

# FlashPort – The Next Generation In E-Portfolios?

## The Use of Portable Applications as e-Portfolio Tools in Teacher Education

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### Abstract

Eportfolios are becoming increasingly important in HE in the UK and have tended to move towards web-based versions which are either institutionally owned, or hosted by a commercial company. Whilst there are certainly advantages with these models there are important considerations over the transferability and ownership of students' work.

This paper reports on the design and implementation of an alternative model, using a set of portable applications as ePortfolio tools for use by initial teacher education students. The work focuses on adding a range of small stand alone applications to USB flash drives along with a set of files and templates focusing on the students' studies. To this we have given a generic name - 'FlashPort' - and developed a specific version for trainee teachers that we have called 'eLiPort'.

The research takes the form of an intervention, following the introduction of eLiPort to a group of trainee teachers on a one year Secondary (High School) teaching course in the UK. Findings of the initial research are discussed along with how the challenges were addressed, its use in practice and the implications for the future.

**Keywords:** *ePortfolio, Portable applications, USB drive, Flashport, eLiPort.*

### Introduction

The portfolio in the traditional sense is a collection of materials recording an individual's progress over time. Basically, this 'container' can take a number of forms but with the development of digital technology more portfolios have become electronic in nature - an 'ePortfolio'.

Web-based ePortfolios have become increasingly popular in HE institutions in the UK, with many using commercially built applications via on-line learning platforms. However, the majority are only available to students whilst they are enrolled at a specific university. Thus, from a database driven system that is an institutionally designed and developed product for students, the framework of the ePortfolio has evolved to include sets of social web pages created by independent students, reflecting personal views and achievements (Facebook, My Space, Elgg). The latest portfolios have resulted through demand for change. Already in 2004 opinions were being expressed by scholars such as Cohn and Hibbitts, calling for a new form of ePortfolio:

*"Rather than limit people to the e-portfolio model, why not develop a model providing a personal Web space for everyone, for their lifetimes and beyond?"* [1]

It was with this concept in mind that we first asked the question; what happens when a student leaves an institution with regards to transferability and the issue of 'ownership'?

For a number of years, the UK Government has provided funding to a number of agencies for technology initiatives that enable students to record their learning, using electronic tools, in educational institutions. Many universities followed each other by developing 'in-house' solutions for their websites, whilst others used their VLE systems to do this. With this in mind, we first asked the question; what happens when a student leaves an institution with regards to the transferability and issue of 'ownership'?

It appears that the issue is far from clear as the Joint Information Systems Council (JISC) report:

*'Although some institutions appear to claim intellectual property rights in certain works created by any of their students. See University of Oxford, University Statutes, Statute XVI: Property, Contracts, and Trusts, Part B: Intellectual Property s.5(b) where the University claims ownership of all intellectual property specified in s.6 of the statute which is devised, made, or created by student members in the course of or incidentally to their studies. s.6 covers works generated by computer hardware or software owned or operated by the University...It is unclear how effective such a claim might be.'* [2]

Taking into consideration the above, researchers Stephen Taylor and Duncan Mackrill at Sussex University (UK) have been designing and developing an innovative ePortfolio tool for Initial Teacher Training (ITE) students using digital technologies.

The challenges included:

- Developing a low cost portable ePortfolio using digital technologies, to bridge the gap between the university course and teachers' professional working life.
- Providing a mechanism for trainee teachers to record their progress over time and share these with their university tutor (and others) when located off campus.
- Transferring ownership of digital portfolios from institution to individual.

This concept led us in turn to research an alternative portfolio tool that would function as a receptacle for the storage of information, independent of restrictions such as might be found with an institutional VLE. It should be transportable and be able to contain specific applications for use, independent of the programs installed on a specific computer's operating system.

The resulting solution uses the concept of a portable ePortfolio, with lifelong learning as its root, combined with a range of portable applications, all operating from a flash drive. The generic name for this combination we have called FlashPort.

This design, with its portability and stewardship of personal data, is anticipated to become a standard methodology using USB flash drives for recording information and running full program applications at speeds comparable to native hard disk access. These drives can be loaded with software programs that run without making changes to system settings or files on which they operate.

