

GRAB YOUR FUTURE WITH AN E-PORTFOLIO!



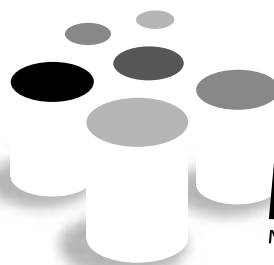
**Study on new qualifications and skills needed by teachers
and career counsellors to empower young students with
the e-portfolio concept and tools**

Summary Report



Education and Culture

Leonardo da Vinci



MOSEP

More Self-Esteem with my e-Portfolio

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**Study on new qualifications and skills needed by teachers
and career counsellors to empower young students with
the e-portfolio concept and tools**

Summary Report

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FOREWORD

“Every act of conscious learning requires the willingness to suffer an injury to one’s self-esteem. That is why young children, before they are aware of their own self-importance, learn so easily.”

Thomas Szasz

The willingness to put one’s self esteem on the line may be one of the key factors for self determined learning. Once adolescents are comfortable with determining their own destiny with respect to learning they will become open-minded to new ways of organising their learning. This appears to be a prerequisite for the kind of life-long learning which should become the foundation of the knowledge based society. And the need for change applies to teachers as well: they too, will need new skills and competencies in order to be suitable companions for the self-determined young learners they will be faced with. The MOSEP project – more self-esteem with my e-portfolio – aimed at providing a study, course materials and on-line information to acquire these competencies.

The study you are reading provides some of the theoretical background and practical guidelines for teachers and vocational counsellors in order to equip them for the challenges that they will face as roles change from “teacher” to “learning companion”.

Chapter two describes the theoretical background for supporting adolescent learners. It then describes the novel concept of e-portfolio and demonstrates its uses in life-long learning for this particular group. Chapter three looks at e-portfolio from an institutional and organisational perspective and points at some of the critical success factors in implementing the methods and tools in a formal educational context. Chapter four specifies new competencies and skills for teachers when their role changes towards supporting the learners in an e-portfolio environment. Chapter five gives a survey of current software tools for e-portfolio work with special emphasis on the functionality expected from such tools. The study also looks at the suitability of these solutions for e-portfolio beginners.

In addition to the study the MOSEP consortium also developed course material for teachers, trainers and vocational counsellors. The course is organised in an open Wiki-software containing practical modules on how to implement and support e-portfolio processes. The course is available in English, German, Polish, Lithuanian, and Bulgarian language and can be accessed via <http://www.mosep.org>.

MOSEP is a practical guide to e-portfolio in life-long learning, which aims at raising the awareness of a broad audience. I would like to thank the whole consortium for their contributions to achieving this objective. Particular thanks go to the authors of the study, Graham Attwell, Agnieszka Chrzaszcz, John Pallister, and Veronika Hornung-Prähauser. My thanks also extend to Martin Prokoph and Markus Ulrich from the Bundeswehr University, Diana Wieden-Bischof, Sandra Schaffert and Daniela Gnad from Salzburg Research all of whom assisted in finalising this summary report.

Wolf Hilzensauer
Project Co-ordinator

INTRODUCTION

1



1 INTRODUCTION

1.1 Background to and context of this study

In almost all European countries, educationalists and apprenticeship tutors complain about the high drop-out rates of schools and vocational education and training (VET) and the high level of unemployed young people with no qualifications (Hans de Boer, Youth Unemployment Taskforce Netherlands, 2003). The problem is not confined to the Netherlands; throughout Europe there are ominous signs that a class is emerging of poorly educated young people with disrupted learning biographies and little chance of finding jobs. The European Union is extremely concerned about the above mentioned issues and has set a target of having, by 2010, an EU average rate of no more than 10 per cent of early school leavers (age 18-24) – in 2006 it averaged 16 per cent (European Commission, 2006).

This study examines ways and methods to combat this problem and has been produced as part of the EU project MOSEP (more self-esteem with my e-portfolio), which is an innovative project being funded under the European Commission's Leonardo da Vinci Programme (August 2006 to August 2008). MOSEP addresses the problem of early school leavers at the stage at which young learners are in danger of dropping out of the formal education system, in adolescence.

Young learners, between the age of 14 and 16, find themselves at transition points in their lives at which they have to choose between going into upper secondary education

or entering vocational training. It is a time when they have to make decisions and need to be supported in making the best choices for their future careers. Adolescent research suggests that students at the transitional stage of development between childhood and adulthood need specific forms of learning support (Bandura, 2006; Pajares et al., 2006). This is the case especially for developing personal competencies, such as goal setting and accomplishment, self-organisation and self-confidence, and developing a

“The middle school years are a critical turning point in young people’s lives. Early adolescence is an important time for youth to adjust to a rapidly changing body, learn new cognitive abilities, form positive social relationships, develop a positive sense of self, and forge a personal code of ethics and morality.”

Eccles & Midgley, 1989; Jackson & Davis, 2000

vision of professional life. As one powerful instrument in this development process, the MOSEP project proposes the innovative eLearning concept of ‘e-portfolio’, because at the heart of this pedagogical approach is a learner-centred model allowing a greater degree of personalisation of learning and of motivating and empowering students to acquire the self-organisational skills needed to succeed in today’s knowledge economy and to become self-confident and competent 21st-century citizens. Furthermore, the e-portfolio concept is a powerful means of aiding inclusion in both social and educational terms as it encourages the celebration of achievements – the wide pallet of skills and interests that a young person has gained both in and out of school.

However, in order to assist young learners in their personal development, Europe needs teachers and careers counsellors trained in the e-portfolio concept and its technical implementation with web-based e-portfolio software. Successful implementation of the e-portfolio approach demands re-thinking the way we approach teaching and learning today. Teachers require specific competencies to support learners in creating and maintaining their e-portfolios – and in evaluating the outcomes. For the learners themselves, the challenge is to acquire the necessary competencies for building a portfolio and, more fundamentally, developing as reflective learners and accepting greater responsibility for their learning journeys and careers.

1.2 Scope of study

MOSEP experiments with the use of electronic portfolios as a means of supporting both the adolescents and the teaching and counselling staff working with young learners during transition phases. A strong European partnership – from Austria, Bulgaria, France, Germany, Lithuania, Poland and the UK – is working closely with a network of experts across Europe to produce an e-portfolio ‘toolkit’ specifically designed for initial and in-service teacher trainers and vocational counsellors. This toolkit will include an e-portfolio training course, which will be developed during the two-year project. The purpose of this study is to provide insights for the course developers and to serve as background material for all e-portfolio trainers in the growing e-portfolio community and beyond.



