, where such skills are viewed as a graduate attribute of some importance (WEBBER 2003).

## 1.1 Definitions of information literacy

Definitions of information literacy abound, but all incorporate similar ideas. One classic definition is that of the American Library Association: to be information-literate, a person must be able to «recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information» (ALA 1989). In the United Kingdom, the Society of College National & University Libraries (SCONUL) proposed a seven pillar model for information literacy which recognises the seven headline skills:

1. The ability to recognise a need for information.
2. The ability to distinguish ways in which the information «gap» may be addressed:
  - knowledge of appropriate kinds of resources, both print and non-print;
  - selection of resources with «best fit» for task at hand;
  - the ability to understand the issues affecting accessibility of sources.
3. The ability to construct strategies for locating information:
  - to articulate information need to match against resources;
  - to develop a systematic method appropriate for the need;
  - to understand the principles of construction and generation of databases.
4. The ability to locate and access information:
  - to develop appropriate searching techniques (e.g. use of Boolean);
  - to use communication and information technologies, including terms international academic networks;
  - to use appropriate indexing and abstracting services, citation indexes and databases;
  - to use current awareness methods to keep up to date.
5. The ability to compare and evaluate information obtained from different sources:
  - awareness of bias and authority issues;
  - awareness of the peer review process of scholarly publishing;
  - appropriate extraction of information matching the information need.
6. The ability to organise, apply and communicate information to others in ways appropriate:
  - to the situation;
  - to cite bibliographic references in project reports and theses;
  - to construct a personal bibliographic system;
  - to apply information to the problem at hand;

- to communicate effectively using appropriate medium;
  - to understand issues of copyright and plagiarism.
7. The ability to synthesise and build upon existing information, contributing to the creation of new knowledge (SCONUL 1999).

The Australian and New Zealand Institute for Information Literacy (ANZIIL) and Council of Australian University Librarians (CAUL) recently issued a revised version of CAUL's Information Literacy standards (CAUL 2001) many of which have been implemented in Australian universities (BUNDY 2004). This 2004 «Australian and New Zealand information literacy framework» is derived, with the copyright holders' permission, from the Association of College and Research Libraries' (ACRL) «Information literacy competency standards for higher education» (ACRL 2000). Within both these documents, information literacy is defined generally in the education sector as «an understanding and set of abilities enabling individuals to recognise when information is needed and have the capability to locate, evaluate, and use effectively the needed information» (BUNDY 2004). This definition is extended further, so that in a broader context the «Framework» and the earlier «Standards» document describe the information literate person as one who knows «when [s/he] needs information, and [is] then able to identify, locate, evaluate, organise, and effectively use the information to address and help resolve personal, job related or broader social issues and problems» (ibid). The Australian Library and Information Association's 2001 «Statement on information literacy for all Australians» stresses the vital importance of information literacy throughout the whole of society, offering the principle that, «A thriving national and global culture, economy and democracy will be best advanced by people able to recognise their need for information, and identify, locate, access, evaluate and apply the needed information» (ALIA 2001).

In the United Kingdom, information literacy was adopted as the theme for the Presidential year of Professor Sheila Corral, the first President of the Chartered Institute of Information and Library Professionals (CILIP) in April 2002. As a result of her advocacy of information literacy, a working party was formed which has now produced a definition of the term, together with an associated list of skills. CILIP's definition is «Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner» (CILIP 2004).

## 1.2 Extending the debate

In contrast to the above definitions and debates on this issue which focus on information literacy as a personal attribute of individuals, two researchers are proposing an extension to the debate by examining organisational perspectives and developing the concept of the Information Literate University (ILU) (JOHNSTON 2002; JOHNSTON 2003; JOHN-

STON 2004a). Their project is a phenomenographic study of academics in four disciplines (chemistry, civil engineering, English literature and marketing), which explores the academics' conceptions of information literacy and their approaches to teaching and learning. As an outcome of their research, they proffer a definition of information literacy as «the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society» (JOHNSON 2004b).

