e-Portfolios – A Personal Space for Learning

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For a number of years it has been common for students in schools to keep a portfolio of their work for a range of purposes. These portfolios have generally been of the paper variety with students putting together a collection of work in a folder to illustrate progress made towards meeting curriculum objectives. There are often specific requirements as to what to include to demonstrate achievement, measured against a list of standards or criteria set. These have in the main been 'assessment' or 'showcase' portfolios. More recently however, there has been a growing interest in electronic portfolios (ePortfolios) and the way in which these may be used to take the place or supplement the more traditional paper based models. This paper seeks to clarify the nature and purpose of an ePortfolio relative to more general portfolio models and to explore issues associated with their development in schools. It follows a period of sabbatical study leave granted to me during the 2007 school year.

I have had an interest and a long involvement in student portfolios, particularly as to how they may be used to promote independent life long learning. For many years I have worked in a school where it has been common practice for all students to maintain a portfolio that provides evidence of their learning. The portfolio's primary purpose is to assist students understand that learning is something *they do*, it is not something that *is done to them*. Learning is a partnership between the learner, the teacher, and the family, and as such each member of the partnership has a key role to play in ensuring the learner's success. The learner must be actively involved in this process (Fox, 2003).

The "Learning to Learn" portfolio model (Fox, 2003) outlines three key areas where a portfolio can assist with this process (See Figure 1). The first of these is to help with the learner's metacognitive development through student goal setting and critical reflection as well as through the introduction of thinking and learning models such as Edward deBonos' *Six Thinking Hats,* Gwen Gawith's *Action Learning Model,* Bloom's *Taxonomy of Learning,* plus other models commonly available in all schools. These strategies can help students develop the ability to think about their own thinking.

The second section of the model has a focus on assessment *for* learning rather than simply assessment *of* learning. Many students have little understanding as to how to go about assessing their own work. They wait for the teacher to tell them whether the work is of an appropriate standard or not. They do not have the skills to self assess, or to reflect on their own performance. A portfolio can provide structures that enable students to become involved in self-assessment and reflection so they begin to understand the criteria for 'good' work. Students can be encouraged to become actively involved in the assessment process through the provision of clear performance standards, now more commonly known as success criteria, along with opportunities for them to self-assess against this clearly defined criteria. (It is a matter of ensuring students have the 'magic formula' for success.)

Students should ask themselves:

> "What is it I have to do to be successful with this work, and how will I know I have been successful?"

Authentic learning opportunities are also crucial in ensuring students see the relevance of what happens at school and how this in turn relates to their daily lives. Students frequently fail to see the relationships between their experiences at school and what they do outside of school. Invariably this can lead to students 'switching off learning,' resulting in a lack of motivation and frustration which may manifest itself in significant behavioural issues.
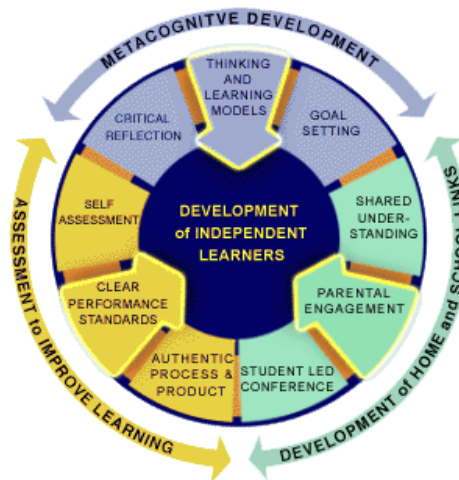

Figure 1

LEARNING TO LEARN PORTFOLIO MODEL

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The third section of the Learning to Learn model focuses on how the portfolio assists with the building of closer links between the school and the home. This process is aided where there are strong patterns of communication between the school and the home with the portfolio being a vehicle to assist this process. The portfolio helps engage parents in their child's learning by providing a focus for discussion and feedback around student achievement. The goal here is to create opportunities that will encourage focussed dialogue between the child and the parent/caregiver at home.

The *student-led conference* is a strategy for encouraging students, teachers and parents/caregivers to become actively involved in the student's learning journey. At such a conference students are required to provide and discuss evidence of their learning. This empowers students and supports their growing progress as learners. (Fox I. 2005, Fox R. 2006).

Each of these areas is designed to assist students develop the ability to look at their own progress as learners and to encourage them to begin to see what they could do to assist their own future progress. Each works towards the end goal, the development of independent learners.

Paulson, Paulson and Meyer (1991, p.60), describe a portfolio as:

> *"A powerful collection of student work that exhibits the student's efforts, progress and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the criteria for judging merit, and evidence of student self selection."*

Paulson *et al* (1991) talk of the portfolio being student centred. They focus on the involvement of students in process, encouraging them to take a degree of responsibility for material to be included. Students are also expected to be involved in the assessment of work included, helping to determine its worth. Self-assessment is a key element.