Therefore, the study:

- | outlines the problem of young early school leavers in the countries taking part in the EU project MOSEP (Austria, Bulgaria, France, Germany, Lithuania, Poland, United Kingdom) and identifies their needs for specific learning support. It looks for examples of schools that have used e-portfolios with this age group. The outcome is an overview of success factors for implementing this new instrument in daily school practice (Chapter 2);
- | introduces the concept of e-portfolio and its potential for improving young learners' educational engagement and vocational orientation in theory. Keywords of the e-portfolio concept, purpose, functions and phases are described. The role of applying technology is discussed and critical issues related to this are highlighted (Chapter 3);
- | proposes the new qualifications needed by pupils and teachers for implementing this concept. The report focuses on competencies to be acquired by both pupils and teachers. In particular, it discusses the changing role of the latter in coaching young learners by using the e-portfolio themselves (Chapter 4), and
- | provides an overview of Open Source tools, especially for those new to the (electronic) e-portfolio concept (Chapter 5).

The conclusions serve to define learning objectives for teachers using e-portfolios and to develop a train-the-trainer course based on the e-portfolio concept and tools. The philosophy and MOSEP course structure are described in Chapter 4 and can be downloaded from <http://www.mosep.org>.

1.3 Methodology

The authors of this study applied the following research instruments:

- | Desk research – secondary material from studies in the fields of educational and psychological research and conference proceedings (in particular, national and international e-portfolio conferences).
- | Interviews with e-portfolio experts, teachers and career counsellors already piloting this approach with young learners.
- | Case studies about e-portfolio usage in the age group of young learners (high school level) were carried out in each MOSEP country (Austria, Bulgaria, France, Germany, Lithuania, Poland, United Kingdom).

YOUNG LEARNERS' NEEDS AND THE POTENTIAL OF E-PORTFOLIOS

2



2 YOUNG LEARNERS' NEEDS AND THE POTENTIAL OF E-PORTFOLIOS

This chapter first outlines the problem of young early school leavers in the countries taking part in the EU project MOSEP (Austria, Bulgaria, France, Germany, Lithuania, Poland and United Kingdom). Secondly, it presents the results of a search for best practice examples of the use of e-portfolios for young learners in schools, especially for developing personal skills. Finally, success factors in applying this new instrument in daily school practice are summarised.

2.1 The European problem of disrupted learning biographies

This section looks more closely at the situation of early school leavers* and drop-outs in those countries taking part in the MOSEP project. It illustrates the intensity of the problem with statistics, and investigates various reasons for early school leaving and national strategies addressing this development. The findings are based on the country reports of "Achieving the Lisbon Goal: The Contribution of Vocational Education and Training Systems" of 2004. In addition, national studies were used for supportive and detailed information.

AUSTRIA | Situation and data

In Austria, the number of school drop-outs ranged between 9 and 10 per cent in the year 2002/03 (Steiner, 2005 and Schmid, 2004). The statistic includes young learners between the age of 15 and 24 years. Whereas only 5.9 per cent leave formal education at the age of 15-16, the percentage increases to 12.6 per cent at the age of 23-24 (Steiner, 2005). 8 per cent of this cohort end their school career after compulsory school attendance and 4 per cent without graduating (Riepl, 2004). All the data from Steiner's study were calculated on the basis of the micro census.

However, even if the rate of drop-out is very low compared with other European countries, three different groups of early school leavers could be identified:

- | young learners with a migrant background;
- | young learners with parents who have a low level of formal education, and
- | young learners with some type of handicap (Schmid, 2004).

*Individual characteristics of early school leavers and factors influencing early school leaving as they appear in the latest Commission report on "Progress towards the Lisbon objectives in education and training" (European Commission, 2006):

"Young people at risk" are the group of early school leavers often with differing motivation.

Who are the school leavers?: those who experience difficulty in meeting the academic demands of school, who get low grades, and who repeat a grade level are those most likely to become early school leavers.

The average age of young people leaving education with only primary or lower secondary education ranged between 14.5 (Greece) and 19.6 (in Denmark) in 2004. In Greece, Italy, Hungary and Romania, young people tend to leave education earlier than in other countries (at around the age of 15). There is less variation between countries at ISCED levels 3 and 4: the oldest school leavers are in Sweden, Finland, the Netherlands (on average they leave at around the age of 20), while the youngest are in Slovakia and Hungary (around the age of 18).

The school leavers might be divided into:

- | positive leavers, who choose to take up employment, apprenticeship or alternative career paths;
- | opportune leavers, who haven't decided on a career path, but leave to take up a job or perhaps a relationship in preference to school;
- | would-be leavers, or 'reluctant stayers', who prefer to leave but lack opportunities beyond school;
- | circumstantial leavers, who leave school for non-educational reasons, for example family need;
- | discouraged leavers, who have not had success in their schooling, and who have low levels of performance and interest;
- | alienated leavers, whose needs may be similar to the discouraged students, but which are more difficult to meet.

Source: <http://ec.europa.eu/education/policies/2010/doc/progressreport06.pdf>

Reasons for early school leaving and drop-out

Reasons for dropping out and leaving school within the above problem groups are:

- | social background;
- | ethnic origin;
- | educational background of the parents, and
- | unemployment of parents (Steiner, 2005, section 2.3).

Other studies focus on some other aspects, such as:

- | excessive demands or poor performance;
- | problems with teachers or, in the case of teaching, with supervisors;
- | an aversion to learning and to school in general, and
- | motivation by peers to drop out (Riepl, 2004, p. 19).

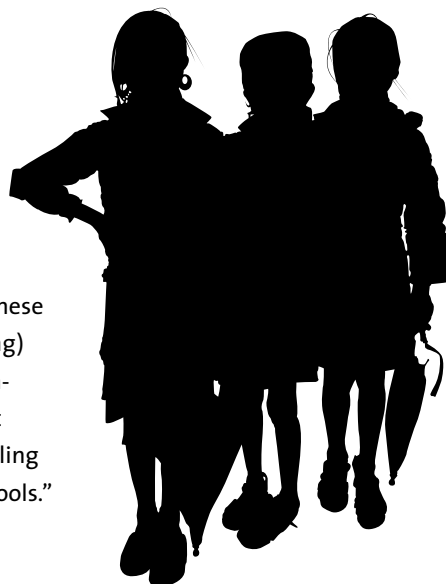
Finally, reasons such as illness or personal wishes, like the desire to earn money or a negative attitude of the parents towards school (some asking too much of their children or some perhaps against a higher education level), have been identified (Riepl, 2004, p. 20).

