Nursing Informatics for All

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Abstract.

This paper argues that, in order for nursing
informatics to make the maximum possible
contribution to the delivery of patient care, it
has to be seen as being important to all
nurses, not just those who chose to
specialise in it.

A review of the computer experience and
literacy of pre-registration nursing students
entering Bournemouth University, England,
shows that although computer ownership is
rising, as is frequency of use of the Internet,
use of other computer programmes isn't.
Students perceive themselves to have poor
computer skills, and many cannot carry out
quite basic tasks in the programmes they
use.

The paper concludes that all pre-registration
nursing programmes need to include
information and technology skills, rather
than just basic computer skills to help reach
the goal of nursing informatics for all.

1. Introduction

Definitions sometimes serve to confuse
rather than clarify. This certainly applies to
the term Nursing Informatics. Not only are
there a variety of definitions to choose from,
but its relationship to, and distinction from,
other disciplines, such as medical
informatics, health informatics or consumer
health informatics is not particularly clear.

Some definitions of nursing informatics are
very focused on the computer. The term
informatics itself deriving from the French
'informatique' which literally translates to
data processing. The term nursing
informatics according to Saba[3]

considers both the computer system and the
computer technology used to process
nursing data.

Other definitions, such as the one used by
the United Kingdom National Health Service
(NHS) focus more on how the technology
can help practitioners. In 1997[1] it defined
Health Informatics as 'Making effective use
of information and technology for
communication, decision making and
learning in health care delivery and
management'. In 1999[2] informatics is
described as a term used to encompass
aspects of information management,
information systems and information
technology for professional practice.
Building on those definitions, nursing
informatics is the use of information and
technology to support the professional
practice of nursing.

Some definitions allow those who do not
wish to be involved to argue that informatics
is a specialist discipline, and that as they are
not informatics specialists it does not
concern them. The first part of the argument
may well be true. There are many
specialised aspects of nursing informatics,
and many nurses would not be interested in,
say, developing the algorithms used in the
NHS 24-hour nurse advice and health
information system, NHS Direct, or in
technical developments in encryption for
transmitting information securely.

If, however, all patients are to directly benefit
from nursing informatics, and it is hard to
think of a reason for its existence if it isn't to
benefit patients, then every nurse needs to
be involved. This will inevitably be at
different levels.

Learning to work effectively with information
and technology is the first step in nursing
informatics. These skills are essential for
developing individual professional practice,
and may later mean that nurses who don't
see themselves as nursing informaticists are
able to contribute to specialist aspects of the
discipline, for example by giving informed
opinion on systems that are being
developed.

Nursing is a dynamic profession, and nurses
are actively involved in change both within

systems and within their personal practice. The change equation developed by Gleicher (cited Protti[4]) sets out 3 essentials, all of which must be present if resistance to change is to be overcome.

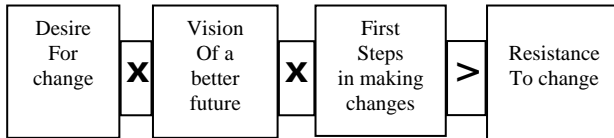| Desire For change	X	Vision Of a better future	X	First Steps in making changes	>	Resistance To change

Fig 1. Change Equation

If nurses do not have an understanding of informatics they cannot bring the vision of how information and technology can contribute to the solving of problems, and therefore the improvement of patient care. As a consequence either technology based solutions will not be considered, or opportunities to contribute to developing systems that really meet the needs of nurses develop will be lost because staff cannot visualise the better future that Gleicher considers to be an essential element of achieving change.

2.   Nurses' Informatics Skills.

In the UK the NHS has published several documents looking at the informatics skills that nurses need. In the annual National Health Informatics Competency Summary 2001[2] it is acknowledge that the majority of clinical staff (including nurses) do not meet the level of competence recommended in any area. Improving basic skills is therefore seen as an important aim in establishing the building blocks of health informatics. To help promote this the European Computer Driving Licence (ECDL) has been adopted by the NHS as a baseline standard that all staff should reach. The ECDL is, however very computer skills focused, rather than taking a wider overview of information and technology.

Research at Bournemouth University has found that it isn't only qualified staff who lack essential skills. New nursing students frequently do not have skills in information and technology either. The UK Government,

from September 2002, is introducing an Information and Communication Technologies (ICT) curriculum for all school pupils up to year 9 (age 14). The Department of Education state that the aim is not to develop basic IT skills, but to 'identify, understand and apply appropriate knowledge, skills and understanding'

Any potential improvements in the skills of new nursing students arising from this initiative will, however take a long time to materialise. Nursing students come from a wide variety of backgrounds. Some have recently left school but still may not have the good ICT skills envisaged as it could be 4 years since their last compulsory ICT lesson. A lot of nursing students do not join courses on leaving school. Some will have been in employment; some are returning to work after an absence eg caring for children and they and may or may not have had the opportunity to acquire ICT skills prior to enrolling on the course.