A common feature with other definitions of portfolios is that they should be self-reflective collections. Reflection is seen as a key component within any portfolio. Unless students are encouraged, and indeed are shown how to become reflective learners, they will have to rely on others to assist with the evaluation of their progress. Reflection is essential in the move towards metacognition and independent learning.

Why one may ask are these things important? Is it not sufficient to simply focus on literacy and numeracy skills as has been the more common practice in the past? Have they not previously served students well?

My all time favourite quote is: -

> *"The problem with education isn't that schools aren't what they used to be, the problem is that schools are what they used to be. Schools have not gotten worse, they have simply not changed for the better." (Gerstner, Semerad, Doyle, & Johnson. 1994).*

It could be argued that many schools are still stuck in a 20th century time-warp and are struggling to move forward. Some teachers have not recognised that we are well into the 21st century and the 'knowledge age' is now here! Mark Treadwell talks of the need to build a new school paradigm as we move into the next major Renaissance period.

> *"Education is undergoing a paradigm shift on a scale not seen since the Renaissance and the invention of the printing press. We are in the midst of seeing education transform from a book-based system to an internet-based system with profound implications for every aspect of teaching and learning." (Treadwell, 2007)*

If we are to better prepare our students for this new knowledge age, we require future citizens who do not simply survive, but who thrive in the rapidly increasing global community. To do this, students will require understandings in advance of basic literacy and numeracy skills. These skills will of course still be crucial, but they will not be sufficient on their own. The 'back to basics' calls will not be enough to have students flourish as future global citizens. They will need 21st century skills to enable them to be *"confident, connected, actively involved, lifelong learners"* (Ministry of Education, 2007, p.7.)

Do we want our schools to develop students for the future who have an understanding of an *'answering pedagogy'* or do we want them to have a *'questioning pedagogy?'* (Harpaz & Leftstein, 2000). Do we want students to simply repeat what others have done before, to give the 'right answer,' as expected by the teacher, with no consideration of multiple perspectives? Or do we want students able to create new knowledge, with the ability to question, to challenge and to debate issues. If students are to become truly global citizens for the future teachers will need to have in place strategies that support the development of a questioning pedagogy.

What can schools do to assist with this process? An ePortfolio is a tool teachers could use to assist with the development of these future skills.

What is an ePortfolio?

In the working environment ePortfolios are increasingly common. Generally they support a C.V. They give substance to other written material and show prospective clients or employees, *this is me; this is who I am and what I can do. I am proud of what I have achieved to date.* Entries illustrate not only the individual's current abilities, but also their history, personal information, growth over time and significant achievements.

An ePortfolio can therefore paint a detailed picture and present information in a form that is difficult if not impossible to present in any other way. It can provide a competitive edge over others who may not be in a position to show their abilities so clearly.

To have students keep an ePortfolio primarily for such a purpose however is limiting. It misses out on the many other opportunities such a portfolio provides to assist students develop in more significant ways.

So how does an ePortfolio differ from more traditional paper models? In terms of its overall purpose perhaps it does not. It is simply that with the technology now available an ePortfolio can provide so much more information to illustrate the student's true strengths and abilities. It can provide far more evidence of learning and can show far more of the learning process than with traditional portfolios.

Some writers make a distinction between web-based portfolios, web folios, and those where student work is collected and stored on a CD or some other storage device. (Good, 2006, p.1) For the purposes of this paper an ePortfolio refers to all manner of electronic collections whether they are web-based or not.

Definitions of ePortfolios vary considerably but in general they all refer to the electronic gathering of a range of student work collected and stored in some electronic format. This could simply be the scanning of work to be stored on a CD or DVD, or a more comprehensive web-based model with wikis, blogs, podcasts and other web2 tools being used. There are many options available. The format for the ePortfolio will depend largely on its ultimate purpose, the availability of both hardware and software and the knowledge and understandings of the teachers and students who are putting them together.

Banks refers to ePortfolios as:

> *"An e-portolio is an electronic format for learners to record their work, their achievements and their goals, to reflect on their learning, and to share and be supported in this. It enables learners to represent the information in different formats and to take the information with them as they move between institutions."*
>
> *(Banks, 2004. p.3)*

This definition has a number of key elements. It talks of the ePortfolio showing achievements. This is a significant factor in any successful school portfolio. It should provide evidence of the learner's progress and successes against clearly stated objectives. It should provide evidence of learning. It should be more than simply a random collection of work, stored electronically, with no particular focus.

The definition also talks about student goals and their ability to refect on their learning. Goal setting and reflection are critical skills if we as educators are to have our students learn to take increasing responsibility for their own learning. They must be able to look at their work, reflect on this and determine what they have done well, where they have had difficulties, and what they could do in the future to make improvements. These are key questions in the reflective process and the on going development of metacognitive skills and are key components of electronic portfolios.