Initiatives to tackle early school leaving and drop-out

In general, three types of activities to combat this problem are suggested (Riedl, 2004, p. 33):

- | preventive actions;
- | supporting further educational opportunities;
- | identifying the consequences of school drop-out.

The Austrian Ministry of Education focuses on the last two possibilities for tackling the problem: On the one hand it “offers IVET opportunities to young people with ‘learning problems’ after general compulsory schooling: these take the form of ‘Integrative Berufsausbildung’ (Integrated Vocational Training) and the provision of training places either in a company, a school or in a training program of the Austrian Public Employment service. On the other hand it offers ways to make up the school-leaving qualification of compulsory schooling (‘Hauptschulabschluss’) or the apprenticeship certificate: second-chance schools.” (Schmid, 2004, p. 4)



BULGARIA | Situation and data

“According to Eurostat data the rate of early school leavers follows an increasing trend (from 20.3% in 2001, and 21.0% in 2002 to 22.4% in 2003). ... The drop-outs from the system are reported to account for 3.0% in 2002/2003 (1998/1999 - 3.1%, 1999/2000 - 2.6%, 2000/2001 - 2.9%, 2001/2002 - 2.7%). There is no data for drop-outs by ethnic groups, however estimations of Ministry of Education and science suggest that most of the drop-outs in basic education are children from Roma origin. ... For students from the rural areas the drop-out rate is even higher: 2000/01 - 4.7%, 2001/2002 - 4.2%, 2002/03 - 4.5%.” (Damyanovic & Fragoulis, 2004, p. 6)

Reasons for early school leaving and drop-out

The main reasons for school drop-out in Bulgaria are, according to the study by Loukanova:

- | immigration;
- | health problems;
- | family reasons, and
- | change of schools without reporting the change.

Besides these, other aspects are mentioned such as:

- | reluctance of the parents to continue supporting their children's education (Loukanova, 2000, p. 14).

Initiatives to tackle early school leaving and drop-out

"The steps undertaken by the Ministry of Labour and Social Policy to address the drop-out issue are legislative initiatives (Social Assistance Act) which include measures of the Government for encouraging parents to send their children to school, etc. The approach and measures adopted to avoid and overcome the negative aftermaths aim at eliminating or reducing the impact of the main reasons for the current situation, ..." (Damyanovic & Fragoulis, 2004, p. 6)

In addition, several different initiatives were started for teachers' improvement and the integration of Roma children.

GERMANY | Situation and data

According to a study of the Federal Statistical Office of Germany in 2006 and for the age-group of 25-year-olds in particular, school statistics for Germany show that the number of school leavers (not counting vocational qualification schools) rose by 23 per cent (to 958,000) between 1992 and 2005. In 2005, 78,000 or 8 per cent of these 958,000 left school without a Hauptschule leaving certificate. This ratio has not decreased compared with 1992. Women are less represented in this group; their share fell slightly to 6 per cent, while the share of men without a leaving certificate increased slightly (to 10.2 per cent). (Federal Statistical Office of Germany, 2006, p. 23)



Reasons for early school leaving and drop-out

Until now no educational authority has taken on the responsibility for combating this problem. One of the few studies on this issue has identified the following factors relating to the problem of early school leavers and drop-outs:

- | excessive demands or lacking challenges;
- | lack of social, linguistic or cultural integration of children;
- | lack of integration of particular children into the class;
- | lack of future prospects;
- | lack of motivation;
- | family environment and problems.

Furthermore, the following reasons were also mentioned:

- | stress in the family environment (e.g. parents' problems, addiction, divorce);
- | fear of leaving the parents;
- | fear of going to school with all its challenges and stresses;
- | bullying.

(Adamczyk et al., 2004)

Strategies to tackle early school leaving and drop-out

As the responsibility for education lies with the individual countries, there is no uniform strategy to tackle the problem of early school leaving and drop-out.

But "[d]ue to the bad results of the PISA study, in which the average results for 15-year-olds in Germany are well below the OECD average, the Kultusministerkonferenz (Standing Conference of the Ministers for Cultural Affairs) defined the following fields of action:

- | measures to improve language skills as early as the pre-school stage;
- | measures for better links between the pre-school area and the primary schools with a view to earlier school enrolment;
- | measures designed to improve primary education and continual improvement of reading competence and basic understanding of the interrelation between mathematical and natural science;
- | measures to actively encourage educationally disadvantaged children, especially children and young people with a migrant background;
- | measures for subsequent quality development and assurance within classes and the school itself by making standards and a result-oriented evaluation obligatory;
- | measures designed to improve the professionalism of teachers, especially with a view to diagnostic and methodical competencies as part of a systematic school development;
- | measures to extend school and extracurricular full-time offerings with the aim of providing extended education and encouragement possibilities, especially for scholars with an education deficit and those with special capabilities. To support the Länder the government allocates 4 Mrd. within the capital spending programme 'Zukunft Bildung und Betreuung' in the period 2004-2007 for the development and extension of full-time schools.

These measures are also intended to reduce the number of early school leavers and increase the educational maturity of young people and the reduction of potential restraints in vocational education and training." (H. Gross, G. Hanf, U. Hippach-Schneider, 2004, p. 6)

LITHUANIA | Situation and data

"Statistical data shows that the percentage of young people leaving general secondary education early has not changed significantly. In the period from 1995 to 2001 this group constituted 1.3 per cent of the population, and 1 percent in 2000 to 2001.

However, the percentage of young people leaving vocational training with few or no recognised qualifications in the same period was much higher and growth can be noticed in the number of early school leavers: in 1995-1996 they constituted 84 per cent and in 2000-2001 11.8 per cent. In order to reduce the number of young people leaving education or training without or with few recognised qualifications, legal, social and financial measures have been initiated. One of those measures is the introduction of a strict control of obligatory secondary education and the devolution of the legal responsibility to the parents.” (Grollmann, Philipp & Ruth, 2004, p. 8 f.)

Reasons for early school leaving and drop-out

The report claims ethnic minorities to be the most significant problem (ibid).

Strategies to tackle early school leaving and drop-out

“In order to reduce the number of young people leaving education or training without or with few recognised qualifications, legal, social and financial measures have been initiated. One of those measures is the introduction of a strict control of obligatory secondary education and the devolution of the legal responsibility to the parents.” (Grollmann, Philipp & Ruth, 2004, p. 8 f.)