## **Portable applications**

Devices that use flash memory are recognised by different names: flash drives, memory sticks, pen drives, Secure Digital SD cards, flash cards, memory cards, and Compact Flash cards (CF cards), to name a few. Irrespective of the name, if a device is recognised by the operating system as a drive, then its capabilities can be accessed to store the user's data, and run portable applications with the major advantage of being easy to upgrade.

The approach taken has been to build a customised menu with pre-installed portable applications and a personal file system. Most currently available portable applications are Open Source, meaning they can be used free of charge without limitation, adding a new dimension to mobile learning.

*'Open source is a development method for software that harnesses the power of distributed peer review and transparency of process. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in.'* [3]

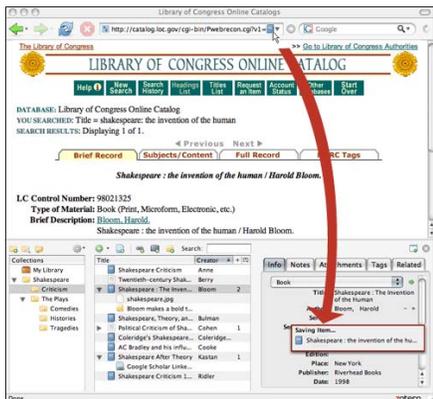
Applications which are part of the open source software revolution include portable versions of Mozilla Firefox and Thunderbird Mozilla e-mail client. Another useful application is Open Office.

Portable applications are assessed through a menu to allow users to access their work on any computer.

*'A portable app is a computer program that you can carry around with you on a portable device and use on any Windows computer. When your USB flash drive, portable hard drive, iPod or other portable device is plugged in, you have access to your software and personal data just as you would on your own PC. And when you unplug the device, none of your personal data is left behind.'* [4]



Plug-ins, a further enhancement to portable applications, relies upon services provided by the host application with which they can interface, including methods to register with the host application. A plug-in or add-in extension or tool is a small compact computer program that interacts with an application providing certain, usually very specific, function "on demand".



An example of this is Lightning, a tool to manage a daily schedule directly within Thunderbird. Another example is Zotero, a plug-in for research students. This

application interfaces with a web browser and Open Office through a standard interface, and is a repository for compiled research that enables the user to develop research and recall it from the set of portable applications, including the portable web browser. Zotero, like other plug-ins, interacts with the host application but is independent of it. Equally, the host application is independent of plug-ins, making it possible for plug-ins to be added and updated dynamically. With the use of these and other portable applications and plug-ins, users can collect, collate and repurpose evidence of their teaching competence (including important contextual data through audio, image and video), linked to the statutory national teaching standards. They can also display, record and share CVs, reflective journals, spreadsheets and recording applications by saving them in a number of different formats.

A record of the work is stored on the flash drive and transported to be retrieved later as required from any computer. This allows teachers to use their USB drive on any PC in university, at home or their school placement, without the need to install software or have administrator rights.

Advantages of a USB ePortfolio are that:

- It is portable;
- the trainee takes responsibility and ownership;
- the transfer of data and evidence from Initial Teacher Training course into teaching career is easy;
- school and university work is all in one place;
- the applications and materials/ resources can be used in school, at home (or another location) as well as in university;
- the technology it in part, familiar - most students already have a USB drive and understand how to manage data e.g. folder structures;
- it is inexpensive (a 4GB USB drive is less than \$18).

Some disadvantages of a USB ePortfolio are that:

- if lost, (without being backed-up) crucial evidence disappears too;
- it must be manually backed up regularly;
- the user needs to be organised;
- it is less easy to share than a web-based ePortfolio;

- there are only limited opportunities for tutors to provide feedback;
- opportunities for trainee/tutor interaction are less than with many on-line ePortfolios.

For those using Apple Mac computers the ePortfolio could be used in the same way as on a PC but the supplied Portable Applications in this project were unable to be used as these were for PC only. A development for next year is to include Portable Applications for Mac too.

### eLiPort

The resulting FlashPort for ITE was called 'eLiPort', to include the concepts of 'Lifelong' and 'Portfolio' and enabling students to take their portfolio with them into their professional teaching career and further study. Having developed what was expected to be a portable solution to the challenges above, it was decided to pilot this with a small group of trainee teachers.