Unlike the project currently underway at Sheffield, which may be deemed to be strategic and broad-brush, this Emerald project is small-scale and grounded in the practicalities for practitioners dealing with students with variable levels of information literacy. The practical implications of inadequacy in such basic skills as numeracy and literacy are easily overlooked or underestimated. There is an acknowledged decline in literacy and numeracy; the Moser Report (MOSEY 1999) indicated that 7 million adults (one in five) in England are functionally illiterate. In practical terms, this means that if given the Yellow pages, they would not be able to find the page number for «Plumbers». Whilst these extreme problems will not apply to students recruited into Higher Education, there are of course *gradations* on the scale of literacy problems. Many others, far from illiterate, have problems with spelling and may experience some frustration when using online information systems which demand perfect spelling and punctuation, e.g. a library catalogue which demands «Shakespeare, W» (Shakespeare comma space W) and which will not retrieve anything if the enquirer types «W Shakespeer». This applies to many online databases and most certainly to internet website addresses, where misspelling or a slight error in punctuation can completely frustrate attempts at access.

Familiarity with ICT is nowadays an element underpinning Information Literacy and there is a subconscious belief that anyone entering Higher Education somehow already has the requisite ICT skills. However, given government widening participation initiatives in the United Kingdom, keyboard phobia remains a reality for some students, quite often the mature, or those who have entered University after a period of long-term unemployment. Such students are sometimes shocked at how frequently the computer keyboard is the required interface in higher education, and will resist as long as possible, using a variety of stalling techniques to overcome their lack of skills, such as relying on a more competent friend or using paper versions of information. It is noteworthy that this phobia is not confined to students: it often correlates with age and sometimes quite senior members of lecturing staff will use avoidance strategies to conceal that they are not at ease with the computer keyboard: typical behaviour of those who believe that their professional credibility relies on always appearing to be in charge of the situation (ARGYLE 1972).

When students are keyboard-competent, they sometimes exhibit the tendency to conflate ICT skills with information literacy. With any tech-

nological innovation it is quite common for the means to appear to be the end, especially for the uninitiated. But, «awareness is growing at an international level ICT literacy (the ability to use a computer) and Information Literacy (the ability to gather, sift, evaluate and select appropriate information from a variety of sources are not one and the same» (MARTIN 2001). This view is reinforced by the categorical statement contained in the Australian *Framework* that, «Information literacy incorporates, and is broader than, fluency in the use of information and communications technology» (BUNDY 2004).

However, whilst much of the current debate centres on extending our understanding of information literacy beyond merely the basics of ICT, the reality is that Practitioner Librarians are dealing increasingly with students with insufficient literacy skills to interrogate efficiently online catalogues, and insufficient numeracy skills to navigate the shelves classified using Dewey decimals (HULL 2000). «It is a myth that library use is declining because of competition from computers and other media. Computers have created a massive demand for material, not taken it away. As more of the population spend longer in education, it is suggested that 70% of the population read books occasionally compared with about 50% in the 1960's» (SMITH 1999). This is bringing a new generation of customers into university libraries and, at the outset, a large proportion of them are not equipped with the skills required to physically locate the books they need (HULL 2005).

## 2 THE EMERALD RESEARCH PROJECT

Reported here is progress towards completion of a funded project, which is a partnership between the University of Teesside and the University of Wales, Aberystwyth. The general aim of the project is to create and test a toolkit to assess both the depth and durability of learning by students, following a programme of information literacy skills. The partnership is particularly appropriate in encompassing both ends of the spectrum: those with a greater propensity to have a deficiency of information literacy skills and the future professionals who may well have to act as future mediators and educators in the world of Information Literacy.

The University of Teesside enjoys an established reputation as being committed to widening access to higher education amongst the lower socio-economic groupings, being one of the two leading universities in terms of recruitment from such social groupings (TODAY 2002). Its level of support for students has achieved national recognition (HODGES 2005). It is arguable also that information literacy skills are of especial importance to students from non-traditional social backgrounds, where previous heavy exposure to information, either electronic or print-based, is less likely to be the norm.

The University of Wales, Aberystwyth is one of the leading departments in Information Studies and one of the foremost providers of Dis-

tance Learning education in the discipline. Courses offered cover most aspects of information studies, including Archives Administration, Records Management, Information and Library Studies, Health Information Management and a Continuing Professional Development programme for middle managers. With 800 students registered on its distance learning schemes, Aberystwyth is arguably the largest educator of future information literacy skills trainers.