Banks definition also refers to the opportunities students have with current technology to present information in a variety of formats. With the knowledge we now have about differing learning styles and multiple intelligences it is essential students have opportunities to present their work in ways that are most meaningful for them. As a motivational tool technology can be a powerful factor for some who struggle to see the relevance of what is happening in their classrooms relative to their daily lives.

Finally the definition refers to the importance of students being able to take their information with them when they move off to another school. This is a key issue with respect to ownership. Who is the owner of the work produced? Ownership should remain with the authors, (the students), with them being able to take their work when they move between classrooms or schools. Generally this is not the case and work can become lost. There are often few ongoing exemplars available to enable student progress to be tracked over time. Technology allows us to store a considerable quantity of material in a manner that enables it to be easily retrieved at a later stage. This can provide valuable insight into the overall progress of the individual.

Dr Helen Barrett, one of the most prolific writers in the area of electronic portfolios, states that:

> *"An electronic portfolio uses technologies as the container, allowing students/teachers to collect and organise artefacts in many media types, (audio, video, graphic, text); and using hypertext links to organise the material, connecting evidence to appropriate outcomes, goals or standards."*
>
> *(Barrett, 2005. P.5.)*

Barrett goes on to identify how an electronic portfolio differs from the more traditional portfolio process through the use of technology.

Traditional Portfolio Processes include:	Adding Technology allows enhancement through:
• Collecting • Selecting • Reflecting • Projecting • Celebrating	• Archiving • Linking/Thinking • Storytelling • Collaborating • Publishing

Perhaps a very simple definition is that as used by the Pebble Pad ePortfolio System developed at the University of Wolverhampton, stating:

"An ePortfolio is simply an evidence-based web-publishing system." (Sutherland, 2005)

It is the 'evidence based' feature of an ePortfolio that will be a significant focus in a school setting where published student work clearly documents evidence of learning relative to curriculum objectives. It provides examples of learning achieved over time and provides a record of the student's achievements.

Barrett (2005) refers to evidence in the ePortfolio as being not only the completed work that the learner puts in the ePortfolio, but also the *"accompanying rationale that the learner provides: their argument as to why these artefacts constitute evidence of achieving specific goals, outcomes or standards."* She goes on to explain that in some cases the evidence requires validation by the teacher against a clearly defined rubric with specific criteria to complete the process. She represents this process with a simple formula:

Evidence = Artefacts + Reflection (Rationale) + Validation (Feedback)
(Barrett 2005, P7)

This is a model that is common for many entries within current portfolios. They consist of student work, preferably with some part of the process included, the student's reflection and the teacher or evaluator's follow up feedback against a predetermined assessment rubric. Students have a copy of the rubric prior to commencing their work so that they also know the performance standards being sought.

As outlined later the ePortfolio can have a number of differing purposes. It can be used as a powerful vehicle to assist students take increasing responsibility for their own learning in different ways. To restrict it to simply becoming a vehicle to demonstrate achievement of specific curriculum learning objectives, important as they are, would limit its overall potential.

Why have an ePortfolio?

To a large degree the answer to this question depends on the overall purpose for the portfolio. For what purpose is the ePortfolio being kept? If teachers cannot answer this question then there is little point in asking students to keep an ePortfolio. It becomes simply another task in the busy life of teachers and students.

Siemens (2004) states:

> *"The intended task of the portfolio is the ultimate determinant of value. For certain courses or programmes, a blog may be all that is required. Regardless of the format selected each portfolio effort should encourage learners to develop the skills to continue building their own personal portfolio as a life long learning tool."*
>
> *(Siemens 2004. p.1.)*

An ePortfolio can be used to serve many different purposes. It can…

- provide assessment information linked to curriculum objectives showing evidence of progress.
- show student growth over time so a picture can be built up of overall ability and progress.
- show what a student can do, rather than focusing on what can't be done.
- focus on process rather than simply a finished product.
- become a vehicle for empowering students to take increasing responsibility for their own learning.
- better provide for a range of differing learning styles.
- provide a broad overview of a student's achievements over time rather than simply a snapshot from a particular period.
- show that development, and not simply achievement, is important.
- focus on authentic assessment thus providing opportunities for students that are closer to their real life experiences.
- assist with the development of student self esteem through providing a vehicle for them to display work of which they are proud.
- provide a forum for student goal setting, self-assessment and reflection.
- be used to assist with the process of reporting progress to parents.
- provide a wider audience with greater accessibility to student work where the ePortfolio is web-based.
- encourage quality high standard work through the knowledge that it will have a wide audience.
- Show that the technologies now available are simply tools that can be used to support learning rather than them being an end in themselves.

Through my experiences in using paper based portfolios for many years it has become evident that just as there is no one correct model for the structure of a portfolio, there is no one correct purpose or set of purposes for keeping an ePortfolio. Each school and each teacher will need to determine exactly how an ePortfolio is to be used and what its key purpose is to be. The ePortfolio may in fact be used to meet a number of differing purposes.

