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Original Article

The virtual portfolio: from conception to reality

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Abstract

The rapid growth in web technologies illustrates how global attitudes to paper are changing. The world of radiotherapy is responding to this by steadily replacing paper-based systems with digital equivalents. In this time when the world is swapping thousands of years of dependence on ink and paper for pixels and screens, representing professional development in a large file of paper may soon seem incongruous.

This paper aims to introduce the concept of a "virtual portfolio" along with the rationale for using it. In the context of radiotherapy professional practice, the virtual portfolio's function mirrors that of a conventional portfolio, but uses electronic media to collate and present the evidence. Potential advantages and disadvantages of the virtual portfolio are presented, along with a brief overview of the software tools that can assist with the transition away from paper.

Since a portfolio is ultimately a very individual expression of personal and professional development, it is obvious that the virtual portfolio will not be suitable for everyone. It can be seen that electronic media offer some useful tools to the portfolio developer, but ultimately it is the content and use of the portfolio rather than the format that is of importance.

Keywords

Portfolio; e-portfolio; CPD

INTRODUCTION

This paper aims to introduce the reader to the concept of an electronic or "virtual" portfolio. There is considerable confusion surrounding the definition of an electronic portfolio and the use of other terms such as "e-portfolio", "digital portfolio" or "webfolio" contribute to this. Electronic portfolio expert Helen Barrett defines it thus: "An electronic portfolio uses electronic technologies, allowing the portfolio developer to collect and organise portfolio artifacts in many media types".[1] An "e-portfolio" is a web-based collection of student work, usually driven by a database and maintained by an organisation. A "webfolio", however is a stand-alone web-based portfolio that uses HTML links but does not rely on a database of work to drive it.

For the purposes of this paper, the term used is largely irrelevant since it is more concerned with the move towards portfolio development via electronic media rather than the specifics of one particular form of electronic portfolio. Rather than use a range of terms, the term "virtual portfolio" will be used to encompass all of them. This term shares more common ground with Helen Barrett's "digital portfolio" definition as a portfolio that replaces paper with electronic media. This does not mean it has to be on the Internet or database

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driven, but rather that it makes use of the same features that make web pages user-friendly and easy to navigate around.

Much of the current literature surrounding e-portfolios focuses on their use within an educational framework for developmental, presentation and assessment purposes.[2,3] In the context of radiotherapy professional practice, the virtual portfolio's function mirrors that of a conventional portfolio. In the UK it is primarily a tool for professional development, with a selection of its contents forming a profile to ensure compliance with the Continuing Professional Development (CPD) Standards in order to remain on the register of the Health Professions Council (HPC).[4] Conventional portfolio development is well documented[5] and the aim of this paper is not to address this again, but rather to debate the rationale behind the use of electronic media for portfolio compilation. The main advantages and disadvantages of the medium will be presented in order to inform the reader's decision.

WHY GO ELECTRONIC?

Before considering the differences between the 2 media, it is useful to consider the similarities. Both allow for production of a personalised developmental tool and creation of a profile for proof of CPD as part of professional requirements. Both require regular user input as well as a heavy commitment in the initial creation phase. Although electronic media can offer enhanced presentation by allowing the use of colour and images, this does not differ much from the potential offered by using coloured backgrounds on a paper-based system. In addition, although presentation skills can be evidenced using a portfolio, the purpose of the personal development portfolio means that the content is more important than the style of the work. As a personal developmental tool, however, it is recognised that the ability to customise colours and backgrounds may encourage feelings of ownership of the portfolio and thus possibly the interaction with it.[6]

There are many potential advantages associated with maintaining a virtual portfolio and some disadvantages that are mainly associated with the initial compilation of the work. An obvious advantage is the reduction in size and printing costs. Although a computer is required for its production, keeping the portfolio on a disc, memory stick or the Internet allows it to be accessed from anywhere without having to carry a large lever-arch file around. A paper-based system will require the re-printing of the contents list when the portfolio is updated so that the new work can be added. It may also necessitate a renumbering of the pages and potentially a full reprint of the portfolio. An electronic format can be updated with relative ease and without wasting paper.

The main advantage offered by electronic media, however, is the improved organisation and navigation features that can allow the reader to find relevant material with ease. Although contents pages, section dividers and clear cross-referencing can enable a reader to access particular sections of a paper-based document, it cannot compete in terms of speed, with being able to click a mouse button and be presented with the piece. The caveat here is that the link does have to work and the potential for frustration with broken links cannot be underestimated. If carefully devised, a virtual portfolio can be very user-friendly. The inherent structure, once in place, allows updating to take place without disrupting the navigation system.