## 2.1 The toolkit

The evaluative toolkit is being trialled on:

- undergraduate students from Teesside;
- information studies students at Aberystwyth, who need such skills as students themselves, but who may ultimately be the deliverers of information skills training in their future professional lives.

Eventually, the toolkit will consist of three components, namely:

1. pre-training self completion questionnaire;
2. immediate post-training self completion questionnaire;
3. semi-structured interviews with volunteers six-twelve months following completion of information skills training.

All three elements of the toolkit have been designed; the two questionnaires have been trialled with students at both universities, with the interview schedule being administered and analysed currently (2005).

### 2.1.1 First questionnaire

For the first element of the toolkit, tests were devised to examine students existing competence in basic literacy and numeracy by requiring them to correctly order two sequences, one consisting of five words and the second consisting of five numbers, based on typical sequences to be found in library online catalogues or on library shelves. Secondly, students were questioned as to whether or not they had used the web previously; if yes, for what purpose, and subsequently to evaluate the success/failure of their web usage. Finally, respondents were required to determine whether an item was either a journal or a book. Demographic data relating to age, gender, course of study, and mode of study were collected, together with the occupation of the principal salary earner or breadwinner as designated by the respondent, to be used as an indicator of social class. It could be argued that the use of postcode data would be a more accurate means of assessing the socio-economic background of the respondents, thus enabling us to correlate the possible role of information literacy training in combating social exclusion. However, as there are significant numbers of overseas students at both institutions, it was

believed that inclusion of their UK postcode would skew the data, as it would reflect their socio-economic status as foreign students, rather than their intrinsic status.

### 2.1.2 Second questionnaire

All questionnaires were completed anonymously and on a voluntary basis. Following their initial training, the same students were asked to indicate their agreement with six statements relating to the training they had just received measured along a six point Likert scale:

1. strongly agree;
2. agree;
3. no strong opinion;
4. disagree;
5. strongly disagree;
6. no answer.

The statements used were general, for example «I learned something new» and «I will need more support in the future» rather than being specific to the actual training received as this differed markedly in content, format and length between the two institutions. However, all students in both universities, full-time (FT), distance learning (DL), undergraduate (UG) and post graduate (PG) received instruction or an introduction to both computing facilities/ skills and library facilities/ skills. All students included in the project were newly enrolled at the relevant university, and had received no prior instruction at either Aberystwyth or Teesside. The primary difference between the two universities was in the timing of the sessions. All Aberystwyth students received their training in the first few days at the University of Wales at Aberystwyth, whereas Teesside students received their sessions four weeks into the first semester. The timing of the sessions was decided by reference to considerations other than those of the project; we were observing and testing sessions already in place, rather than ones designed specifically for our purposes. The demographic data collected in the first questionnaire was repeated, in order to preserve anonymity and to enable cases to be correlated from both the pre and post training evaluations.

### 2.1.3 Interviews

The third element of the toolkit, the semi-structured interview schedule with self-selecting volunteers was devised and is currently being tested. Students were asked on completion of both questionnaires to write their name on the forms if they were willing to participate further in the project. It is recognised it would not be feasible to interview all participants but it was felt that to interview a selection would provide access to data not available through a closed questionnaire. The first section of the

schedule explores their answers to the first questionnaire, and the extent to which these responses are still true for the individual. Similarly, the second section explores their initial views on their literacy training, together with the extent to which such skills have been of use in the period subsequent to the training sessions. Finally, their perceptions of the long-term value to themselves of information literacy skills for their future careers are explored.