Especially for the 15-year-old drop-outs a “wide range of support for children from socially violated groups, including the provision of food, learning materials, temporary living place, taking care of their free time, etc. is being planned.” (Grollmann et al., 2004, p. 9)

POLAND | Situation and data

“The ‘early school leavers’ rate (percentage of 18-24-year-olds with at most lower secondary attainment levels who are not in education and training) is fairly low (7.6% in 2002 compared with 18.8% in the EU15 average or 8.4% for the new member states⁷). Poland is currently meeting the EU objective set for 2010.” (Czesana & Matouskova, 2004, p. 8)

Reasons for early school leaving and drop-out

The official report focuses only on problems with learners from an ethnic minority in Poland.

Strategies to tackle early school leaving and drop-out

“There is also a governmental organisation ‘Voluntary Labour Corps’ providing care for young people at risk of unemployment and socio-pathological disorders (it acts under the supervision of the Ministry of Labour). A network of 303 centres provides support towards social inclusion and prevention of drop-outs, and organises vocational training. The programmes last two to three years and include young people over 15.” (Czesana & Matouskova, 2004, p. 8)

UNITED KINGDOM | Situation and data

No current data available at the date of printing.

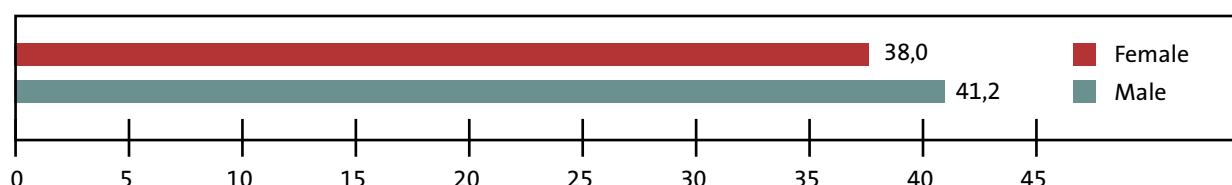
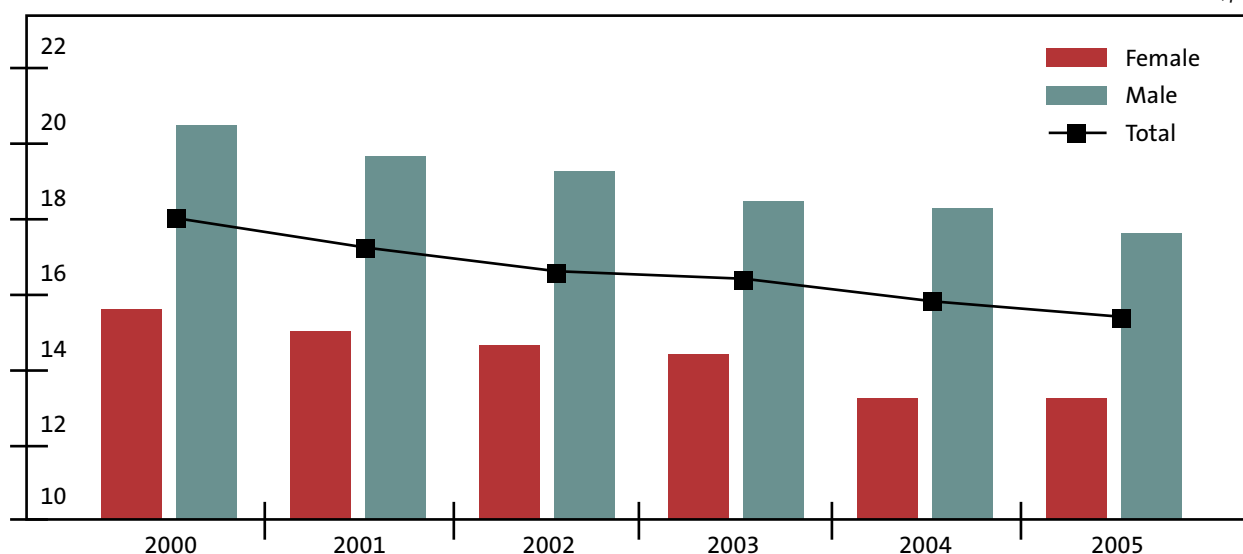
Strategies to tackle early school leaving and drop-out

Among others, there is the instrument of financial grants in UK education. According to the Country Report for the UK, “[e]ducational Maintenance Awards are grants to 16 to 19 year olds from poorer backgrounds in the UK for participation in post-compulsory (not HE) courses. The aim is to encourage participation and reduce the need to earn (from part-time employment), thus freeing time for study. Pilots have been successful, and the scheme was nationalised in 2004.” (Leney & May, 2004, p. 5)

EUROPEAN OUTLOOK | Situation and data

It is very difficult to obtain sound statistical data for drop-out rates among very young learners (age 14-16). However, the EUROSTAT service offers 'numerical' insight into the next age group of early school leavers, i.e. persons aged 18-24.¹⁾ As the graph below indicates, in the EU25 the rate of early school leavers decreased from 17.7 per cent in 2000 to 15.2 per cent in 2005 but is still considerably above the target of reducing this rate to no more than 10 per cent (as set out in the Introduction). Malta (41.2%), Portugal (38%) and Spain (30.8%) have the highest rates of early school leavers, while Poland (5.5%), Slovakia (5.8%) and the Czech Republic (8.4%) record the lowest rates of people leaving school early. The next graph shows a considerably higher percentage of male than female early school leavers.*

Graph 1:
Early school leavers, EU25, 2005 (%).
Source: European Foundation for the Improvement of Living and Working Conditions 2007, p. 9



Graph 2:
Early school leavers, EU25, 2005 (%).
Source: European Foundation for the Improvement of Living and Working Conditions 2007, p. 10

Strategies to tackle early school leaving and drop-out

European countries are following different routes with regard to actions addressing drop-out problems. In the progress report on achieving the Lisbon Agenda, four different ways have been reported:

- | Modularisation (Austria, Belgium, Czech Republic, France, Germany, Hungary, Iceland, Luxembourg, Malta, Poland, Portugal, Slovenia, Sweden, Turkey).
- | Establishing national qualification systems/frameworks (Czech Republic, Ireland, Lithuania, Malta, Netherlands, Slovenia, UK).
- | Establishing competence-based programmes (Bulgaria, Czech Republic, Estonia, Hungary, Italy, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia).

