

Digital video cases

Investigating the effectiveness of technology-supported continuing professional education for general practitioners.

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Abstract The availability of self-paced CD-ROM packages and on-line information and courses suggests that the dissemination and use of technology-supported learning for continuing medical education is growing. However, review of the literature indicates little evidence is available about how continuing medical education has been re-conceptualised to consider interaction and media richness afforded by digital technologies. Further, understanding of practitioners' perceptions of the use of such techniques, how they might engage with such strategies, or how effective technology-based learning may be in supporting their knowledge or skill development is yet to be confirmed through empirical findings. This paper reports on the design considerations, development issues and methodology to formatively evaluate a CD-ROM package aimed at facilitating general practitioners' understanding of dual disorders.

Introduction

Traditional strategies for continuing medical education focused on face-to-face meetings such as lectures or small group workshops for which participation was linked to professional development points as allocated by regional or national professional colleges. The more recent availability of self-paced CD-ROM packages and on-line information and courses suggests that the dissemination and use of technology-supported learning has grown. However, review of the research literature indicated little evidence was available about how continuing medical education has been re-conceptualised to consider interaction and media richness afforded by digital technologies. Further, understanding of how practitioners perceive the use of such techniques, how they might engage with such strategies, or how effective technology-based learning may be in supporting their knowledge or skill development is yet to be confirmed.

This paper reports on the design considerations, development issues and methodology to formatively evaluate a CD-ROM package aimed at facilitating general practitioners' (GPs) understanding of dual disorders.

Project background

Mental health is identified as a significant health priority of the Australian Commonwealth Government. In Australia, up to 25% of the population will experience a mental disorder at some time during their life. One third of that subset will have a co-existing substance use problem. This co-morbid condition is known as dual diagnosis. One in three patients that present to a general practitioner with a mental disorder will have a substance use disorder.

While GPs are ideally placed to support Australians facing such conditions, these medical professionals may not have the breadth of training to deal with the issues that might present in their practice.

A collaborative partnership between two regional divisions of general practice, the local health service delivery organisation and university-based mental health and educational technology research groups sought to investigate the design, development and pilot testing of a continuing medical education initiative. The focus of this initiative was an interactive multimedia learning resource aimed at improving the skills of Australian general practitioners in the identification, assessment and management of dual diagnosis patients.

Design underpinnings and dilemmas

The design of the *Dual Diagnosis* multimedia learning resource was informed by the current and changing context for continuing medical education. Further, design included a re-conceptualisation of how the proven learning strategy of the case method might be enhanced using digital video to provide a guided, self-paced interactive training experience.

Continuing professional development context

Continuing education for physicians has followed the trends of other professions with calls for ‘just-in-time learning’ and thus, interventions focused in the workplace (Leist and Green, 2000; Sebaldt, 1997). The increasing use of information technology in service delivery has led medical educators to identify the need to embed information processing skills (i.e., the need to critically analyse and manage information) within training experiences (Leist and Green, 2000; Worley, March, and Worley, 2000). However, moving away from the monthly or quarterly continuing education workshop evening to self-paced mode means a new way of learning for the general practitioner and new considerations for the educational designer.

In order to capitalise on the potentially short (e.g., as limited as 10 minutes) and infrequent opportunities available in a general practitioner’s work schedule for training, such educational resources must allow the learner to focus on appropriate components to foster efficient interaction. Navigation and search tools must be embedded and easy to use such that the learner can find what they need quickly and easily. Management tools need to be provided so that learners can revisit topics when they run out of time or return to information they identify as important.

Promoting learning with video-based cases

Case-based learning strategies have been a feature of professional education for more than a century (Sykes and Bird, 1992). In medical education, case-based strategies involve providing learners with a text-based narrative that details a patient presentation and history. Students analyse actions taken by experts in relation to the case or are required to identify the additional information (e.g., ordering tests, engaging in specific examinations) necessary for them to be able to make an accurate diagnosis and suggest a course of treatment (Barrows, 1994).

Case-based methods are considered to support learners in making links between theory and practice — specifically such methods support active, independent learning with authentic situations and interactions (Bromley, 1986). Learners are required to analyse these ‘real-world’ problems, reflect on their understandings, interact with other learners and thus explore

multiple perspectives, and reflect upon or suggest a course of action (Bennett, Harper and Hedberg, 2002). Specifically these strategies are seen to support deep understanding, critical analysis, decision-making and communication skill development (Bennett, 2002; Peplow, 1998).