At the time of writing the interviews, of a semi-structured nature, are being conducted; the interviewers are focusing initially on the two questionnaires which the participants have previously completed. Participants are not being restricted to focusing narrowly on the questionnaire, but rather encouraged, in a neutral way, to expand on their replies. This is a deliberate tactic to grant the interviewer access to matters preoccupying participants' thoughts. Because the questionnaires were used as an initial stimulus in the interview, it is suggested that the participants would already have information seeking and handling as the centre of their focus and other themes diffusing from that central focus and of some relevance to it were more likely to be broached. This technique of using the questionnaire as a point of departure discourages the collection of data which is so far-ranging it could be termed «an attractive nuisance». It has been said on the subject of qualitative data: «A rough working frame needs to be in place near the beginning of the fieldwork. Of course it will change. The risk is not that of imposing a self-blinding framework, but that an incoherent, bulky, irrelevant, meaningless set of observations may be produced, which no-one can (or even wants to) make sense of» (MILES 1983). But, by using the questionnaires as an initial point of focus and then allowing the subjects to deviate, the researcher is granted access to additional data not unconnected with the focus of the research. The data will be analysed using the principle of «grounded theory» (GLASER 1973).

## 2.2 The data: descriptive statistics

Approximately equal numbers of questionnaires were returned at each institution. See tables 1 and 2. The unusually high rate of response may be explained by a number of factors: the questionnaires were quite short; participants had the option of remaining anonymous; participants in the research gained entry to a prize draw of a book token.

**TABLE 1.** Questionnaire 1 response rates

Degree scheme	Nos. Distributed	Nos. Returned (%)
Teesside FT UG	153	144(94)
Aberystwyth FT UG	24	24 (100)
Aberystwyth FT PG	31	31 (100)
Aberystwyth DL PG	102	96 (94)

**TABLE 2.** Questionnaire 2 response rates

Degree scheme	Nos. Distributed	Nos. Returned (%)
Teesside FT UG	146	144 (99)
Aberystwyth FT UG	17	17 (100)
Aberystwyth FT PG	37	36 (97)
Aberystwyth DL PG	102	100 (98)

Discrepancies between the figure in Tables 1 and 2 may be explained by the fact that several students left before the training sessions were finished and thus were not available to complete the second questionnaire. Similarly, as the training was divided into two sessions at both Aberystwyth and Teesside, several students disappeared «in transit».

The following tables analyse the responses to the individual questions on the questionnaires. As the number of Aberystwyth Full-time Undergraduate respondents was relatively small (24 and 17 respectively), it was decided that a more meaningful comparison would be between the Full-time and Distance Learners (or Part-time) students at the two institutions. All the PG students at Aberystwyth surveyed were enrolled on «conversion» or «first-qualification» masters' degrees, rather than on second-qualification masters degrees, and hence they were all «new» students.

**TABLE 3.** Putting things in order (Alphabet): Questionnaire 1

Answers	% Teesside FT	% Aberystwyth DL	% Aberystwyth FT
Correct	94.4 (N136)	84 (N84)	94.5 (N52)
Partially correct	2.1 (N3)	3 (N3)	0 (N0)
All incorrect	3.5 (N5)	8 (N8)	3.6 (N2)
No answer	0 (0)	5 (N5)	1.8 (N1)
<b>Total</b>	<b>100 (N144)</b>	<b>100 (N100)</b>	<b>100 (N55)</b>

Relatively homogeneous results are shown above for the pre-training test of literacy amongst the various student groups at the differing universities. It is tempting to posit the hypothesis that the 10% difference between the DL students from Aberystwyth and the FT students may be partially explained by the fact that the test was in English, and 41% of the DL students were from outside the UK. However, whilst only 5.6% of Teesside students were from outside the English-speaking world, the true difference is between the Aberystwyth DL and FT students in this dataset. As 87% of Aberystwyth DL students were from the English-speaking world, in comparison to 78.2% of FT students, first language competency in English does not constitute a valid or reliable explanation for these differences.

**TABLE 4.** Putting things in order (Numbers). Questionnaire 1

Answers	% Teesside FT	% Aberystwyth DL	% Aberystwyth FT
Correct	57.6 (N83)	73 (N73)	69.1 (N38)
Partially correct	20.1 (N29)	9 (N9)	5.5 (N3)
All incorrect	22.2 (N32)	12 (N12)	23.6 (N13)
No answer	0 (N0)	6 (N6)	1.8 (N1)
<b>Total</b>	<b>100 (N144)</b>	<b>100 (N100)</b>	<b>100 (N55)</b>

Interestingly, there is only a difference of 11% between the numbers of DL students who completed both the numeracy and literacy tests accurately. However, again, the results for the FT students across the two universities show a remarkable homogeneity. Differences of 25.4% for Aberystwyth FT students and 36.8% for Teesside students between the literacy and numeracy tests are interesting and form an area for later more detailed analysis. From these initial results, the differences appear not to lie with the student bodies of the two universities, but rather between numeric and literate competence.