* **Note:** Early school leavers: Percentage of the population aged 18-24 years with at most lower secondary education and not in further education or training. 2000, 2001: Estimated value; 2003: Break in series. Source: Eurostat, Structural indicators, 2006 in: Report about "Quality of work and employment 2006" of the European Foundation for the Improvement of Living and Working Conditions 2007: <http://www.eurofound.europa.eu/pubdocs/2006/60/en/1/ef0660en.pdf>, accessed 20 July 2007

- | Increasing access to higher education (Austria, Finland, Germany, Liechtenstein, Portugal, Spain, Sweden). (Leney, 2004, p. 6)

In general, the European Union seems to regard the improvement of competencies as one of the most important goals to improve the situation. “A paradigm change is taking place in the objectives of training and approaches to the content and curriculum of VET. The development of broad occupational competencies through workplace learning is the key dimension of VET innovation. Transferable or key competencies provide another way to define this approach. In both cases, the context in which the learning takes place has an important bearing on the learning outcome.” (Leney, 2004, p. 13) And e-portfolios seem to be a useful instrument to provide evidence of such key competencies.

2.2 Theoretical background for supporting adolescent learners

Adolescence can be defined as “the transitional stage of development between childhood and adulthood, representing the period of time during which a person experiences a variety of biological changes and encounters a number of emotional issues. The ages which are considered to be part of adolescence vary by culture, and range from preteens to nineteen years. According to the World Health Organization (WHO), adolescence covers the period of life between 10 and 20 years of age. Adolescence is often divided by psychologists into three distinct phases: early, mid and late adolescence.” (http://en.wikipedia.org/wiki/Adolescent_psychology, accessed 21 August 2007)

Traditionally, research in this field is linked to psychological development and family studies. However, as the vast list of research themes shows, there are many overlaps with

Clearly, it is not simply a matter of how capable you are; it is also a matter of how capable you believe you are.

Pajares & Urdan, 2006, p. 343

other research disciplines, and projects in education and electronic enhanced learning can in particular benefit from those insights (Journal of Adolescent Research, <http://jar.sagepub.com/> accessed 21-07-2007). Aiming at supporting young students – before they leave school – needs some

insight into this specific period of development from childhood to adulthood. In the context of MOSEP, we are questioning how and in what way the e-portfolio concept can contribute to the competence development of young students. Therefore we analyse theoretical findings about e-portfolios and:

- | the concept of self-efficacy of young learners;
- | the concept of self-organised/self-regulated learning, and
- | the potential of e-portfolios to increase the motivation of students for learning.

Developing self-esteem and self-efficacy of young learners

Modern psychologists are convinced that in different periods of life specific competencies are needed for successful functioning and that the beliefs about one's personal capabilities heavily influence the outcome, and also the learning results. This concept of self-efficacy is defined as “the beliefs in one's capabilities to organize and execute the courses of action required producing given attainments” (Bandura, 1997, p. 3). More specifically, self-efficacy is referred as “beliefs in one's capabilities to meet the demands of a certain role or successfully carry out a certain activity. In short, perceived efficacy is concerned not with the number of skills you have, but with what you believe you can do with what you have under a variety of circumstances. Efficacy beliefs operate as a key factor in a generative system of human competence. Hence, different people with similar skills, or the same person under different circumstances, may perform poorly, adequately, or extraordinarily, depending on fluctuations in their beliefs of personal efficacy.” (Argy-

ropoulou & Sidiropoulou, 2003, p. 1) These psychological findings of adolescent research match the pedagogical concept of e-portfolios.

In educational development, Bandura (2006, p. 10) postulates three routes by which efficacy beliefs play a key role in cognitive development and accomplishment:

- | students' beliefs in their efficacy to regulate their learning activities and to master academic subjects;
- | teachers' beliefs in personal efficacy to motivate and promote learning in their students, and
- | the faculties' collective sense of efficacy that their schools can accomplish significant academic progress.

The environment in which students learn today offers many possibilities to acquire information, for example at libraries and very easily through the Internet. Learning environments and social software allow the learner to be active independently of time and place. However, this requires an active role by the student and, as Bandura states:

"This shift in locus of initiative involves a major reorientation in students' conception of education. They are agents of their own learning, not just recipients of information. Adolescents need to commit themselves to goals that give them purpose and a sense of accomplishment. Without personal commitment to something worth doing, they are unmotivated, bored, or cynical. They become dependent on extrinsic sources of stimulation. A vision of a desired future helps to organize their lives, provides meaning to their activities, motivates them, and enables them to tolerate the hassles of getting there." (2006, p. 10ff).

The e-portfolio concept takes these changes into consideration and offers the student and the teacher possibilities to follow a competence-based, individual and personalised learning path.

People not only direct their learning by beliefs of personal efficacy, but also their professional career. In vocational psychology, this is a well-known phenomenon. One of the most popular applications of self-efficacy theory is the study of career decision-making self-efficacy (Betz, Klein & Taylor, 1994, cited in Argyropoulou, 2003, p. 2). Taylor and Betz (1983) (based on Crites' (1978) model of career choice competencies) provided a decision framework, which defines the skills required in career decision-making: (1) goal selection, (2) occupational information, (3) problem solving, (4) planning, and (5) self-appraisal. Because self-efficacy theory is defined in relation to competence in specific behavioural domains, career decision-making self-efficacy refers to the individual's self-confidence in successfully carrying out the mentioned activities. Thus, the conceptualisation and measurement of career decision-making self-efficacy involves the integration of two major theories, one originally stemming from clinical-social psychology and the other having its origins in counselling/vocational psychology (Argyropoulou, 2003, p. 2ff.).

As will be outlined in the next chapter in detail, teachers applying the e-portfolio concept will support their students especially in developing competencies for selection (choice making and planning).

Implications for teachers, parents or vocational career coaches deriving from the adolescent research findings are manifold and almost all of them are relevant for qualified e-portfolio guidance. In the following, we provide a non-exhaustive list of recommendations outlined by the adolescent researchers Pajares and Urdan (2006, pp. 343-364):

- | Emphasise skill development rather than self-enhancement
- | Ensure that students' interpretations are adaptive
- | Engage in effective modelling practices
- | Select appropriate peer models

- | Minimise the relative ability information publicly available
- | Tailor instruction to the student's capabilities
- | Exercise care in grouping practices
- | Careful the things you say, children will listen
- | Praise what is praiseworthy
- | Help young people learn to "read" their feelings
- | Identify self-handicapping strategies
- | Foster optimism and a positive outlook on life
- | Foster competence and confidence
- | Challenge under-confidence
- | Foster authenticity
- | Make self-regulatory practices automatic and habitual
- | Set proximal rather than distal goals
- | Provide instrumental rather than executive help.