Through a set of portable applications running from eLiPort students can collect, record, collate and repurpose evidence of their teaching competence (including important contextual data through audio, image and video). They can also easily display, record and share this 'evidence' with their tutors and others, linking directly to the statutory national professional standards for teachers from training, to advanced skills teachers. In addition, a repository for compiled research is also included.

Each trainee was given a 2GB USB flash drive preloaded with a set of portable applications for PC:

- Calendar/Scheduler (with 'alarms' for key dates for year)
- Web-browser - Firefox
- Email Client - Thunderbird
- Back-up zip application - 7 Zip
- Audio recorder – Audacity for recording and playing back recordings of their work
- Media player - VLC
- Word Processor – Open Office
- Spreadsheet – Open Office
- Virus checker – Clam Virus
- PDF viewer - Sumatra

All of the applications were portable and open source, avoiding licensing issues at the various locations where the students were placed.



In addition, electronic copies of all handbooks, forms and templates were included, along with tutorial videos for using eLiPort. Trainees also had the opportunity for email or telephone support provided for by their tutor.

To be qualified to teach, trainees are required to meet, or exceed thirty-three statutory Qualified to Teach Standards [5] during their training year.

Trainees organised their electronic 'evidence' for achieving the standards on their USB drive via a Word document using a table with cells for each Standard, background information about the evidence used and hyperlinks to the relevant file on the eLiport USB stick. Examples of evidence included:

- Assignments and reports
- Logs of meetings with university or school-based tutors
- Lesson plans and evaluations
- Lesson observations by tutors
- Reflective writing

### Research

The research took the form of an intervention with a small (n = 13) group of Initial Teacher Education (ITE) music trainees in the UK on a one year, Post Graduate Certificate of Education (PGCE) Secondary (High School) teaching course leading to Qualified Teacher Status, at the University of Sussex.

A mix of quantitative and qualitative research methods were used, including questionnaires and semi-structured interviews with trainee teachers and their university tutor. It should be noted that the main researcher was also their university tutor.

### Context

Most of the course is spent off campus in schools and trainees collect evidence of their competence from university work and in their school placements.

In the UK trainees become Newly Qualified Teachers (NQT) after successfully gaining Qualified Teacher Status (QTS). They are then required to pass an induction year where they must again demonstrate evidence of competence against another, related set of standards [6]. The issue of transferability is addressed through the use of the eLiPort ePortfolio as they will continue to be able to build on the evidence collected from their PGCE course.

One of the challenges was that eLiPort was introduced halfway through the course rather than at the start. This was a limitation because trainees had already collected a considerable amount of evidence for QTS. As a result they were given two options:

- 1) To provide a mixed portfolio consisting of paper-based evidence in a file from the first half of the year and electronic evidence in the ePortfolio from the second half.
- 2) Not to use the ePortfolio and keep to the paper version.

In reality however, some voluntarily took a third option, scanning all the relevant evidence produced earlier in the course to make their portfolio completely electronic.

### Findings

Eleven of the thirteen considered themselves to be confident or secure with ICT. Ten used the PC and two the Mac, whilst one was able to use both PC and Mac. All used eLiPort at home with twelve also using it at school and university.

Almost all trainees were very positive about eLiport and only one failed to engage, instead presenting all their evidence in hard paper copy. Having the ePortfolio together with all the forms, templates, handbooks and teaching resources in the same place proved to be very popular.

*...saves carrying lots of files around, everything is in one place. Has a good range of software on to use.*

Trainee comment 1

Trainees used the portable applications in their placement schools in their teaching and for their own learning. The four applications considered to be the most useful were Audacity, the Calendar/ Planner, Open Office and 7-Zip. Two trainees (one a Mac user) failed to use any of the portable applications. Interestingly, the other Mac user purchased a 'Parallel Desktop' specifically to enable them to use the portable applications for PC on their own Mac.

*Having Open Office was probably the most useful thing on the stick. For 80% of the course I was working on a laptop so old it had to be wound up manually before starting and only had Microsoft Works. Always having Open Office meant that I could save the formats of Lesson Plans in something I would recognise.*

Trainee comment 2

*The applications... have proved most useful in unpredictable situations. By this I mean that when I have had to move classrooms as a surprise from room bookings, videos that I had saved for the lesson could still be used*

Trainee comment 3

A number used the 2GB of memory to capacity in the five months of the pilot. This was unexpected but on investigation, was found to be due to the number of video and audio files (that can be quite large file sizes) trainees downloaded are created for their teaching resources.