100% of all student groups reported prior usage of the web to answer information queries. When asked to evaluate the extent to which they found their visit to a website to be (a) of use, and (b) of interest, the answers received are shown in Tables 5 and 6 below.

**TABLE 5.** About the web (Usefulness): Questionnaire 1

Answers	% Teesside FT	% Aberystwyth FT	% Aberystwyth DL
Very useful	69.4 (N100)	67.3 (N37)	76 (N76)
Useful	17.4 (N25)	20.0 (N11)	15 (N15)
Average	0.7 (N1)	7.3 (N4)	3 (N3)
Not of use	4.9 (N7)	0 (N0)	1 (N1)
Completely irrelevant	0 (N0)	0 (N0)	0 (N0)
No answer	7.6 (N11)	5.5 (N3)	5 (N5)
<b>Total</b>	<b>100.0 (N144)</b>	<b>100.0 (N55)</b>	<b>100.0 (N100)</b>

**TABLE 6.** About the web (Interest): Questionnaire 1

Answers	% Teesside FT	% Aberystwyth FT	% Aberystwyth DL
Very interesting	39.6 (N57)	38.2 (N21)	38 (N38)
Interesting	20.1 (N29)	30.9 (N17)	25 (N25)
Average	16.1 (N16)	12.7 (N7)	14 (N14)
Uninteresting	17.4 (N25)	9.1 (N5)	17 (N17)
Very uninteresting	0.7 (N1)	3.6 (N2)	0 (N0)
No answer	11.1 (N16)	5.5 (N3)	6 (N6)
<b>Total</b>	<b>100.0 (N144)</b>	<b>100.0 (N55)</b>	<b>100.0 (N100)</b>

Of initial interest is the seeming discrepancy between perceived usefulness and interest. Clearly, websites need not be interesting to be perceived by students as being useful. Again, time has not allowed us to analyse all the textual data from the questionnaires as yet, but, in the case of the DL students a popular choice of website use was to locate train timetables in and out of Aberystwyth. In this example may lie one possible indication of the reason for their being able to distinguish between «usefulness» and «interest»! The results of the immediate post-training self-evaluative questionnaire are given in Tables 7 – 9 below.

**TABLE 7.** Aberystwyth FT students: Questionnaire 2

Answer	% «Learned something new»	% «Learned something useful»	% «Learned for future career»	% «Pre-sentation clear»	% «Staff friendly and helpful»	% «I will need more support»
Strongly agree	21.8 (N12)	14.5 (N8)	5.5 (N3)	16.4 (N9)	32.7 (N18)	14.5 (N8)
Agree	34.5 (N19)	41.8 (N23)	21.8 (N12)	30.9 (N17)	34.5 (N19)	27.3 (N15)
No strong opinion	14.5 (N8)	12.7 (N7)	30.9 (N17)	12.7 (N7)	3.6 (N2)	21.8 (N12)
Disagree	1.8 (N1)	3.6 (N2)	12.7 (N7)	10.9 (N6)	1.8 (N1)	5.5 (N3)
Strongly disagree	0 (N0)	0 (N0)	0 (N0)	0 (N0)	0 (N0)	1.8 (N1)
No answer	27.3 (N15)	27.3 (N15)	16 (29.1)	16 (29.1)	15 (27.3)	16 (29.1)
<b>Total</b>	<b>100.0 (N55)</b>	<b>100.0 (N55)</b>	<b>100.0 (N55)</b>	<b>100.0 (N55)</b>	<b>100.0 (N55)</b>	<b>100.0 (N55)</b>