The development and accessibility of digital technologies gives opportunity to go beyond the traditional text presentation of case materials and provide learners with a range of resources that include rich media such as animation, audio and video. In the *Dual Diagnosis* learning resource patient cases are used to exemplify module content (i.e., information about identification, assessment, referral and coordination of dual diagnosis cases) and provide an authentic context for the learner. Case materials consist of a short text introduction with video excerpts of patient interaction with their doctor over a number of visits. To include the expert insight, or professional peer perspective that is often available in face-to-face training environments, a post-visit discussion between the patient's attending doctor and two colleagues is portrayed using still image and digital audio.

A team consisting of content experts (mental health nurses, general practitioners and psychologists) and an instructional designer authored the scripts for the patient-doctor and doctor-colleagues interactions. Draft scripts were presented to a focus group of general practitioners who were asked to take on the various roles and read-aloud through the lines as a group. The group was then asked to comment on whether the cases seemed realistic; if they saw people whose situations were similar to *James*, *Sonia*, *Will* and *Rose* in their practices; if the language the case patients used seemed appropriate; if the reactions and actions of the attending doctor was what they might do; or if their actions might be considered poor or best practice; if the discussion among the colleagues was something they might engage in; and, if the language used in the discussion was appropriate. Comments and suggestions made by this focus group were integrated into a final script.

For the final production, actors took on the patient and physician roles and the cases and GP discussions were filmed on digital videotape. The scenes were then edited with *FinalCut Pro* to produce a series of short clips for inclusion in the package. *FinalCut Pro* was ideally suited for use on this project because it offered sophisticated editing options, but could be run from the desktop machines available to the designers working on the project. The accessibility of the software also allowed designers to rapidly edit clips and test within prototypes of the package. This was an important facilitator for design discussions among the collaborative group — within which many participants had little or no experience with development of multimedia training packages.

Upon completion of editing, the digital video elements for the doctor/patient interaction and the audio/still images of the doctor/colleague discussion were included in the case section of the multimedia package (e.g., see Figure 1).