More than two-thirds (9) felt that they, rather than the University, had ownership and control of their ePortfolio. Only just over half (7) thought having access to a web based server where they could upload their ePortfolio as a back-up and share it with their tutor would be an

advantage, although a number commented that this was unnecessary.

*I do feel a sense of ownership...I prefer the portfolio to be on the memory stick rather than online for various reasons: I have more control over how I organise and structure things, and I can access it on any computer at any time whether there is an internet connection or not. This is really useful!*

Trainee comment 4

As a USB stick, eLiPort is very small and trainees considered this a most positive aspect, yet at the same time many were concerned that they did not lose it.

*In comparison to life before USB, it is so much easier. Before I had to carry several folders around and this was highly impractical for a non-driving trainee teacher...The ePortfolio/USB way of doing things is amazing, I only take that to school, and this has everything I will need for the teaching day and my university commitments.*

Trainee comment 5

Technical problems were infrequent with the exception of an issue with hyperlinking - it seems that using tables and cells in Word that include a considerable number of hyperlinks can cause an error where the hyperlink fails to link to the correct folder. This issue is being investigated further and it is expected to change the template to an Excel document instead.

One or two trainees found that they were unable to get Internet access via Firefox in their schools due to the firewall settings put in place by the network manager. However, they were able to use other portable applications without a problem.

Some trainees commented on the difficulty of including logs and forms that cannot easily be electronically signed.

In the questionnaire, when asked if using an ePortfolio was an improvement on paper-based evidence files, a majority (8) agreed strongly and no one disagreed. Nine participants indicated that they intended to use eLiPort after leaving the course and only three were undecided, suggesting that it is therefore generally considered a worthwhile and valuable innovation.

### Limitations

This intervention suffers from being introduced half way through the year when trainees had already established ways of working to collect their evidence for the Standards. It would have been much better to begin the pilot at the start of the year.

The number of participants in the research was small, having been designed as a pilot study to gather data and

user opinions to inform practice and enable further development of eLiPort for the following academic year. Further research will then be carried out.

### The future

All ITE trainees at Sussex (200+ trainees) are to adopt the eLiPort USB ePortfolio from September 2008. As a result of this pilot the following changes will be made:

- trainees will be given a 4GB 'loaded' USB stick;
- portable applications for both PC and Mac will be loaded to each stick;
- and option for a mixed electronic and paper-based 'evidence' portfolio will be retained;
- an information and support website will be developed;
- a greater number of video tutorials will be provided;
- the evidence record template will be created as an Excel document rather than in Word;
- schools will be asked in advance to allow their firewall settings to permit trainees Internet access using the Firefox portable application;
- an on-line repository will be made available for those trainees who wish to back up their drive on-line rather than to another computer.

There remains an issue around facilitating the digital (or other) verification of electronic, paper-based signed 'evidence' to be resolved. In addition, further compatibility testing of the ePortfolio and portable applications across platforms and operating systems will be carried out.

### Conclusion

The development of this new ePortfolio tool has impacted on current learning development and practice, as well as reflection and the repurposing of information and materials over time. eLiPort also elicits the critical issue of privacy, control and ownership of digital personal data.

As can be seen, the pilot project has largely been successful and users have mostly been very positive about the innovation. In summary, the benefits include:

- a significant reduction in the amount of paper used;
- a user-friendly portfolio which can be shared electronically with others;
- the ability to use the USB drive applications on any PC - a significant advantage for use in schools;
- a low-cost but effective solution with no need for expensive applications as the Portable Apps are freeware;
- easy access to applications and the user's own material
- no personal data left behind on the 'host' computer

We intend to develop eLiPort further over the coming year but it is clear that a portable USB ePortfolio including portable applications is a valuable tool for trainee teachers and their professional development.

## References

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## Websites for FlashPort:

<http://flashport.ca> and [www.flashport.org.uk](http://www.flashport.org.uk)

and for the ITE eLiPort project:

[www.eliport.co.uk](http://www.eliport.co.uk)

## Portable applications are available from:

<http://portableapps.com/>