**TABLE 8.** Aberystwyth DL students: Questionnaire 2

Answer	% «Learned something new»	% «Learned something useful»	% «Learned for future career»	% «Pre-sentation clear»	% «Staff friendly and helpful»	% «I will need more support»
Strongly agree	41 (N41)	46 (N46)	12 (N12)	20 (N20)	60 (N60)	30 (N30)
Agree	41 (N41)	41 (N41)	21 (N21)	51 (N51)	38 (N38)	31 (N31)
No strong opinion	15 (N15)	13 (N13)	39 (N39)	19 (N19)	2 (N2)	32 (N32)
Disagree	3 (N3)	0 (N0)	22 (N22)	6 (N6)	0 (N0)	5 (N5)
Strongly disagree	0 (N0)	0 (N0)	6 (N6)	1 (N1)	0 (N0)	0 (N0)
No answer	0 (N0)	0 (N0)	0 (N0)	4 (N4)	0 (N0)	2 (N2)
<b>Total</b>	<b>100 (N100)</b>	<b>100 (N100)</b>	<b>100 (N100)</b>	<b>100 (N100)</b>	<b>100 (N100)</b>	<b>100 (N100)</b>

By far the greater proportion of Teesside students (98.6%) acknowledged that they had learned something new from their training sessions. Whilst 82% of the Aberystwyth DL cohort held similar opinions, only 56.3% of the Aberystwyth FT intake expressed such views. The reason for the difference is open to conjecture.

**TABLE 9.** Teesside FT students: Questionnaire 2

Answer	% «Learned something new»	% «Learned something useful»	% «Learned for future career»	% «Pre-sentation clear»	% «Staff friendly and helpful»	% «I will need more support»
Strongly agree	75.0 (N108)	77.1 (N111)	36.8 (N53)	50.7 (N73)	72.9 (N105)	11.8 (N17)
Agree	23.6 (N34)	20.8 (N30)	41.0 (N59)	39.6 (N57)	25 (N36)	18.8 (N27)
No strong opinion	0.7 (N1)	1.4 (N2)	18.8 (N27)	6.3 (N9)	1.4 (N2)	43.8 (N63)
Disagree	0 (NO)	0 (NO)	2.1 (N3)	2.1 (N3)	0 (NO)	21.5 (N31)
Strongly disagree	0.7 (N1)	0.7 (N1)	1.4 (N2)	0.7 (N1)	0.7 (N1)	4.2 (N6)
No answer	0 (NO)	0 (NO)	0 (NO)	0 (NO)	0 (NO)	0 (NO)
Total	100 (N144)	100 (N144)	100 (N144)	100 (N144)	100 (N144)	100 (N144)

### 2.3 Analysing task completion from other perspectives

So far we have looked at the results of the task completion from an institutional point of view. It is interesting to observe that there are both gender and social class differences when we look at the success rates of the tasks students were asked to complete: putting 5 words into strict alphabetical order and 5 numbers into strict decimal order. These tasks are reproduced below.

#### Putting things in order (1)

Please put the following words in alphabetical order, using the numbers 1,2,3,4,5 in the boxes below

\_\_\_\_\_ psychology  
 \_\_\_\_\_ phoneme  
 \_\_\_\_\_ pyrrhic  
 1 \_\_\_\_\_ pancreas  
 \_\_\_\_\_ physical

#### 2.3.1 The Gender Element

The sample overall was largely female (74%) with the Teesside element being 76% female and the Aberystwyth 72%. Given the truism that «men are better than women at Mathematics» it was thought worthwhile to examine their results for the decimal test above, Putting things in order (2), and indeed the males do perform slightly better overall. See Table 10.

**Putting things in order (2)**

Please put the following numbers in order, beginning with the lowest number, again using the numbers 1,2,3,4,5 in the boxes below.

	155.03
1	150
	153.5
	153.15
	155.301

**TABLE 10.** Decimals Question: All correct answers by gender and University

Gender	% Teesside	% Aberystwyth	% Sample overall
Male	74	63	68
Female	52	79	65

However, it is remarkable, that when further split by University, a rather different picture emerges: males at Teesside perform considerably better than females at their University and females at Aberystwyth rather better than the males at theirs. One possible explanation is the probable former occupation of these Teesside male students. Teesside is an area of former heavy engineering and chemical industries and a large proportion of the University's intake is from the ranks of these former skilled manual workers, who would have used mathematics in their daily life and have retained their skills in this area. What is perhaps a little disturbing, especially in view of the widespread use of decimal classification schemes in libraries, is the less than perfect performance of the future information professionals! It is also interesting that the female element performs better than the male but no immediate explanation for this springs to mind.