Portfolios can become simply repositories where all manner of work is collected with no clearly defined purpose. Such portfolios are unlikely to make a significant difference to student learning. An electronic version gathered in the same manner is also unlikely to be of great value. Such portfolios tend to be created for accountability purposes to provide evidence that key learning has taken place. This is a valid purpose but not one that is likely to impact on learning.

Barrett states:

> *"Portfolios can provide structure for involving students in developing and understanding criteria for good efforts, in coming to see the criteria as their own work, and in applying the criteria to their own and other's work."*
>
> *(Barrett, 2005. p.4)*

As previously stated, the ePortfolio can provide evidence of learning in a manner that is often difficult to replicate in any other way. The technology allows a greater degree of information, particularly related to process, to be included. The use of video, sound and images, as well as text, can be used to track the learning journey and to provide evidence of the learning process and not simply the final end product. In most traditional portfolios evidence of the end product is recorded, when we know that it is through the learning journey, the process itself, where most of the learning occurs. The ePortfolio better allows students to demonstrate that learning journey.

Unlike paper portfolios the ePortfolio enables sound to be stored, thus allowing the student's 'voice' to be heard. This is one of its greatest strengths. The technology allows students to record their own thoughts with respect to a finished piece of work and file this within the ePortfolio attached to the work itself.

Barrett (2006) discusses the power of voice and the way in which digital stories can be used within an ePortfolio to project that voice to a wider audience. She refers to a writing model from The Northwest Regional Education Lab that talks about voice as:

> *"The Voice is the writer coming through the words, the sense that a real person is speaking to us and cares about the message. It is the heart and soul of the writing, the magic, the wit, the feeling, the life and breath. When the writer is engaged personally with the topic, he/she imparts a personal tone and flavor to the piece that is unmistakably his/hers alone. And it is that individual something–different from the mark of all other writers–that we call voice."*
>
> *(Barrett, 2006, p.1.)*

The power of 'student voice' should not be underestimated. To hear students reflecting on their own work, in their own voice, with their own intonations and expressions, conveys meaning in a manner that is simply not possible in written form. Voice adds depth to the work, allowing the author's personality to come through. It enables the author to communicate more directly with those viewing the work who are then able to listen directly to the author's thoughts and reflections.

Metcalf states:

> *"Electronic portfolios allow the student's personality to come across. That just can't happen with a two-dimensional portfolio. Typically parents see stapled, written work coming home-with lots of red marks. With multimedia we can highlight the child's strengths, which helps parents and teachers view a student's academic or behavioural progress through different modalities."*
>
> *(Metcalf, 2001, p.1.)*

Deep and meaningful reflection occurs where students have the opportunity to think critically about their work and speak openly about their progress in a secure environment. This critical reflection helps personalise learning, encouraging students to question, to challenge and to celebrate their successes. It encourages students to

review their progress over time and to look more critically at their own role in the learning process. It helps them make connections between different elements of their learning. It helps students move from *e-learning* to *me-learning*.

One simple means to assist students develop the ability to reflect in a critical manner is through the use of questions and answers as in an interview situation. One student asks key questions and the other responds accordingly.

Three questions might be used as a starting point.

- *What have you done well?*
- *What difficulties did you have?*
- *What could you do next time to improve?*

This is a simple yet powerful way of helping students develop the ability to reflect upon their learning. These three questions can help develop the process of reflection so that students begin to understand they can make a difference for their own learning. They can do things differently next time and make significant improvements. As John Dewey stated, we do not learn from experience, we learn from reflecting on experience.

The reflective process can be enhanced through the addition of a video clip to illustrate the learning process or more simply through a series of digital photos. These can just as readily show the same process but in a much more manageable way. This requires less expensive equipment, little editing, and a faster download speed from the Internet for web-based ePortfolios. All that is required with this approach is a digital camera and a connection to a computer with a microphone.

Student voice, outlining the learning process through to reflection, provides a simple yet highly powerful means of demonstrating the total learning journey. It provides evidence of this learning. It tracks progress. It provides student reflection and future goal setting and focuses on the learning process as well as the completed product. It uses technology to support learning and thus helps both motivate students and better cater for a range of differing learning styles. It encourages the student to think critically about their own progress and what they could do to make improvements in the future. It helps them understand their strengths and their areas of need. It helps them determine their future learning goals and areas where the teacher may be able to provide more specific focussed assistance. It helps them take control over their own learning.

A record such as this can be readily stored in an ePortfolio, with hyperlinks to the exemplars. (See Appendix 2 for links to exemplars) It builds that individual record of progress and achievement, and at the same time assists students understand their own role in the learning process while helping them become truly independent learners.

Getting Started

As has been stated earlier, prior to having students begin their ePortfolio, it is essential its purpose be clearly determined. What is it for? Who is the audience? Where does ownership rest? Is it designed to provide assessment information?