Becta (2007) looked at the issues of motivation and self-esteem in the use of e-portfolios based on observation, usage statistics and reports from participants. They report that: "In the case of e-portfolio development, both engagement and motivation can be affected by access to suitable technology. According to many teachers, the motivation to use the e-portfolio systems provided in each case is closely related to motivation to use ICT in general."

Becta goes on to say: "Teachers across case studies reported that particular groups, such as students with special educational needs (SEN) and those at risk of exclusion, also appeared to be more engaged than previously when working with the learning platform."

With regard to motivation, they found: "Where students see a connection with their current and future lives, motivation will be relatively high."

In terms of self-esteem, Becta notes: "It is interesting to see that, although students tend to 'understand their work better' and are 'pleased with' their progress, for students other than those in primary schools, using e-portfolios and online spaces does not, in the main, help them to be more confident." They believe: "This could be due to the extent of feedback and reflection that they have engaged in: more constructive feedback and reflection is more likely to enhance confidence." The report states: "This points to an important role for teachers and tutors in promoting the social, as well as the instrumental, outcomes of learning activity."

Supporting self-organising skills and goal orientation with e-portfolios

Not only adolescent researchers postulate the development of self-efficacy and self-organisation competencies. Teaching young students self-organising skills in addition to classical subject-matter knowledge has been and is still viewed as one of the major goals of education both internationally and nationally and across all educational sectors (OECD Pisa, 2000; EU Lifelong Learning Programme, 2006). The objective is to support learners in developing knowledge, skills and attitudes that enhance and facilitate their future learning and which – abstracted from the original learning context – can be transferred to other learning situations. These skills are said to be vital and a prerequisite to lifelong and lifewide learning in our rapidly changing information society. Young learners need special attention and methods of teaching and counselling. The notion of self-organised learning, self-regulated, self-directed is deeply embedded in the pedagogical e-portfolio concept. It stems from the understanding that "students who self-regulate their learning are engaged actively and constructively in a process of meaning genera-

tion and that they adapt their thoughts, feelings and actions as needed to affect their learning and motivation” (Boekaerts & Corno, 2005, p. 201). A definition and principles of self-organised learning have been proposed by Harri-Augstein and Thomas as an answer to society’s need to cope with constant change and flexibility. “Self-organised Learning is the conversational construction, reconstruction and exchange of personal significant, relevant and viable meanings with awareness and controlled purposiveness” (1991, p. 27). The term “self-regulated learning” is used to describe learning that is guided by metacognition, strategic action (planning, monitoring and evaluating personal progress against a standard), and motivation to learn. (http://en.wikipedia.org/wiki/Self-regulated_learning, accessed 20 May 2007)

Nowadays the e-portfolio concept can be subsumed as an e-learning instrument, its purpose being:

- | a personal, learning development concept and tool and/or
- | an alternative instrument for assessing learning outcomes and processes (Häcker, 2006).

Among other approaches, e-portfolios are described as:

- | “selective and structured collections of information;
- | gathered for specific purposes and showing/illustrating one’s accomplishments and growth, which are
- | stored digitally and managed by appropriate software;
- | developed using appropriate multimedia and usually within a web environment and
- | retrieved from a website, or delivered by CD-ROM or by DVD.” (Challis, 2005; for other definitions, see Chapter 3)

E-portfolio as a concept and tool has the potential to benefit young learners in their transition period because of its support for the following pedagogical processes (Beetham, 2005, p. 5):

- | summative assessment: demonstrating competence according to criteria set out within a programme of study or by an accrediting body;
- | learning and ‘learning to learn’: enabling the learner to identify and reflect on their strengths and weaknesses, making use of formative feedback, and enabling professionals to support learners in ways appropriate to their achievements and preferences, by drawing on information in the profile;
- | presentation: showcasing the learner’s best or most relevant achievements in the context of a specific learning or career opportunity, for example on application to a university or during a professional development review;
- | personal and professional development planning: supporting the general process of reflection, self-evaluation and action planning for lifelong learning, including guidance on educational and/or career pathways.”

Graham Attwell (2005b) identifies seven different functions for an e-portfolio, all of which can be mapped against different pedagogical processes.

Recognising learning

The first is recognising learning, which is not as simple a task as might at first be assumed:



Within the formal education system, learning has been associated with achievement. Although it could be said that all learning is an achievement, it does not follow that the formal education system has recognised it as such. Furthermore, the formal school curriculum has tended to focus on summative assessment in the form of examinations. All too often learners are unclear what it is they 'should' be trying to do and to learn. Yet, this is critical to their ability to recognise that they have learnt. Learners frequently lack the skills to recognise their own learning, especially ongoing learning that does not necessarily lead to formal outcomes.

Recording learning

The second key function is recording learning:

What should be recorded in a portfolio? An e-portfolio will contain records of formal achievements but, possibly more important, ongoing learning from home and work as well as formal education and training. Peer group interaction may be the most powerful means of recording non-formal learning. E-portfolios should allow individuals to build and present a profile or picture of themselves and should allow people to record their learning and achievement from the home, from school or college and from work.

In terms of recording learning, be it formal or informal, the issue of who the audience for the portfolio is is vital. Elizabeth Hebert (1998) says, "Defining an audience is crucial. The notion of gathering work to 'tell your story' is far too abstract for young students unless they know who is listening to that story. The question of the content of a portfolio becomes much clearer once an audience is defined. For our students, the parents were the most natural audience. Other audiences could be siblings, other students from the same or different grade levels, prior teachers in the school, or senior citizens in the community."

Time is also important. Learners need to know when and how often they should update the portfolio. Knowing who the portfolio is for and when it should be updated are precursors for learners planning and taking responsibility for the other processes and in particular for deciding what should be recorded in a portfolio.

Reflecting on learning

The third key process is reflecting on learning, perhaps the most important part of the learning process:

In terms of e-portfolios it is probably the least developed. Reflection has generally been seen as a process of commentary by the subject on any aspect of him- or herself (Wilson, 2005). The commentary may be private, shared or public. Examples include journals and more recently weblogs.

The issue of supporting and 'scaffolding' reflection will be considered in some depth in a later section of this publication.

Validating learning

The fourth key function is validating learning:

Validating is the process of proving – to oneself and to others – that learning has taken place, including the abilities and competencies identified and recorded (Wilson, 2005). Validation takes place through evidencing and verification. Evidence is provided by the learner to attest to their own achievement and may be in different forms and media – for instance, a picture of a chair they have made or the url of a website they have designed. Verification is externally sourced evidence of claimed achievement – for example, a letter from a team leader verifying performance during a work placement.