Having argued that all nurses need nursing informatics skills, in that they need to be able to use information and technology effectively and understand how it can contribute to professional practice, the question of what needs to be included in educational programmes needs to be addressed.

3.   The Research

The Institute of Health and Community Studies is one of the academic schools of Bournemouth University, England. Pre-registration nursing is one of the course areas offered, and approximately 350 new nursing students enrol with the school each year.

All new nursing students are asked to complete a questionnaire about their computer use prior to commencing the course. Data has now been collected and analysed for the 99-00, 00-01 and 01-02 academic years. The questionnaire has four sections. The first asks about computer ownership, and Internet connectivity. The second asks about their use of some common applications, and asks the students to self rate their ability to use them. It then

asks about their ability to carry out some basic tasks. The third explores their attitudes and feelings about computers and their skills, using a Likert type scale. The final section asks for some demographic information.

The questionnaire is distributed to all students at the start of their first Health Informatics session, staff who understand the research are available to answer any questions the students have, and they collect the completed questionnaires before the end of the lesson. Students are informed that participation isn't obligatory, is anonymous, and does not affect their course. Participation is high, with all students present agreeing to participate. Spoilt, or blank, papers could mean that students did not feel able to decline, but did not want to participate, however no spoilt papers have been received.

The questions asked have been amended both in light of feedback, from questions the students ask when they complete the questionnaire, and to keep pace with changes in technology. One other change is that for the first 2 years the return rate of distributed questionnaires was monitored. This showed that all questionnaires distributed were returned. This was altered to monitor completion against enrolled students, which for 01-02 showed a response rate of 89%

4.   The Findings.

Respondents were evenly spread across the three years of intakes, from a total of 1002 respondents 35% came from 99-00, 33% 00-01 and 32% from 01-02. There were no significant differences in the intakes studied in terms of the gender or age composition of the groups. 61% of students were aged 18-25, (range 59% - 64%); 22% aged 26-35 (range 20% - 23%) and 17% over 35. (range 16% - 18% All intakes were predominantly female, the 10% -15% range of male respondents being in line with the gender balance on the course.

Computer ownership amongst all students is increasing, the first cohort asked only had 33% ownership all year round, this had risen

to 83% by the 01-02 cohort (p<.01). Internet connectivity is also increasing. In 99-00 64% of students' computers had an Internet connection, in 01-02 this had risen to 87% (p<.01)
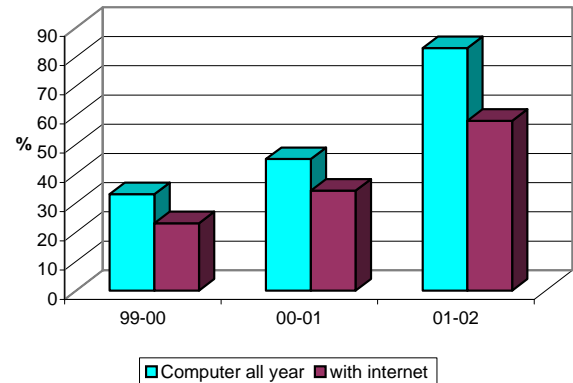

Chart 1. Computer Ownership

The number of students who say that they enjoy working with computers is also increasing. In 99-00 74% of respondents agreed with the statement 'I like working with a computer'. This had increased to 85% three years later (p<.01). A similar number agreed that they were looking forward to using IT on the course.

Unsurprisingly there is a connection between students' computer ownership and the frequency that they use various applications. Students perceived skill levels in using software packages were found to increase with frequency of use. 77% of those students who considered they had 'good' or 'expert' word processing skills used a word processing package at least weekly, whilst 64% of students who hadn't used a word processing package in the previous 3 months considered their skills to be basic (p<.01)

Students' confidence in their ability to use IT has not improved in the same way. One question asks the respondents to show their agreement with the statement 'I struggle if the computer doesn't do exactly what I expect it to do'. Across all years of the study, 61% of students agreed with the statement, the range was 58% - 67%,
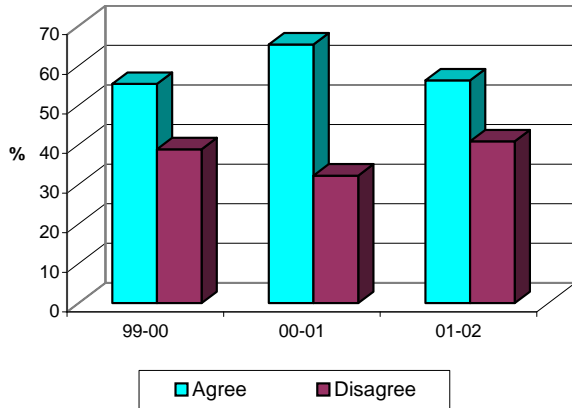
Chart 2. Struggle with computers