Should it show process as well as the finished product? Is it to track student progress over time?

Much thought and discussion is required prior to introducing ePortfolios to students or to teaching staff. There is a real danger of it becoming the latest 'fad' with it doing little to support learning and simply becoming another document for teachers to have to monitor and support in an already busy teaching day. Discussion around the whole issue of 'purpose' is essential before embarking on any new approach.

The Learning to Learn model outlined earlier in this paper (Figure 1) may provide some assistance in helping determine the purpose for the ePortfolio and give a starting point for some of this discussion.

Dr Helen Barrett (2005) outlines several stages in ePortfolio development. She refers to Danielson and Abrutyn who give the following five stages for developing an ePortfolio:

1   **Collection** - teachers and students learn to save artifacts that represent the successes (and "growth opportunities") in their day-to-day teaching and learning
2   **Selection** - teachers and students review and evaluate the artifacts they have saved, and identify those that demonstrate achievement of specific standards
3   **Reflection** - teachers and students become reflective practitioners, evaluating their own growth over time and their achievement of the standards, as well as the gaps in their development
4   **Projection (or Direction)** - teachers and students compare their reflections to the standards and performance indicators, and set learning goals for the future. This is the stage that turns portfolio development into professional development and supports lifelong learning.
5   **Presentation** - teachers and students share their portfolios with their peers. This is the stage where appropriate "public" commitments can be made to encourage collaboration and commitment to professional development and lifelong learning.

When looking through the vast array of work completed by students during the course of instruction each would have ample material to share within their own personal learning spaces. They could establish a home page, with personal information they are happy to have recorded. From there it is simply a matter of hyperlinks to work selected for archiving that best provides evidence of their learning and indicates their growing development as a learner. These could simply be stories or essays written and stored in the ePortfolio along with reflective comments and teacher feedback. It may be exemplars of maths work or work from a whole range of curriculum areas with each piece accompanied by reflection and feedback.

To gain the true benefits of using an ePortfolio over more traditional paper portfolios however, one would expect to see the increasing use of multimedia and web2 tools. Student work would include the use of such tools as wikis, blogs, and video or digital images that could all help show process. There would be music and sound files, maybe some through podcasts, where the student's voice could be heard clarifying process, along with their personal reflective thoughts. It could be the recordings of

their goals with follow up reflection, stored as a sound file. Teachers could record their feedback comments on sound files and attach these to the completed work rather than having them in the more traditional written form.

One could also see the archiving of other media files created during the process of instruction all of which would help us gain a deeper understanding of the student's growing development as a learner. (See examples in the Appendix attached to this paper). The possibilities are almost limitless. It is, as has already been stated, a matter of purpose. There should be a clear and well-understood reason for including each item in the ePortfolio.

Once the purpose for having the ePortfolio is clearly understood, decisions can be made as to what to keep in the ePortfolio; i.e. the collection. It should be more than simply a traditional paper portfolio collected and stored electronically. It should not seek to replicate what has been done in the past or little value will be gained from the potential advantages the available technology provides. To take time and trouble to scan in material so that it can be stored electronically is of little value, unless there is a very good reason to do so.

Careful selection is required to ensure that the ePortfolio does not become a mass of student work with no clear focus. It is a case of *less is more!* A little less in the ePortfolio illustrating the student's growth and development over time is far more valuable than looking to ensure every curriculum objective is covered. An ePortfolio should be a 'big picture' document rather than being bogged down in the miniscule.

A further key decision in the development of ePortfolios will be to determine its format. How is it to be set up? Will it be web based or not? What resources are available within the school, or through the school, that could be used? There are three possibilities to consider.

The first of these is to use one of the many software packages that come with all computers. By this I mean packages such a PowerPoint, Word, iMovie, iPhoto, iTunes and so on. Whatever software is available within the school is fine to assist with the gathering of work in an electronic format. This work could then be put together to create an ePortfolio on a CD Rom or a DVD and added to and updated as required. Students can take their own disk home to show parents or other interested parties. A simple ePortfolio can quickly be built up to illustrate progress over time. It could be a supplement for a paper-based portfolio and perhaps feature as a CD insert in a portfolio to record electronically captured work in addition to more traditional collection methods. A CD or DVD is easy to store, inexpensive and very transportable.

One problem with this model however is that CDs are rather limiting both in terms of storage capacity and access. Work can only be retrieved when access to the disk is available. Unless copies are made only one person can have access at any one time. The advantage of course is that it is secure, unless the disk is misplaced. There is then the risk that work will be lost unless backup copies are made.

This process is easy to put in place both for students and for teachers. Little technical knowledge is required other than the ability to burn disks. Good ePortfolios can

readily be built up in this manner to supplement the paper portfolios common in many schools.