Validation is not the same as assessing and accrediting. Validation is referenced against the abilities and competencies identified by the learner – not those of an external occupational profile or qualification.

Video and other multimedia artefacts may be valuable in enabling validation without the need for additional, external verification.

Presenting learning

The fifth process is presenting learning:

Presenting offers an opportunity to select artefacts from the portfolio to tell a story or make a point. Presentation involves the processes of structuring, visualising, narrating and re-purposing (Wilson, 2005). Presenting is the bridge between validation and assessment but it is only one of the possible purposes of presentation. Other purposes include presenting learning for a job application or application for a European-funded project! e-portfolios should allow individuals to present their learning for different purposes and should be owned by the learner and independent of institutions.



Planning learning

The sixth process is planning learning:

Planning is a structured form of reflection – looking back and looking forward. What have I achieved and what do I want to achieve?

Assessing learning

The seventh process is assessing learning:

Assessing is an external process, not within the control of the learner. Assessing is external judgement of the value of a set of artefacts presented by the learner.

Impact of the 'e' on the pedagogical e-portfolio process

'New' for educationalists nowadays is the use of technology and digital media, web-publishing tools and/or LMS/CMS systems for introducing the e-portfolio concept institution-wide or in class. Barrett (2005) highlights the fact that new technology differs from paper-based portfolio work especially as it allows new ways of archiving, linking/ thinking, storytelling, collaborating and publishing. An electronic/digital portfolio system offers the advantage of archiving different e-portfolio artefacts (e.g. assignments, courses, certificates, grades, project results, research papers etc.), publishing them using web technologies and sharing them with others by means of collaboration tools or other social software, e.g. wikis/weblogs. The literature has identified the following advantages of technology-enhanced e-portfolio work. IT support allows:

- | integration of a huge amount of digital artefacts addressing different senses through the use of different media formats (e.g. text, pictures, sound, video, animation);
- | very flexible display of artefacts, adjusting them to different contexts and re-using them for different purposes;
- | chronological documentation and presentation of a learner's biography;
- | initiation of learning processes in groups using web-based collaboration tools;
- | intensive participation and transparency in the reflection process (see Barrett, 2005; Schaffert, Hornung-Prähauser, Hilzensauer & Wieden-Bischof, 2007).

The provision of suitable e-portfolio software for young learners gives them an instrument with which they can handle their learning strategies and planning on their own.

Whether paper or IT-based, the e-portfolio concept and tools have the potential to support young learners on their way to developing self-organising and self-regulated learning skills. As Weinert says: "Self-learning is heavily dependent on the readiness of individuals to define their own goals, to be proactive, to interpret success and failure appropriately, to translate wishes into intentions and plans, and to shield learning from competing intentions." (Weinert, 1994)

Motivating young students to learn with e-portfolios

It is argued that we all have different styles of learning and approach learning in different ways. Although this would seem self-evident, attempts to theorise and classify such learning styles are less than convincing. Notwithstanding the problems of the theoretical debate on learning styles, it would appear likely that learners will have preferences for different pedagogical approaches and learning strategies, in particular learning contexts. E-portfolios can allow learners to configure and develop the learning environment to suit and enable their own approach to learning. This can have a significant effect on student motivation.

"Students who have the freedom to choose different strategies and approaches may become more engaged in the learning process, and these students will be more likely to approach other problems with an open mind. In addition, students who are involved in creating the project assignment or the project checklist gain valuable experience in setting their own goals and standards of excellence. This gives students a sense of ownership and control over their own learning." (ALTEC, 2007)

Karen Barton, Patricia McKellar and Paul Maharg point to the importance of authenticity in learning and in motivation. (Barton, McKellar & Maharg, 2005)

"The context for their work is law education but the ideas in the paper apply to any sphere of learning. They quote Barab, Squire & Dueber (2000) who say authenticity lies 'not in the learner, the task or the environment, but in the dynamic interactions among these various components [...] authenticity is manifest in the flow itself, and is not an objective feature of any one component in isolation'." (Attwell, 2007b)

They go on to describe the environment they have designed for providing simulations of legal practice: They suggest that, if we create flexible, sensitive software instruments by which students can express themselves and carry out task-based learning, then we become involved in creating an environment where students can begin to comprehend through active learning the complexity of a professional legal task or transaction. E-portfolios can provide an environment for collaboration and reflection on authentic task-based learning.

Evidence that the introduction of e-portfolios can improve motivation:

The London Borough of Southwark is providing e-portfolios as part of a work-based learning programme. They have 500 students involved with 14 different providers. They

claim that student retention rates have increased by 10 per cent and the number of those not involved in education or training (NEET) has fallen by 12 per cent.

Crewe College in the UK have introduced e-portfolios for a group of young people 14-16 years old, who are undertaking a level 1 course in motor vehicle maintenance and repair (Attwell & Brandsma, 2006). The e-portfolio records work undertaken on a kit car project, developed as enrichment for the course and not contributing to the qualification. Whereas motivation was previously a major problem, they say the students now have to be 'sent away' from the project. They are using breaks or after-class hours to work on the kit car and complete logbooks in the PebblePad e-portfolio system. Students have taken on all the publicity work for the project and are even finding sponsors from local enterprises.

The Becta survey (2007a) found that "primary students were very enthusiastic about using the school website for storing, collaborating on and presenting their work. Generally, they found it 'fun', and agreed that they became more interested in their work. Among FE and secondary students (...) although fewer than half found it fun, or that it made them more interested in their work, more than half indicated that they would like to use an e-portfolio in future."

Of course, it could be argued that the increased motivation comes from authentic work-based learning, rather than through the e-portfolio. However, it is the consistent argument in this paper that the introduction of e-portfolios is intrinsically linked to pedagogic innovation and student-centred learning.

The importance of e-portfolio design for motivating students

"I work with metal and wood. I have many tools that I have acquired over the years, some I have bought, some I have been given, some I have found. I know what tools I have and know what they can do. I have hand tools and many power tools. I can create things by using my tools, I can solve problems by using my tools. Each time I use my tools I derive enjoyment and learn something about the tool and the materials that I work with. The tools I have been given or have found for 'free' I value if they do the job and are easy to use. No matter how sophisticated a tool is I will only use it if it is easy to use – like the majority of the planet I dislike having to use manuals! I want an easy/intuitive user interface. – the students I teach have similar attitudes in terms of selecting and using ICT tools – I am sure that this attitude/approach is not unique to Wolsingham students.