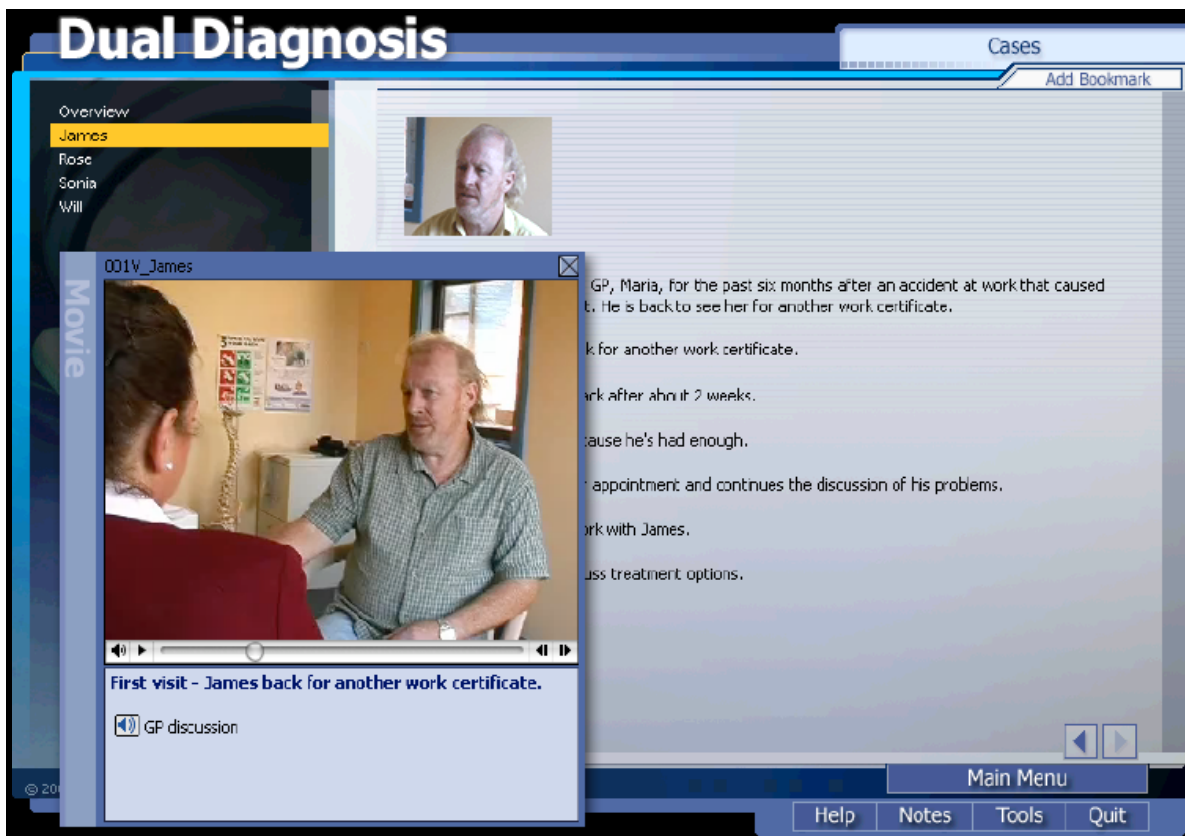


Figure 1: Digital video case presentation in Dual Diagnosis.

Additionally, links to specific components of the cases were made from the content of the five modules of the package. These links allow learners to watch a short video sequence that provides a realistic illustration of a concept or practical application of a skill.

Focus on outcomes

A formative evaluation was implemented toward understanding the relevancy of the design and the effectiveness of the training resource. The *Dual Diagnosis* CD-ROM was disseminated to GP members of the two participating regional divisions of general practice in two ways: through face-to-face workshops and through the post for those who could not attend the sessions. Face-to-face sessions were facilitated by a mental health professional and included a presentation that provided an overview of the issue of dual diagnosis and showed excerpts of three of the four video cases of the package. After viewing each excerpt, participants were asked to discuss the patient-doctor interaction. Finally, participants were provided with an overview of the entire *Dual Diagnosis* package and asked to take it away and work through it on an individual basis for a period of four weeks.

Research methodology

The research design seeks to capture detailed qualitative data (see Table 1) within the learning context and needed to be tailored to the two dissemination strategies (see Figure 2). This design enabled the researchers to develop an in-depth understanding of the learners' experience (of either face-to-face or self-paced training modes), their interpretations of the cases, and their attitudes toward the materials.

Table 1: Data Collection Techniques			
Mode	Survey	Observations (overt)	Follow-up interviews
Face-to-face	Participants surveyed at the beginning and at the completion of the training course to collect information on their prior knowledge of the content area, their use of the CD-ROM, and their attitudes to the materials.	The researchers will observe and record the face-to-face discussion sessions.	Participants will be invited to engage in an in-depth telephone interview at the completion of their training experience regarding their use of the CD-ROM and the relevance and perceptions of the case materials.
Individual self-paced		No observation will occur.	