As with anything new, however, there are difficulties associated with initial use. The need for some initial computer skills may put some users off. It has been argued, however, that the development of these transferable skills could benefit the user's future career.[7] There may also be an initial cost associated with production of a virtual portfolio, depending on what software needs to be purchased. Using professional e-portfolio "hosts" can cost in the region of £26.00 annually.[8] Some of the software packages that can enable virtual portfolio compilation may be relatively expensive, although cheaper options are available, such as the "CPDNow" system that has been developed by the College of Radiographers,[9,10] which is free for members, although incorporated in the annual membership subscription.

Some evidence may not be suitable for inclusion electronically. This will be the case if the user is accustomed to "stamp-collecting" handouts as evidence rather than writing reflective pieces on

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sessions attended. For example, including a "Certificate of Attendance" at an event may be problematical for an electronic approach. But in the context of proving that learning has taken place, the value of a certificate proving attendance can be doubtful. In most cases, paper-based evidence can be replaced by more useful reflective pieces, which are suitable for easy conversion to electronic media. Essential paper-based material may have to be scanned in.

One of the possibilities presented by virtual portfolios is increased sharing of the contents with others and benefiting from peer review. This can be achieved using web technology via an Intranet or wider distribution on the Internet. This approach allows the user to gain from the input of fellow professionals and also enables valuable reflection to be shared amongst the wider community. This is particularly relevant in relation to multi-professional working. There are some potential dangers associated with this approach, however. Once the portfolio is in the public domain, the confidentiality of the evidence is lost and care is needed to prevent plagiarism or accusations of libel arising. As with a paper-based portfolio, the need for confidentiality is paramount, but when relying on electronic media, it is important to remain aware of where copies of the portfolio are and to exert some control over their availability.

GOING ELECTRONIC

1: Initial design

As with traditional portfolio development, the first stage of the process is outlining the scope and use of the work. Authors need to consider the purpose of the portfolio and the likely range of evidence that it will contain. For radiotherapy practitioners in the UK, this will include evidence to demonstrate fulfilment of CPD standards to satisfy the HPC[4] as well as pure developmental material that will be used in personal and professional development.

2: Software tool

This additional step in the portfolio development process is only relevant for virtual portfolios. Paper-based portfolios are usually presented in a file or binder, whereas although electronic media are presented on a screen, there are numerous methods of displaying them. The choice of software tool needs to be made with care, since it will affect the ease of use, the cost of the portfolio, the power of the navigation system and the presentation of the work.

There are 3 different categories of software that are suitable for virtual portfolio development.

Hyperlinks

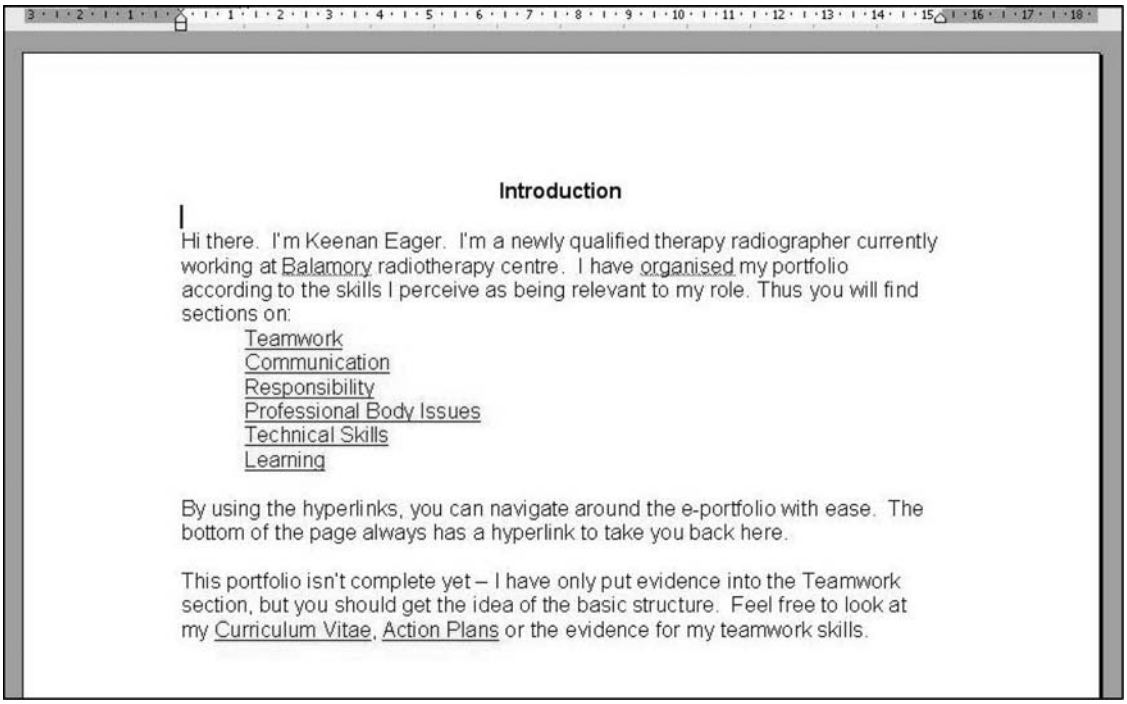
The most basic virtual portfolio can be created using features of familiar word processing or presentation software. Microsoft Word™, Powerpoint™ and Adobe Acrobat™ are examples of common software packages that permit the use of hyperlinks. A hyperlink is a tool that changes a word or phrase into a "button" that can move the display to a separate part of a document. Hyperlinks are commonly found in web pages and appear as underlined words or phrases that are usually in a highlighted colour.

