Abstract—Within the healthcare system, training and continued professional development although essential, can be effected by cost and logistical restraints due to the nature of healthcare provision e.g. employee shift patterns, access to expertise, cost factors in releasing staff to attend training etc. The use of multimedia technology for the development of e-learning applications is also a major cost consideration for healthcare management staff, and this type of media whether optical or online requires careful planning in order to remain inclusive of all staff with potentially varied access to multimedia computing. This paper discusses a project in which the use of DVD authoring technology has been successfully implemented to meet the needs of distance learning and user considerations, and is based on film production techniques and reduced product turnaround deadlines.

Keywords—DVD, healthcare, distance learning, cost.

I. INTRODUCTION

The genesis of this research project was established by problems associated with the introduction of new assessment procedures in the determination of child and adolescent psychiatric disorder. Healthcare professionals working in this field had developed a text based assessment tool which was under review and testing within the psychiatric community. Issues regarding access to clinicians for group assessment were not solely confined to the nature or appropriateness of the subject matter, but stem significantly from logistical and time constraints endemic in professional healthcare practice, as commented in [1]. The assessment of the tool, required individual and group sessions whereby the effectiveness of the questions used (normally within an interview session with the parent or carer of the child) could be discussed and rehearsed. However, the only effective mechanism for assessment was the use of transcripts from existing case interviews. The use of DVD media for group training sessions with the emphasis on observational and influenced by association of audio input to added to the ease of use of the product. The learning style was match key visual clues during the interview. Included in the graphics, as additional support, but not essential to DVD was PDF and text based on screen information / added to the ease of use of the product. The learning style was match key visual clues during the interview. Included in the graphics, as additional support, but not essential to DVD was PDF and text based on screen information / added to the ease of use of the product. The learning style was match key visual clues during the interview. Included in the graphics, as additional support, but not essential to DVD was PDF and text based on screen information / added to the ease of use of the product. The learning style was match key visual clues during the interview. 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The metaphor and use of the phrase “DVD” as a vehicle for motion picture delivery, is firmly established in the mind of the public. This action of “watching” a DVD, supports it’s use as a medium for directed learning unlike the interactivity presented to the user by a CDROM or web based structure. If we compare game styles on popular consoles to that of educational multimedia titles, and the observational (passive) interaction with DVD media, then it is not that constant interaction equals engagement or even learning. Interaction is one of the central tenants of the promotion of multimedia learning, however lecture based instruction still forms the majority of learning methodologies within formal education at all levels. Within game play, on one level, the interaction could be limited to a task based approach, the goal being to score points or attain access to each new level. On the other, games which are based around a narrative/story theme, whereby the user/player has to engage with concepts such as timeline, interaction with characters, character development, emotion, etc fall into the same arena as the motion picture or television series. If we compare time spent on console games titles (young adult males) that are based around first person viewpoint, and direct one to one interaction with plot characters, to that of time spent on any investigation based web or CDROM resource, it would be a safe bet that there would be considerably more investment and energies within the first example. Taking into account the entertainment factor of a console game, the nature of the game activity etc, this still leaves us with an environment which requires memory rehearsal (navigation in 3D space), solving puzzles, strategies developed over time to complete tasks, at the same time as possible high sensory input and motor skills output. The question this raises, is there also more opportunity for retained learning using materials which are constructed to suit the first person viewpoint, in the same way that television programmes in documentary style are edited and presented.

It is this shift in emphasis from content driven multimedia to that of film media that deals with attention span and engagement, that is core to the passive interaction approach.

