Use with care: possibilities and constraints offered by computers in nursing clinical education

Julianne Cheek, David Gillham *, Patricia Mills

Faculty of Nursing, Centre for Research into Nursing and Health Care, University of South Australia, Underdale Campus, Holdrooks Road, Underdale, SA 5032, Australia

Abstract

Funding constraints, demands for improved efficiency, low staff to student ratios and improved computer software (D. Wright, The use of multimedia computers and software in nurse education, Health Inf. 1 (3) (1995) 101–107.) all combine to produce a situation where a dramatic increase in the use of CBE for tertiary nurse education appears inevitable. In particular there is a very strong movement towards the development of nurse education materials able to be delivered via the World Wide Web (WWW). Given the speed and the extent of these developments it is essential that CBE developments are subject to adequate review and critique. In particular it is important that the pedagogical concepts underpinning the CBE are congruent with the technological innovation being implemented. This paper provides such a review and critique through the discussion of a project concerned with the integration of a computerised hospital nursing care planning database into the undergraduate nursing curriculum. The evaluation of the project not only raises many issues and concerns relevant to CBE in general, but also provides examples of the ways in which CBE can be used to link theory to practice. It also highlights the need for congruency between pedagogy, technology and student learning. Implications arising from the project are discussed at length, including the possibility for clinicians and academics to work collaboratively on database development. © 1998 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Education, nursing; Education, nursing, continuing; Education, nursing, baccalaureate; Computer assisted instruction; Computer literacy; Hospital information systems

1. Introduction

Universities in Australia are faced with the challenge of finding ways to improve the quality and efficiency of teaching at a time when significant cuts to funding have occurred. Practice based disciplines such as nursing are also confronted with high costs associated with providing clinical education, essential for the development of student’s
clinical competence which is required for nursing practice. Computer based education (CBE) may provide a positive contribution towards clinical education if software can be used to represent or even simulate clinical practice. At a time when vastly increased use of CBE is inevitable, it is important that the use of CBE for nursing education and practice is subject to adequate critique. While ‘cheap’ and ‘fast’ education may be achieved by keeping ‘bodies off campus’ there has been limited consideration directed to the pedagogical issues associated with the new forms of educational delivery [1]. Furthermore specific disciplinary requirements, such as the need for nursing students to develop clinical competence, demand careful consideration in any moves towards CBE. This paper reviews a specific CBE project which aimed to promote links between the hospital and university settings, in order to promote improved learning and teaching outcomes in the clinical component of one subject in an undergraduate nursing program. In so doing the discussion explores ways in which technology can be used to enhance and improve teaching and learning.

2. The computerised care planning project

The computerised care planning project which has been reported elsewhere in detail [2–4] began with the installation of a major public hospital’s computerised hospital nursing care planning system into the undergraduate nursing students’ computer laboratory. A project philosophy which emphasised the need for student centred learning, the integration of the use of the computer program with the existing curriculum and the development of students’ problem solving skills ensured implementation of the technical innovation provided a positive contribution to the teaching and learning process. Significantly a strategy was developed which used the perceived limitations of the computerised database for undergraduate education, such as limited rationale for care and lack of detail in explanation of terms, to advantage. Specifically, students were provided with problem solving activities based on clinical scenarios. Students retrieved information from the computerised care planning system which was identical to that used in the hospital. Students then used the information from the database as a learning resource along with texts and lecture, tutorial and laboratory input to problem solve. In this way students were not only gaining skills in computer literacy essential for future professional practice [5] but developing life long learning skills in computer based information retrieval [6]. Furthermore students were implementing clinical problem solving as they would as practising Registered Nurses and actively critiquing the content of the computerised care planning database.

Evaluation of the project indicated that students strongly valued the opportunity to be able to access the hospital care planning database in the university. Students found use of the database helped them link theory to practice and that use of the database helped to prepare them for clinical placements. Major concerns raised during the evaluation process related to the need for students to develop skills in actively producing nursing care plans. A number of educators and students involved in the evaluation process were alert to the possibility of students becoming reliant on the computer to produce care plans. In the pilot phase of the project one student commented “I love using the care planning program because I do not have to think as hard”. While problems related to passive use of the database appeared to be eliminated because of the teaching and
learning process which was adopted, dependence on database material needs to be treated as an ongoing concern for students and practitioners alike.