A second option is to use one of the small but growing numbers of commercially available learning management systems (LMS) available. The advantage here is that these are web-based and come with a preset format that can readily be tailored to suit the needs of individual schools and students. Students could create their own personal learning spaces within such a format.

Within these spaces they could develop home pages, personalised in a manner that best suits each individual, providing opportunities to demonstrate their own uniqueness. This provides a high degree of ownership for the student. Using simple hyperlinks they are able to provide links to work being stored. This could be simple text, video, picture, sound or any other electronic format. This ensures the site is easy to use and data simple to retrieve, so long as good broadband access to the Internet is available.

A real advantage of this approach is that it is web-based and therefore access to a much greater audience is possible. Anyone with an Internet connection, anywhere in the world, can view the student's work so long as they have been given the appropriate password. This is a great advantage in a school where many students have come from overseas or have relatives overseas, or live outside the immediate school area and are eager to view the student's work.

Another great advantage is that students are able to readily access their own work from home. This enables them to share their learning with others in the family and for them to be able to work seamlessly between home and school. Students can simply save their work into their web-based ePortfolio from school, log on again at home, and then continue with their work. This provides a much more authentic working and learning environment where students begin to understand that learning is a life-long process able to be carried out any time, anywhere.

A further advantage with a web-based approach is the much greater storage capacity available. This is essential when large files, such as video and sound files, are being uploaded and stored.

One significant difficulty for many schools however with current LMS is the issue of cost. There is a not inconsiderable on-going annual charge to maintain the LMS licence fee. There are also issues where fast Internet access is not available either at school or at home creating real problems in uploading or downloading larger files. Limitations in this area can be a significant disincentive to storing some of the most valuable work completed. It is often the image and sound files that best display the learning process.

A third option is to ignore commercial software packages and instead simply use web tools that are readily available at no cost. Students can set up their own home page on the web, with assistance if required, and then hyperlink from there through to open sites such as blogging sites, wiki sites, uTube, podomatic and so forth. The real advantages here are the limitless storage capacity, the minimal cost, and the very real advantage of portability when a student leaves one school to move on to another or

out of the schooling system all together. In terms of ownership this has real advantages giving overall responsibility and control to the student.

The one major problem however with such an open system is that associated with Internet security. Any school would be failing in its duty if it did not ensure its students were safe at all times and unfortunately there are no guarantees students will be safe when their work is freely available on the Internet with no controls over who can see it and who can reply directly to the student. We regularly see reported incidents of students being exposed to all kinds of dangers when, often naively, they open themselves to potential danger when they put material on the Internet, which can track back directly to them. The dangers are greater where personal details are being shared. They are putting themselves in a risk situation. It does not seem prudent in the current environment to have students exposed so openly without some kind of filter or protection available.

Schools cannot allow their students to be put at risk. It is essential therefore prior to setting up web-based ePortfolios that a school develops a set of protocols with clearly defined procedures known and agreed to by all. This could be in the form of a contract and could simply be an extension of the contracts most schools have in place now with respect to Internet use.

So what is to be done? As can be seen there are advantages and disadvantages in each of the three approaches outlined. Our school has been exploring a range of options to find the most effective and convenient means of establishing ePortfolios to assist students with their learning and that is manageable and web based. To this end we have been using a commercially based software package, a Learning Management System. We have students who have developed their own personal learning spaces within the LMS environment. These have been tailored to suit their individual interests and abilities. Students are able to express their own personalities through establishing learning spaces in a manner that best shows individuality and personal ownership.

Parents, relatives and others interested in the student's work are able to readily access the ePortfolio through the use of passwords, where these are given, thus providing a high degree of protection. They are in a position to safely record pictures of themselves, information about their families, and their interests, alongside class work displaying evidence of process and completed work associated with their learning experiences. Their ePortfolio can be safely built up in a secure environment. Parents can have a high degree of confidence that the ePortfolios are not putting their children at risk and the school is being responsible in keeping to the clear and well-documented protocols established.

One issue we have found with respect to using the LMS exclusively is with storage when files become large. This is going to happen when many sound and image files are being uploaded across a whole school. The storage required becomes immense. In order to overcome this we have been exploring the use of open source web2 tools to supplement the LMS and determining how these can be used safely.

A convenient strategy we have found is to use blogging, wiki, podcast and open source sites to store many of the larger files. Student work is uploaded following

clearly established protocols that clarify what can and what cannot be shown and recorded. These protocols are designed to ensure student safety. They are also designed to ensure students understand the risks of having personal contact details and identifying information on the Internet. It forms an important component within the school's Internet safety protocols. (See Appendix 2 for sample ePortfolio home pages showing hyperlinks to student work.)

We see the use of both a LMS and open Internet sites as a good compromise. This ensures student safety is not compromised while also allowing for larger student files to be uploaded. Students, with teacher support where required, determine the items they wish to share in such an open environment. The advantage of this approach is that issues to do with storage capacity are overcome at no additional cost and access is easier through a simple web link to individual pieces of work stored on these open sites.