Students were asked to self-rate their skills in using various basic software packages including word processing and spreadsheets. For both, other than a small reduction in the number of students who said they had never used the package, there was no significant improvement in students' skills over the 3 years of the survey.
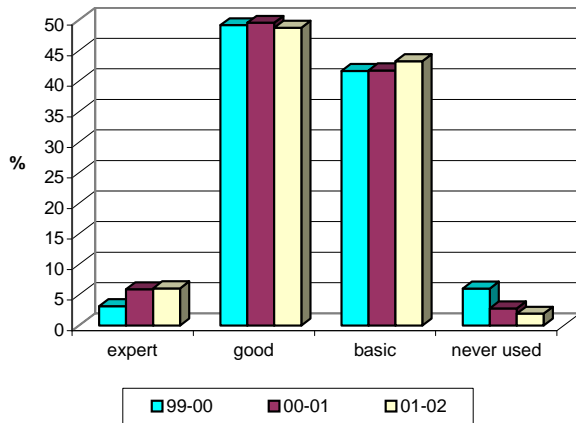

Chart 3. Word Processing skills

The only application that has shown a significant change as the study has progressed is use of the Internet (p>0.05). Students are using it more, in 99-00 41% of students hadn't used the internet, a figure which in the 3 years of the study had reduced to 15%. Students also reported greater confidence in their abilities, in 99-00 only 16% considered their skills to be at least 'good' this figure had increased to 37% by 01-02.

When these statistics are compared to questions about students' successes in using the Internet the picture isn't as encouraging. In the first year of the study only 31% said that they could use a search engine, compared to 63% in 01-02. The number having problems finding a reasonable amount of relevant information is also increasing. In 99-00 only 35% of students agreed that they ended up with far too much information when searching on the WWW, 3 years later this had increased to 53% (p<0.01).

5. Implications

New nursing students are not starting their nurse education with adequate informatics skills, either for study or for professional use. Many are lacking even quite basic computer skills. An online poll conducted by nursing-informatics.net asked 'Should we still be teaching basic computing skills in nursing and informatics courses, or should we assume them?' 73% of the 78 respondents considered that students on general nursing courses should be taught basic computing skills, and only 1% thought that it should be assumed that nursing students had satisfactory skills at the start of their courses. Whilst participants in this survey were self selecting, and there is no information available about them, given the nature of the web site it is likely that the respondents know something about the subject and nursing students.

In reviewing the success of Information for Health Protti 2002 [4] said that *'When information is everywhere the commodity in shortest supply is attention'* going on to identify that health professionals are facing an information overload. This research has found that although nursing students have greater access to computers than they did even 3 years ago skills are not improving at the same rate. The Internet is perhaps the most striking example of this. Use is rising, but all that actually means is that the number of people suffering from information overload is increasing.

Nurses have a professional responsibility to ensure their skills and knowledge are updated. They also have a responsibility ensure that their patients have sufficient understanding of their condition and treatment to both give informed consent for treatment, and to care for themselves as necessary.

The Internet is an excellent source of information for both responsibilities. Nurses therefore need to develop the skills to use it for their own needs, and to help patients use it for theirs. Inefficient use can contribute to information overload and can lead to patients becoming confused and worried unnecessarily.

Protti [4] also identified that, in the implementation projects he reviewed, of over 150 factors the only consistent ones were top management support and user involvement.

Having worked with nursing students and technology for over four years my experience is that in every intake there are students who started the course with no idea of why nurses need to use computers, or the skills ands knowledge that they need to use them to effectively support practice. Some are very resistant to the idea, seeing it as either increasing nurses administration workload, or as a way of depersonalising care, and a threat to their professional practice rather than a useful tool.

This approach may arise from lack of understanding of how technology can be used, or from a fear of using computers. A computer may be a tool with which they, to date, have avoided or struggled with. The skills needed to work effectively with technology and information, ie informatics, skills can be seen as building blocks. Without a solid base it is impossible to develop higher level skills

6. Conclusion

Nursing informatics is a title that many people, nurses included, do not fully understand. Even within the discipline there are different interpretations. For discussions amongst people who understand the subject

this is no bad thing, and helps to identify areas of specialist interest and development of the discipline.

Outside the specialist arena there is a danger that 'nursing informatics' is little more than jargon, at best something that is seen as essential for the specialists to develop, and at worst as taking nurses away from caring and putting them in front of computers.

Skills in working with computers are essential building blocks to developing nursing informatics skills. Without these nurses cannot move on to start seeing how technology can help them in their work.

Nursing informatics does not however stop there. Nurses also need an understanding of the technology they are using to ensure that are able to use it safely, eg maintain confidentiality of patient information. They also need information handling skills to ensure that they can find, evaluate, manage and present information.

If Nursing informatics is to be seen as an important topic for all nurses, then nurturing an understanding of health informatics in its widest sense is an essential part of any pre-registration nursing programme. Developing the information and technology skills to be able to integrate the use of both into professional practice is equally important if nursing informatics is to become one of the core parts of the art and science of nursing.

7. References

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