3. Project implications: using multimedia to develop clinical databases

The development of improved computer software has placed the production of multimedia education resources within reach of most nurse educators. At a time when the theory practice gap in nursing is recognised as a serious problem [7] the use of computerised care plans for education provides a practical and physical means of linking the hospital to the university. By supplementing existing care planning content with multimedia the educational value of computerised care plans can be enhanced. Hypertext can be used to provide multilayered explanation [8] providing an ideal tool for the development of educational material for multiple user groups [9]. For example, computerised nursing care plans with hypertext links to more detailed explanations for care developed for undergraduate students can also be used by Registered Nurses wishing to update their knowledge about a particular aspect of care.

3.1. Supporting sciences

A very significant future benefit arising from the development of multimedia resources linked to nursing care plans is that supporting science content may be directly linked to nursing care using the potential afforded by hypertext links. A particularly important aspect of this approach is that science content is not supplied to students directly by a lecturer but students explore the science content as they select it for themselves using hypertext. Learning that occurs in this way is thus student centred and the learning pathway followed student initiated.

3.2. Using multimedia to enhance student learning

Multimedia and specifically hypertext, can be used in a manner which allows students to customise their learning according to individual prior experience. This is an important requirement for undergraduate nurse education because of the diverse backgrounds of nursing students [10]. Hypertext can also be used in a manner which preserves nursing care plans as they are used in the hospital. In so doing clinical credibility is maintained, whilst further layers of explanation can be added, allowing access to detailed explanation of aspects of the plans, when required by the user. The inclusion of video in multimedia is specifically applicable to the demonstration of intricate and or complex clinical procedures such as the measurement of central venous pressure. Similarly audio will allow clinical experts to talk nurses through set procedures such as catheterisation slowly and precisely. The use of audio and video will provide students with the opportunity to replay instructions provided by experts who may otherwise be too busy to provide repeated individual instruction in the work environment. This also provides students with access to expert input and information at any time and location.

4. Discussion

Clearly a strong case can be made for the development of multimedia education material based on computerised care plans in hospitals. However, as emphasised by students who participated in the computerised care planning project the integration of the com-
puterised database into the teaching and learning process is as important as the technical quality and capability of the database itself. Ironically an imperfect database which is examined critically by students may facilitate more effective learning than a perfected database which is used passively. There is danger that students may become reliant on database material assuming such information will be available to them at all times or that such information is ‘naturally’ correct. Therefore it is essential that use of high quality databases is integrated in a manner which promotes active use of the databases in problem solving. This may be best achieved through the use of patient scenarios and presentation of problems likely to be encountered in clinical practice.

A further concern relates to the misuse of CBE resources. While educational resources which are developed from computerised nursing care plans may form a valuable core of an undergraduate nursing curriculum it is essential that suitable supplementary materials, adequate lecturer contact and extensive clinical experience are provided. McWilliam strongly emphasises the importance of the physical presence of the teacher in the pedagogical process [2]. In a discipline such as nursing which is so dependent upon human communication, removal of the university and hospital teacher from the teaching and learning process may have far reaching and unforeseen consequences. It is likely that a computerised care planning database as a stand alone resource may be highly ineffective.

A further issue of concern is the assurance of continued provision of current clinical information. The issue of providing care planning databases on the World Wide Web (WWW) raises further problems. Such as the difference in learning styles between countries and in nursing care between nations. The variation could be significant because recommended nursing care in one country may constitute illegal practice in another.

Conclusions drawn from the nursing care planning project lead to the recommendation that the development of care planning databases for educational purposes is desirable. However, the size of these databases is such that complete development would be an expensive exercise. Cooperation between institutions with centres of expertise being established would help promote efficient database development. However before moving towards such globalisation of university courses it is essential that both the integration of database use and examination of pedagogical principles as they relate to decreased teacher contact are given adequate consideration [2]. It is essential that the implementation of technological innovations in education are accompanied by research that evaluates their impact on teaching and learning.

Acknowledgements

The authors acknowledge the support from the Committee for the Advancement of University Teaching (CAUT) which funded the project.

References