More significantly however is that work filed in such a manner is accessible to a much wider audience. Students know it can be seen across the world. We have found that with the addition of a *ClustrMap* students receive acknowledgement from the recorded 'hits' that are often accompanied by positive written comments in the feedback section. This feature has proven to be a very powerful motivating factor. Students working in this way have had numerous 'hits' on their work with feedback from around the world. In one case an educational consultant in Chicago contacted the student, through the school, asking if she could share the student's work at a conference where she was speaking in the USA. It is common to see students checking their sites first thing in the morning to see what the 'web tracking' software shows and to look at the number of new 'hits' overnight. (See Appendix 2 for sample links.)

This is highly empowering for students and indicates to them that their work does have real value, not only to their teachers and themselves but also to many others. It is a great incentive for students to produce work of real value and quality. They are aware it is likely to be seen by a wide audience and as such needs to be of the highest standard. Prior to teachers agreeing to new material being uploaded students are required to have edited their work, ensured appropriate language conventions have been used, (eg. no 'text language'), and checked that the finished product is of the highest standard. An ePortfolio can do much to validate high quality work standards.

As one student recorded in a reflective statement in her ePortfolio:

> *"I think that I prefer to have my eportfolio on a blog, because with knowledge net, the only people who can see what you're doing are you and your teachers (or your friends if you give them the password) but with a blog, the world is your audience!"*

A very perceptive and revealing comment!

In 2007 Becta, (Becta, 2007) the UK Government's lead agency for Information and Communication Technology, was given the task of leading the Government's e-learning strategy to see how the new technologies could be used to help improve educational outcomes. Within this strategy Becta commissioned the University of Nottingham to conduct research into the impact of ePortfolios on learning.

Researchers studied eight ePortfolio projects currently in operation in the UK to determine the impact ePortfolios had on both learning processes and outcomes.

Amongst other findings they reported that ePortfolios had the greatest impact on learning when they were fully integrated into the day-to-day learning programme, rather than when they were used as a discreet entity. Where this integration occurred there was likely to be a substantial impact both on learning processes and learning outcomes. These findings were consistent irrespective of student ability levels. Researchers also found that the ePortfolio made student progress and achievement more obvious to teachers and students, clearly showing development, achievements, strengths and also weaknesses.

We are currently at an exciting stage in education. We now know so much more about learning and how we may better personalise that learning for each student. We also now have many technology tools available that were not there previously. This technology is not going to go away. It will in fact have an increasing impact on schools in the years to come.

The ePortfolio is one means through which schools can make greater use of the new technologies in a way that supports learning. It is using the technology in the manner it should be used, to assist with learning and not to become an end in itself.

One real concern with ePortfolios is the danger that the technology can become the end point rather than it being the tool to support learning. The ePortfolio is not an end in itself but it is a means to help teachers and students achieve their end goals. Again unless there is a clear and focussed purpose for the ePortfolio, understood by teachers, students and parents, then it is possible that the technological 'whistles and bells' available so readily, and which students do so enjoy, can very easily become the primary focus. The ePortfolio may then have a great structure, but it may not support real learning. Hence teachers contemplating the development of ePortfolios within their own classes should ensure they are very clear about the purpose, or purposes for the ePortfolio beyond those of technical competence.

They should keep asking the following two questions:

"Is this ePortfolio about my teaching supported by student evidence?"
or
"Is this ePortfolio about student learning supported by my guidance?"

For ePortfolios to have the greatest impact on learning structures should not be too restrictive. They should allow for flexibility and creativity. They should provide opportunities for students to self-select material for inclusion. They should encourage students to make connections across subject boundaries. They should provide more than simply evidence of learning but also evidence of process, reflection, celebrations and feedback. Ownership should ultimately remain with the students so that over time they develop revealing stories about their learning and the interrelationships between the many facets of their learning lives to enable personal growth and development to occur.

For some teachers the technology required to implement ePortfolios is still a bit of a mystery and these teachers may be reluctant to include it in class programming.

Technology is having a significant impact on the lives of our students and it is also changing community expectations towards teaching and learning. Teachers can no longer be expected to have all the information students require. For some, this can be a significant challenge (Hartnell-Young & Morriss, 2007).

Sheryl Nussbaum-Beach:

> *"We are the last generation of teachers who will have a choice whether or not to use or not to use the new technologies in the classroom." (Nussbaum-Beach 2007)*

Teachers should not be too concerned whether they know how to use all the new technologies or not. What they can be assured of however is that there will be students in their classrooms who do! These students are the resource we should be tapping into to assist those of us who Prensky calls *digital immigrants*. (Prensky 2007) We are the ones who are new to the technology. We are the ones learning this 'new language.' The students of today are the *digital natives,* most of whom know how to navigate their way around these technologies comfortably. They have been brought up with them. They are used to them and do not see too many difficulties. We as teachers should feel comfortable with that and realise that students can take a greater degree of control, further developing their own technical skills by assisting both teachers and other students.