**TABLE 11.** Social class of sample

Social class	Teesside %	Aberystwyth %	Sample overall %
A/B	34	56.2	45.5
C	33.3	29.1	31.1
D/E	13.2	9.1	11
Not given	19.4	5.8	12.4
Total	100% (N144)	100% (N155)	100% (N299)

The overall performance on the alphabetical task was much better, with an overall success rate of 91% with no difference of note between the genders. Perhaps the surprising finding here is that 94% of the Teesside sample completed the task correctly compared to only 88% of the future librarians from Aberystwyth. However, the Aberystwyth sample contained a number of students whose first language is not English which could explain their less than perfect knowledge of the English alphabet order.

### 2.3.2 The social class element

Because the numbers in each social classification are relatively small, classes A and B have been collapsed, as have C1 and C2 and D and E. It is noteworthy that a reasonably large proportion (19%) of Teesside respondents declined to disclose their social class. This reticence on the subject of social origin has been observed in previous research in the area and has been as high as 25% (HULL 2000). Teesside is an area of regeneration following the rundown of heavy industry and has high levels of long term unemployed and relatively unskilled workers, who are psychologically defensive about their true origins and prefer to leave the form blank. The question was framed, «Please would you tell us the occupation of the chief breadwinner in your family», and some Teesside ones were returned with a definite «No!».

### World Wide Web

100% of respondents reported use of the World Wide Web and were asked to rate it from the point of view of being useful and interesting. Overall, 71% rated it very highly for usefulness, giving it the maximum score of 5, but only 38% gave the maximum score for being «interesting.» The breakdown by social class is shown in Table 12.

TABLE 12. «WEB IS USEFUL/ WEB IS INTERESTING» BY SOCIAL CLASS

Social class	% awarding maximum score for «Web is useful»	% awarding maximum score for «Web is interesting»
A/B	45.5 (N97)	44 (N51)
C	31.9 (N68)	25.9 (N30)
D/E	11.3 (N24)	14.6 (N17)
None stated	11.3 (N24)	15.5 (N18)
<b>Total</b>	<b>100 (N213)</b>	<b>100 (N116)</b>

The breakdown by social class for those finding the web interesting or useful roughly mirrors the overall breakdown by social class. The numbers

involved at this stage are too small to draw any firm conclusions but there does appear to be a trend for the lower socio-economic groups to find the web more interesting than useful and the reverse for the upper ones.

### 3 CONCLUSION

Information literacy skills are of central importance in a world which is increasingly information-driven. In the past there has been a tendency to ignore the extent of the potential influence of a high level of information literacy. As awareness grows, this small project indicates a number of tendencies, in populations from both a leading provider of widened access to higher education and a major provider of education for future information professionals. In both cases, it is clear that no assumptions should be made about students' existing competences on arrival at University.

The Emerald Project has provided some confirmation of the relative lack of numeracy and literacy skills previously reported in the literature. What is perhaps surprising is that this lack extends to the ranks of the future Information Professional. It is possible that at a subconscious level there is the belief that those who have chosen to follow a career in information handling will already have all the requisite skills to support their chosen role. Their level of skills in these areas is of particular importance because, increasingly, in United Kingdom universities especially, information professionals are called upon to be teachers of information literacy. It is vital for the teachers to be fully competent in all aspects of the skills they are endeavouring to transmit.

Another finding worthy of note is that students whose first language is not English, although they may have sufficient communicative skills to participate in their course, may still not be readily able to recite the sequence of the alphabet in English, so necessary for physically locating items. The alphabetical sequence is something a native speaker learns as a child and superficially has no particular value for a mature learner of a foreign language, who will of course know the individual letters of the alphabet but not necessarily in the alphabetical sequence used so frequently in libraries. The movement of students internationally continues to grow: 240,000 studies in British Higher Education in 2002 (HIGHER 2003). Therefore, what appears to be a minor skills deficit could have considerable impact at a practical level and should be noted particularly by providers of education for future Information Professionals.

Overall, replication of the research, using the Emerald toolkit in other situations would be worthwhile, as it could generate sufficient data to provide results which are statistically significant.

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