IV. DVD AND HYBRID MULTIMEDIA SYSTEMS

One of the key benefits of the use of DVD media as the main instructional product is within it’s ease of use (typical 5 button remote control access) and ease of device playback. In this mode, passive interaction takes place between the teacher/tutor and the pupil/student, by structuring the content as a dialogue based around chapters, with options for directed navigation embedded into the flow of the information. However if the same media is accessed within the education / workplace environment via a computer, then further interaction is made possible. Figure 2, shows the possible options for on and off campus delivery. In Figure 2, the student can access the content of the DVD in three modes. The first is the basic DVD player only mode, which will present the content within the limits of current DVD authoring. Secondly the user can access the DVD content via a Shockwave HTML multimedia structure by including an interface via HTML pages stored within the DVD (DVD-ROM). The final option is to access further content via the internet, which can be static or dynamic
from both the DVD content (DVD@ccess) or via the HTML structure on the disc. DVD access to the internet is made possible during DVD authoring and links can be created in menu structures. When activated, these links will open the host computers browser and establish the web link. The DVD player software and the web browser are opened a two separate applications on the users PC, and the user is required to switch between them. A more elegant solution is to employ the Macromedia Director multimedia authoring application (www.macromedia.com) which includes options to integrate an authored DVD disc or DVD disc image into the structure of a Shockwave HTML presentation. The software includes a DVD event manager, which monitors the elapsed time of any video or audio stream, and can present additional on screen text or graphics/images to be displayed in tandem with the DVD playback. For example, the user can be watching a video sequence with audio commentary within the DVD window, and at a predetermined point in the playback, a diagram or text prompt can appear in a separate window. Another possibility of additional media added into the DVD presentation, is the use of simple script programming within the Macromedia application to access text from a specified web page, and present the same within the DVD player interface. This could allow a teacher to prepare questions as simple HTML text on a school server, which would present itself automatically to the student at a selected point in the DVD playback. Figures 2 & 3, details current options for DVD interactivity from basic player access to use within a hybrid multimedia application.

Fig. 2 DVD media supporting on and off campus / workplace training and access to various platforms.

Fig. 3 Examples of hybrid DVD interaction with multimedia applications an online media.
V. PRODUCTION OF DVD TITLE

Prior to the production of the final DVD product, a prototype DVD version was created for initial feedback and testing. This was based on a traditional design common to cinematic titles which utilised only a small subset of the potential interactivity offered within current software authoring applications. For the purposes of evaluation the menu and sub menu structures were contained within a two layer hierarchy used previously within a similar healthcare instructional title, (interface burden, Kappel [5]) in order that navigation tasks were not regarded as an issue for evaluation but rather the focus was on the media content. Figure 4, shows the prototype DVD structure. The main interview sequence during which a series of questions were asked of the child’s parent / guardian was duplicated into 2 tracks one with a lower third graphic showing the correct scoring for each question. The intention was to ask clinicians to watch the interview and score each question from their own judgment, and then replay the interview to assess their performance with the scoring displayed. Figure 5, shows an example of the interviewer’s question script from the text based assessment tool.

A scene by scene menu similar to the scene selection structure found on movie DVD titles, was also added in order that the user could receive coaching as to what to look out for in each question and how to score the same. This feature served to explain the concepts behind the assessment process and provided a video glossary of each question for healthcare staff new to the technique. Figure 6, shows end user’s experience of using the DVD application.

VI. EVALUATION OF THE DVD PROTOTYPE

Generally there was the feeling that the DVD didn’t provide a realistic representation of what parental interviews are like. There were comments that the conversation shown on the DVD between the clinician and the parent/carer seemed unrealistic. However all of the material used in the DVD was from real life examples taken from actual clinical interviews. Clinicians suggested that what might be more engaging and realistic would be an actual parent describing their child. They felt this would help to show the clinician’s expertise in managing and teasing out answers. They also raised questions about whether the child would be in the room at time of the parental interview. This is something that commonly happens in a clinical setting but wasn’t shown in DVD. There were comments that the parallel use of the DVD and questionnaire help show how questions could be asked. Only looking at the questionnaire on its own made the questions appear disjointed. The DVD helped the questions flow and seem relevant and provided comfort to the clinicians that there was some leeway in how the questions could be asked.