Those teachers reluctant to come to terms with the reality that 21st century learning is different, or should be different, from that which was the norm in the 20th century will find all kinds of reasons as to why ePortfolios are not possible in their school or classroom.

> *"We do not have the technology available."*
> *"Internet access is too slow."*
> *"How can we have ePortfolios when there is only one computer in the classroom?"*
> *"My students are struggling with reading and writing. We do not have time for these frills!"*
> *"Teachers at this school are reluctant to change."*
> *"It is just a fad and will not last!"*

Those wishing to find solutions to these questions, and to others that will be raised will do so. These are the 'can do' teachers and school leaders. These are the teachers and leaders who find solutions to difficulties as they arise rather than finding reasons not to initiate change. Of course those with greater access to computers and other technologies will find the solutions to some of these issues simpler. Much can be done very readily however with a computer, a microphone and a digital camera. Little else is required. Creative teachers will do as they have always done and find ways to provide greater access for their students even when resources are limited. The key is to have teachers and students understand how the ePortfolio can be used to assist the learning process. Once this is clearly understood and acknowledged and teachers see the benefits for student learning, then solutions become easier to find.

As educators we have a responsibility to engage our students in their learning. To do this we must find ways to have them see greater relevance in their schooling. Sadly for too many that is currently not the case. Too many classrooms are still stuck in a 20th century time warp. For many students their homes are much more interesting places than their classrooms. They are able to access 21st century technologies on a daily basis at home yet when they come to school they can only have that access

when appropriately scheduled and in what is all too often a very controlled environment. They do not see these technologies being used to support their learning in a school environment.

> *"A yawning chasm (with an emphasis on yawning) separates the world inside the schoolhouse from the world outside."*
>
> (Wallis and Steptoe, 2006)

An ePortfolio can be the catalyst to stimulate and motivate students and to have them more highly engaged in their learning. It can assist them see greater relevance in their learning. It can support the development of 21st century skills while encouraging creativity and innovation. In this age of information explosion it can help with the development of skills to process information and determine its relevance. It can encourage students to explore multiple answers to a range of issues. It can develop their ability to reflect on their learning and to set their own future learning goals. It can be a vehicle to help develop self-esteem through the sharing of quality work with feedback from a variety of sources. Mostly however the ePortfolio can assist students understand that learning is something *they do,* it is not something that teachers *do to them.* They become empowered to take a greater degree of control over their own learning and move further along the path towards being truly confident, connected, actively involved, life-long learners.

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Appendix 1: -

Useful sites related to ePortfolios in addition to references noted.

Host	Major Focus	URL
Helen Barrett	Reflection, digital story telling, frequently asked questions, resource links, video professional development	http://electronicportfolios.org
Apple Learning Interchange	A series of instructional video clips by Helen Barrett on ePortfolio development.	http://newali.apple.com/ali_sites/ali/exhibits/ 1000156/The_Process.html
BECTA	UK Government and partners' site investigating the impact that ePortfolios have on learners in schools, further education, higher education and work based learning.	http://partners.becta.org.uk
EifEL (European Institute for E-Learning	An independent, not-for-profit European professional association whose mission is to support organisations, EIfEL is leading the Europortfolio consortium. Useful links to other sites.	http://www.eife-l.org/
MOSEP More Self Esteem with my ePortfolio	MOSEP is a European organisation seeking to address the problem of the growing number of adolescents (aged 14-16) dropping out of schools. Simple video intro re ePortfolios	http://www.mosep.org/
Teacher Tap	A professional development resource for teachers. Great links to other site.	http://eduscapes.com/tap/topic82.htm
Pebble Pad	An ePortfolio 'system' with examples and video clips. Mostly at University level.	http://www.pebblepad.co.uk/
ePortfolio portal	Lots of useful information about ePortfolios. Easy to follow links.	http://www.danwilton.com/eportfolios/
Newcastle University	A range of interesting documents, reports and presentations.	http://www.eportfolios.ac.uk/
Wikipedia	Definitions, links	http://en.wikipedia.org/wiki/EPortfolio

Appendix 2: -

Examples of student ePortfolio home pages showing hyperlinks to work that provides evidence of learning and student reflection.   .

These clips do not show the total home page but will give an idea of two page layouts, each individually designed by the students. Some of the work is stored within the Learning Management System. Other work is stored on open sites.

The following links show how blog, wiki and podcast sites can be used to store student work through a simple hyperlink from the ePortfolio.

http://www.thediaryofannefrank.blogspot.com (note the ClustrMap associated with this site)
http://www.mysciencefair.blogspot.com (This clip provides a good example of student reflection in digital storytelling form.)
http://www.bbi.podomatic.com (A range of podcasts from different students. Each student has a hyperlink from their ePortfolio to their work on the podomatic site)