Inserting these hyperlinks into existing documents or presentations provides them with a strong navigation system and allows the generation of a menu-based contents page as shown in Figure 1. It is, however, important to ensure that the user is not able to bring up endless different windows and rapidly become lost. Using a web-technology based system can help with this.

Web-authoring tools

Hyperlinking is a very powerful navigational tool, but ultimately does not contribute much to the overall presentation of the portfolio. Web-authoring software can enhance an electronic portfolio with menu systems, templates and "wizards" that can potentially produce a consistent format of pages and user-friendliness. Although the thought of writing a webpage can be intimidating, there are user-friendly software packages that can allow a beginner to create them with relative ease. Latest versions of word-processing packages such as Word™ or Publisher™ will allow generation of simple web pages with the associated menus and backgrounds. More specialised (and costly) software such as Frontpage™ or Dreamweaver™ perform this with more elegance and can be used to produce professional standard web pages, as in the example shown in Figure 2. The resulting work allows fully hyperlinked evidence to be displayed

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Introduction

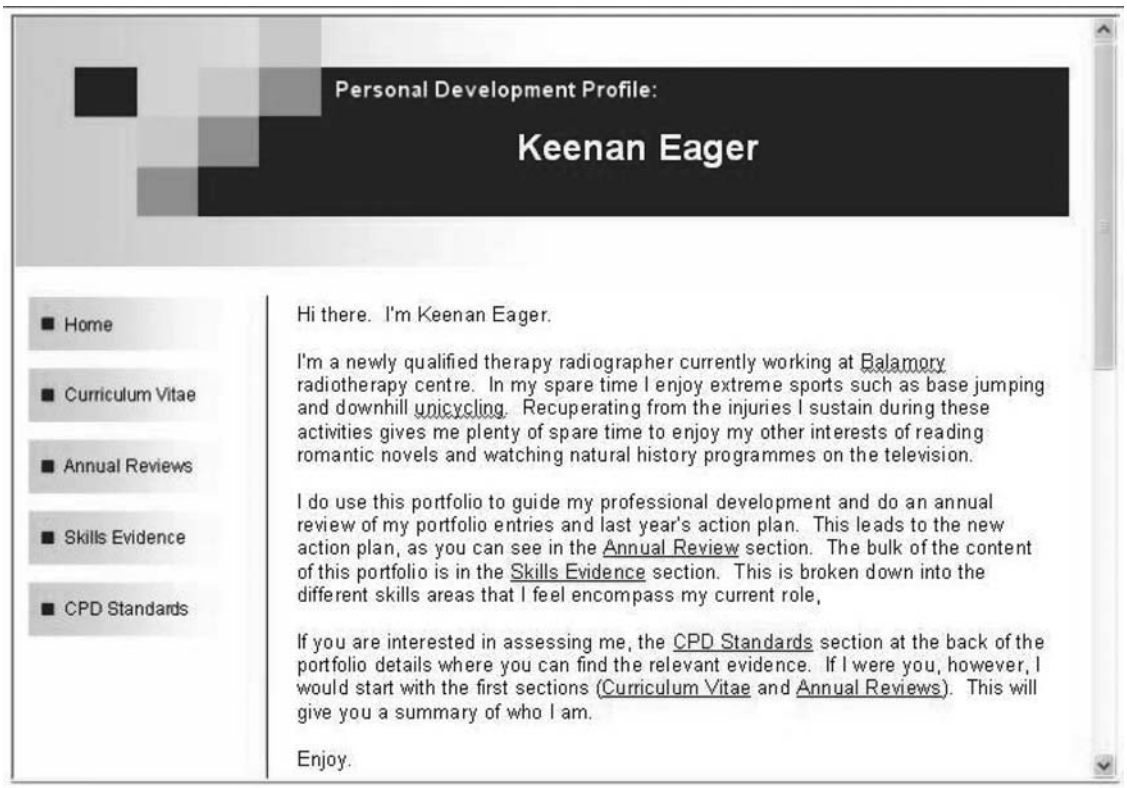
Hi there. I'm Keenan Eager. I'm a newly qualified therapy radiographer currently working at Balamory radiotherapy centre. I have organised my portfolio according to the skills I perceive as being relevant to my role. Thus you will find sections on:

- Teamwork
- Communication
- Responsibility
- Professional Body Issues
- Technical Skills
- Learning

By using the hyperlinks, you can navigate around the e-portfolio with ease. The bottom of the page always has a hyperlink to take you back here.

This portfolio isn't complete yet – I have only put evidence into the Teamwork section, but you should get the idea of the basic structure. Feel free to look at my Curriculum Vitae, Action Plans or the evidence for my teamwork skills.

Figure 1. Hyperlink use in a Word document.



Personal Development Profile:

Keenan Eager

- Home
- Curriculum Vitae
- Annual Reviews
- Skills Evidence
- CPD Standards

Hi there. I'm Keenan Eager.

I'm a newly qualified therapy radiographer currently working at Balamory radiotherapy centre. In my spare time I enjoy extreme sports such as base jumping and downhill unicycling. Recuperating from the injuries I sustain during these activities gives me plenty of spare time to enjoy my other interests of reading romantic novels and watching natural history programmes on the television.

I do use this portfolio to guide my professional development and do an annual review of my portfolio entries and last year's action plan. This leads to the new action plan, as you can see in the Annual Review section. The bulk of the content of this portfolio is in the Skills Evidence section. This is broken down into the different skills areas that I feel encompass my current role,

If you are interested in assessing me, the CPD Standards section at the back of the portfolio details where you can find the relevant evidence. If I were you, however, I would start with the first sections (Curriculum Vitae and Annual Reviews). This will give you a summary of who I am.

Enjoy.

Figure 2. Web page with menu and hyperlinks.

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Figure 3. CPD Now screenshot.

alongside a navigation tool such as a menu with interesting backgrounds and "live" links to external web pages or articles.

Portfolio programs

The most specialised group of software packages are the portfolio development programs available on the Internet. These are designed specifically for the generation of virtual portfolios and are generally user-friendly. The Society and College of Radiographers "CPD Now", as seen in Figure 3, is an example of one of these.[9] There is a large range of alternative commercial systems available, although many of these are designed primarily for institutional use. Applications such as "PebblePad"[11] or "iwebfolio"[8] provide the user with a sensible blank structure that can be tailored to the individual and stored online on payment of an annual "hosting" fee. Although online storage is convenient and generally secure, it may be prudent to keep backups of the content of these systems to ensure that materials are not lost in the unlikely event of a server being unavailable.

3: Structure

Having decided on the most appropriate software tool, it is essential that the portfolio is planned properly, as with the traditional system. It is essential to have an introductory screen that will introduce the user to the portfolio and explain how to use the navigation system. The inherent power of the software tools can only be used if the user understands how to use them. An interactive table of contents can be a useful addition, providing links to the different sections.

A major advantage of the electronic system is that evidence can be organised in many different ways at the same time. The paper-based portfolio can only use one set of categories because the evidence is fixed in its place in the file. A virtual portfolio can display the same evidence in chronological order as well as categorised by skills or type of evidence for example. An interactive profile of evidence relating to professional CPD standards[4] can provide useful links to the relevant evidence and minimise work when the evidence is demanded and can also be submitted electronically. The order in which evidence is accessed is determined by the links that connect it. While this makes the virtual portfolio potentially powerful, it is essential this is planned in advance to prevent it becoming unnecessarily confusing. Before pasting material into the portfolio it maybe sensible to create front pages for the sections and set up the links and menu system.

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4: Compilation

Once the structure has been created, the evidence can be embedded into the portfolio or links can be generated to it. Embedding documents into the portfolio ensures that they can be easily accessed, whereas forming links relies on the documents staying in the same place and may be more risky if the portfolio is going to be stored in several places. As previously mentioned, essential paper resources can be scanned or photographed, but it is important to ensure that file sizes do not become too large. Keeping image size and resolution low can help keep file size manageable, as can converting them to JPEG or GIF formats. Useful resources that can be used are links to electronic journals or web resources that have been cited in the evidence.