There was positive feedback about how the sections were divided up with glossary examples being given by the lead researcher at intervals in the DVD. This led to a sense of being guided through each question. Other positive comments included that the DVD was very easy to look at and listen to. Suggestions of other items which should be included in the DVD were an introduction about the topic, the research project and how the DVD can be used. For example one of the assessment tools involves an observation task which could be integrated more fully into the DVD.
Some though not all clinicians expressed a desire to practice using the assessment tool, either with the DVD example or with other clinicians, before using with families. The majority expressed feeling comfortable to start using it after the group training session. Clinicians put forward the view that it would be helpful to have another example interview or two on the DVD to rate before using in the clinic, therefore allowing clinicians to compare their own answers with the ‘right’ ones on the DVD. Often it was difficult to get feedback about the DVD itself from the clinicians as they were concerned about the workload regarding the research project itself. Or they had clinical questions about the symptoms highlighted in the DVD. Some teams that had been trained using the DVD are now using this with children that are not in the research study. Clinicians are finding the experience very useful in raising issues about this assessment tool and this particular child mental health problem. In order to address some of the issues above raised by clinicians and the research team a new DVD was commissioned, and is in the process of undergoing testing and evaluation.

VII. FUTURE WORK: ONLINE COLLABORATIVE GROUPS

Professional DVD authoring applications contain the ability to write program instruction scripts which any modern DVD player can interpret and process. Although there is limited capacity within the media player to store and execute programs, it is sufficient to allow for degrees of interactivity more recently seen on commercial titles such as interactive quizzes and special features within cinematic releases. A second disadvantage of incorporating extensive programming within a DVD title is that the code which sets different register variables within the hardware of the DVD player is only present during power up, as the majority of commercial units do not incorporate non volatile memory for storage. A solution to these problems is to develop the DVD title as both stand alone product for playback via a DVD player, and to integrate the DVD media within a desktop multimedia environment and networking access to the web. This creation of a hybrid DVD, gives access to well established interactive programming which is both powerful and simple to construct, as well as adding unlimited additional information via web page links to overcome the static nature of optical media. Programming scripts and behavior libraries developed for applications such as Adobe (Macromedia) Director, and Flash can be employed within multimedia applications with limited programming experience. This type of hybrid approach to media presentation, can take advantage of dual layer interactivity, from both the interaction contained within the DVD title, and the overlay of a web / multimedia interface. Both these environments can interact with each other by connecting the video track / chapter timecode to trigger events within the web page or multimedia program. For example, during the interview sequence, the response of the clinician or the parent / child can be used to present additional information on screen, and if this information resides within a web environment, it can be changed over time by simple updating of the web site.

An identified issue for training within this sector of healthcare is the problem of group training due to logistical realties and staff workloads. Although the product can be used individually as a self study tool, interaction with other professionals is key to development of understanding and skills. With the relatively recent popular growth of social networking sites, and established instant messaging tools, as well as browser specific group networks (Google Groups), a DVD title can be part of an interface within allows for real time communication. Figure 7, shows a suggested interface design for clinical discussion using a session facilitator, and a chat room messaging display panel with logged in clinicians. As each question within the assessment tool is covered by the DVD video clip, voting on the correct method of scoring is via buttons over the video window. Users will have a copy of the DVD present within their computer, which provides all of the high quality video media without any cost to bandwidth and online interaction.

Fig. 7 Online simulation interface with DVD playing within the multimedia application.

VIII. CONCLUSION

The use of DVD media and the production techniques associated with film directing / editing and the generation of instructional media which follows dialogue driven design, is a highly inclusive form of e-learning development. Clients understand, and can easily participate within the production process, unlike other forms of multimedia creation. This has significant cost implications as the project time is reduced by virtue of enhanced client involvement. The communication of the clients business or research to the third party multimedia developer is facilitated by both accessing a common language and technology afforded by the DVD environment.

REFERENCES