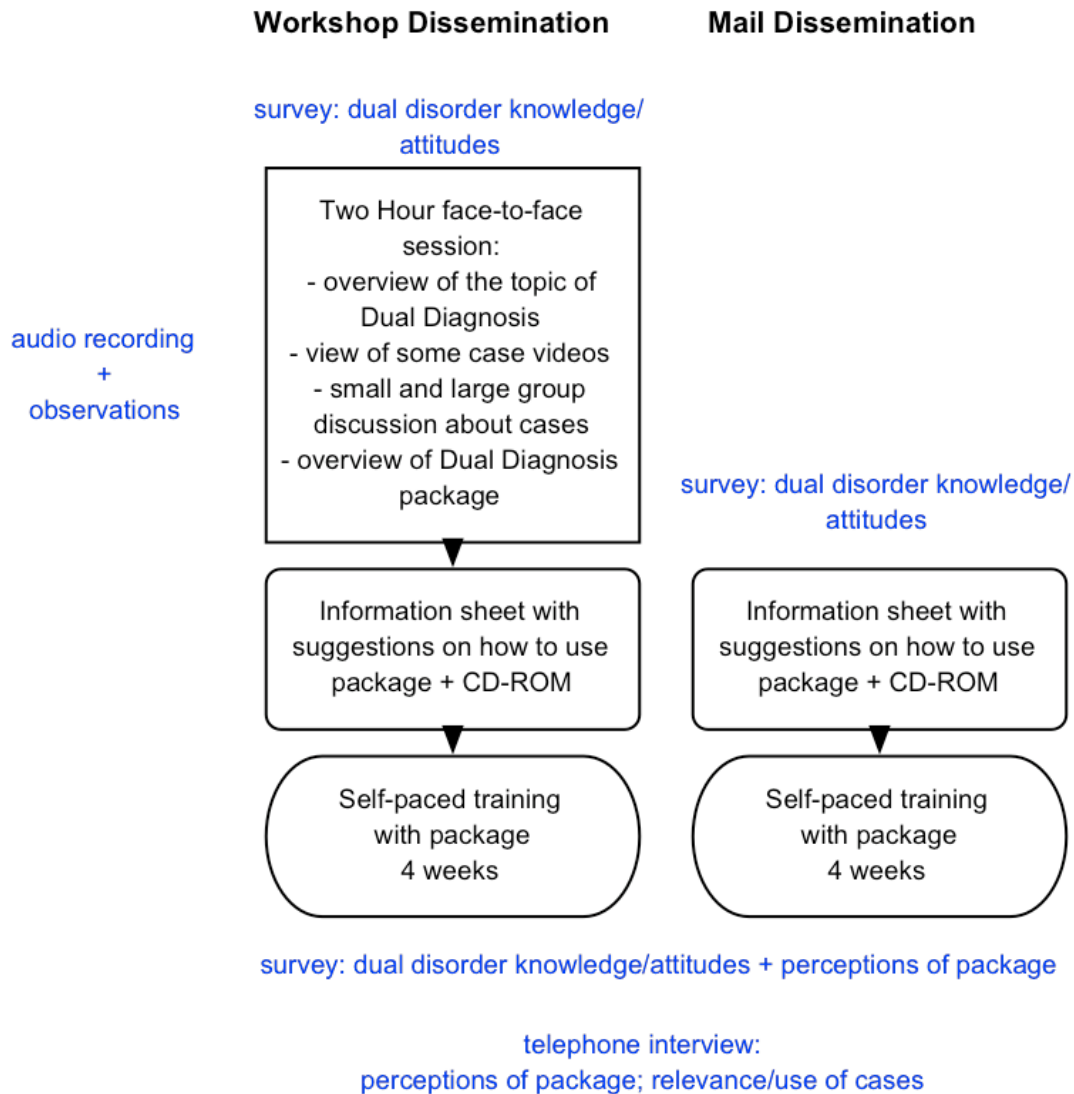


Figure 2: Formative evaluation data collection process.

Preliminary Findings

Preliminary findings can be identified through analysis of the audio recording and observations of the initial workshops that were held to disseminate the *Dual Diagnosis* package.

The video cases engendered much discussion among the participants. The discussion identified that the participants felt that the case patients were representative of some of those that present to their own practices. However, in this workshop format, they did seem to have difficulty identifying that the interactions between the patient and doctor were excerpts from multiple visits. Participants were particularly focused on the appropriateness or inappropriateness of the case doctor's interactions with the patients. Participants suggested what they might do differently. In fact, they quickly turned from the discussion of the resource case patients to discussing those they have come across in their day-to-day practice.

Importantly, they considered whether or not they felt it possible to use some of the exemplified strategies in their practice. They had particular difficulty with strategies that were new to them (e.g., concept mapping with a patient to identify physical and psychosocial issues).

In responding to the overall package and how they might use it after the workshop, participants acknowledge that it seemed to be a comprehensive resource. Participants expressed concern about using it in the office setting — particularly with a patient in the office. They also identified that they already felt pressed for time and were unsure that they would find opportunity to work through the package. Some identified lack of access to a computer or were concerned that they might lack the necessary technology literacy to use the package.

Discussion and next steps

The preliminary findings will be expanded upon by the data collected once participants have had the opportunity to spend some time using the package on an individual, self-paced basis. This will help identify whether some of the issues raised by participants (e.g., unclear identification of multiple visits by the case patient; uneasiness with some suggested physician strategies) were overcome when the participants were using the package on their own, could read and view the material in-depth and make links to the additional information provided. However, initial reactions do provide some guidance considering the next stages of the project.

Given that technology-facilitated, self-paced continuing education is new for a number of general practitioners, opportunities must be identified to provide support for the learners. Suggesting a learning plan and providing a learning structure will go some way toward this goal.

Upon analysis of the complete data set, a set of recommendations specific to the Dual Diagnosis package will be developed such that the product can be appropriately revised and disseminated nationwide. Further, a set of general recommendations on how technology-supported learning might be designed and implemented for continuing medical education will help to ensure appropriate design and thus effectiveness.

Acknowledgments

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