5: Presentation

If colour is to be used to enhance the portfolio, it should be used sensibly and should not detract attention from the text. A consistent layout on each page should be used to provide a professional feel to the portfolio. Templates may be available, depending on the software package, allowing each page to follow the same pattern. Advanced features such as drop-down or expandable menus can enrich the navigation and a simple "search" feature may help if the portfolio is likely to be large.

DISCUSSION

The use of a PC-based application to stimulate reflective practice was the subject of one of the few studies into electronic portfolio use in the healthcare arena. The Royal College of Physicians and Surgeons of Canada[12] used a PC-based portfolio program to encourage doctors to ask questions, seek answers and synthesise new learning. The application produced mixed reactions among the doctors in the study with only 10% engaging with it regularly. Despite this and the insufficient provision of training and support, 54% of participants wished to continue using it after the study had ended. Participants who liked using computers obviously found the electronic presentation attractive and it is this finding that holds the key to choice of medium for a portfolio. The very strength of a good portfolio is its individuality and the extent to which it can reflect the character of the compiler. A wider range of formats and tools is essential to ensure that the spectrum of therapy radiographers can express their professional development in their preferred manner. As Higher Education Institutions (HEI's) continue to place new recruits into the workplace, many of these are necessarily bringing with them considerable IT skills as recommended by the Dearing Report[13] and it is these therapy radiographers who may desire to use electronic media for their portfolios.

The rapid growth in web technologies such as online purchasing, voting, dating etc. demonstrates that global attitudes to paper are changing. The world of radiotherapy is also subject to this change. More and more paper-based systems are being replaced, as evidenced by the introduction of electronic patient notes and verification and record systems.[14] Even the transition away from film to electronic portal images represents a shift towards a digital department.[15] In this time when the world is swapping thousands of years of history of ink and paper for a future of pixels and flat screens, representing professional development in a large file of paper may soon seem incongruous.

E-portfolio exponents frequently cite the major strength of the e-portfolio to be provision of collaboration by creating a "connected" portfolio.[1] A connected portfolio is available for others to read and add to, making the store of information collective rather than purely individual. This enables essential peer review and sharing of ideas and reflections to take place. This must be a vital part of CPD if it is to benefit the profession as a whole, and not just the professional. This approach also has the potential to enhance multi-disciplinary working and stimulate inter-professional learning in the workplace. A commitment to reflective practice throughout the profession is likely to contribute to improved service and generation of good practice, but if sharing of good practice is enabled then the radiotherapy community as a whole could benefit. Although conferences and journals offer an invaluable forum for sharing of ideas, this rarely generates wider discussion across the profession. Websites such as CPDConference[16] are providing resources and the opportunity for this wider discussion, but sharing some of the portfolio contents with others may be the key to creating a truly reflective community. With both

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of these opportunities, the usefulness depends on how many users engage with the process. Although creating a personal virtual portfolio does not automatically achieve this, it is the first essential step. Institutions such as HEI's or hospitals that adopt a connected portfolio approach to encourage CPD may benefit from this sharing of ideas and thoughts that otherwise might be lost. It must be stressed, though that the benefits this can offer may be outweighed by the considerable difficulties this would create in terms of assessing an individual's contribution. To minimise this problem, much of the portfolio must always remain personal and individual to the user, but this should not be at the expense of devolvement of good practice.

The monitoring of mandatory CPD that is being instigated in the UK is likely to develop into an electronic submission method. This has already happened in Australia, where the Australian Institute of Radiography maintains central online storage of CPD data.[17] Radiographers upload evidence of their CPD activities for automatic accreditation. The "CPD Now" web-based portfolio produced by the Society of Radiographers in the UK[10] is designed to encourage maintenance of an electronic portfolio. Having the skills to produce a virtual portfolio will undoubtedly be a valuable asset in years to come.

CONCLUSIONS

This paper has presented possible benefits and problems associated with producing a virtual portfolio in order for the reader to assess whether it is worth doing. Clearly the compilation of a virtual portfolio from scratch is a significant commitment, thus utilisation of one of the many commercial systems may be preferred by some. Since a portfolio is ultimately a very individual expression of personal and professional development, it is obvious that the virtual portfolio will not be suitable for everyone. The initial computing skills needed may deter some radiographers, but perseverance will produce an impressive linked portfolio that is relatively easy to maintain, as well as some well-earned and potentially useful skills. Ultimately though, although electronic media can offer some useful tools to the portfolio developer, it is the content and use of the portfolio rather than the format that is of importance.

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