"The only time that I do not enjoy using my tools is when I have to use them to solve a problem when I would rather be doing something else. What am I rambling about? two things – using the appropriate tools for the job and motivating students. The e-portfolio tools that students will use will be those that are easy for them to use and that will let them use the media and communications methods that they are using in their everyday (out of school?) lives. The tool must motivate the student. The tool must have an interface and features that motivate the students, it must have something that makes them want to use the tool for their own enjoyment. – That is before they even think about the 'reason' that they are creating the portfolio. Not really brain surgery; if the portfolio creation tool is not something they want to/find easy to use, they will not use it. – the e-portfolio implementation will be handicapped from day one if we do not have the right tools!

"The arguments for portability/interoperability have been won – as have the arguments to 'design' integrated 'systems' and avoid the 'Topsy' just grew systems – however, we must be very careful not to 'straight jacket' the process in order to satisfy perfectly admirable design principles. We must somehow capitalise on whatever motivates and makes the students want to compile e-portfolios and at the same time justify/explain/make clear the reasons why/benefits of maintaining an e-portfolio – and of course the more difficult, but crucial bit, obtain curriculum buy-in and integrate the e-portfolio process into learning practice."

John Pallister, Wolsingham School & Community College, UK

Barriers to motivation

This section has focused on the potential benefits of e-portfolios and some of the underpinning drivers for their development and adoption. But there are also dangers.

In an extensive literature review, Pamela Butler (2006) cites Tosh, Light, Fleming and Haywood (2005) who, she says, “provide a timely warning of the problems that can be encountered in electronic portfolio implementation if the needs and attitudes of student users are not taken into consideration.” Their research shows that addressing issues of buy-in, motivation, assessment and electronic portfolio technology can increase student engagement with portfolios. To improve student buy-in, the way electronic portfolios are promoted is extremely important. Students need to see good examples of electronic portfolios, understand their benefits, and know how they will help students to develop as learners and ultimately gain employment. Students are motivated to work on their portfolios when they can see what they will get out of the experience. Knowing how the electronic portfolio will be assessed is also important, yet it cannot be seen as ‘just another assignment’, or students will focus on meeting the assessment criteria to the detriment of thinking critically about their learning journey. As Tosh et al. argue, “clear rubrics and scaffolding for students on how to reflect so that they internalize the benefits of reflective practice are clearly needed if this approach to learning is going to be embraced by most learners”. (Butler, 2006, p. 13) Finally, Tosh et al. document the concerns the students in their study had over the electronic portfolio technology they were using. “Many students had problems with the software, complaining it was anything from too complicated to lacking in functionality. Students lamented the time taken to learn the software, and to customise it to their needs. They also had concerns over the privacy of their material in a web-based platform, and wanted control over what was publicly accessible and what was private. An electronic portfolio system needs to be extremely flexible so that it can be adapted to fit students’ levels of technical skill, improvements in their skills and confidence over time[...]”. (Butler, 2006, p. 13)



2.3 Experiences from e-portfolio pilot projects with young learners

The summary is based on 19 best-practice examples demonstrating exploitation of e-portfolios in teaching practice throughout educational institutions worldwide, with special focus on European cases. (A detailed list of screened best-practice examples during the MOSEP project is given in the Annex.) The research focused on different aspects of e-portfolios in order to elicit key success factors as well as potential barriers to development and implementation of e-portfolio systems in different educational settings. As MOSEP addresses the growing problem of adolescents (aged 14 to 16) dropping out of the formal education system around Europe, the research focused in particular on e-portfolios introduced for young learners in the transition phase.

Introduction of portfolio and background

In general, most e-portfolio stories date from 2004 and 2005 onwards. The earliest implementation was noted by Notschool (UK) in the year 2000 but most of the projects are early developments launched a few years ago and, in most cases, are still not beyond the initial deployment phase.

The portfolio concept and tools were introduced mainly as:

- | internal school procedures or initiatives targeted at students from a particular school in order to support them on entering the labour market or further education;
- | local or regional initiatives that involve remote students and teachers in the idea of portfolios;
- | externally funded projects (mainly EU funding) which experiment with portfolios and prepare a pilot phase of the developments. In new Member States these projects often go hand in hand with significant investments in IT infrastructure.

In the majority of cases the target group consisted of young students aged 11-18. Some projects are targeted at students as part of their career development during their studies. A few projects also focus on adult learners as part of lifelong learning programmes. The initiatives differ in terms of educational settings and context and the socio-economic status of the target group. Also, the rationale behind the e-portfolio introduction varies from e-portfolios that support gifted and talented students (Wollerau, Switzerland) through vocational school support for students in the automotive industry (Crewe, United Kingdom) to a community of students permanently or temporarily excluded from school (Notschool, UK). Despite these factors the main aim remains the same: to stimulate self-directed learning, to document interests and learning and assist in planning individual learning paths.

Critical success factors

From the perspective of an educational institution:

- | There must be a clear reason for implementing e-portfolios, understood and accepted by teachers and students within the organisation. Otherwise it is very unlikely that they would devote time and efforts to start and continue with e-portfolios.
- | School programmes and curricula need to be revised in order to integrate the e-portfolio with the learning process so that it covers many aspects of learners' activities. E-portfolio development must encompass the whole learning experience and be perceived as the basis for lifelong learning.
- | The approach to the learners is also crucial. It is important to instruct them on the process, guiding them through collection, reflection and development of the artefacts. Also, it is crucial to give learners as much freedom as possible in terms of tools or structure so that the e-portfolio is perceived as their own, personal learning strategy.

- | It is also important to ensure there is additional time and money available for courses and programmes to facilitate teachers' continuous learning with regard to e-portfolio tools and methodologies.
- | Collaboration or support from businesses is important in terms of external expertise and increased motivation. It will help learners to understand the e-portfolio perspective and demonstrate their skills in the real labour market.
- | There is also a choice of technological solution to be decided upon. Such factors as costs of installation and administration of a system, reliability, support of different formats, portability or ease of use must also be considered within each institution.

From the perspective of teachers, trainers and vocational counsellors:

- | The skills and competencies of the teaching staff in terms of ICT and pedagogical process must be acknowledged so that the e-portfolio development is cost- and time-effective.
- | It seems that the role of a teacher is pivotal for the whole process of portfolio development. Guiding and coaching of the students seems to be crucial in all cases.
- | Teachers' competencies must be enhanced in order to assess and evaluate the portfolios and make use of their potential (e.g. during interviews).

Skills and competencies

"Tutors need to be familiar not only with e-portfolio processes and tools but they also play a key role in motivating the students to reflect on their learning and skills. (...) Tutors need to develop materials and activities to lead to e-portfolios rather than introduce the e-portfolio as an activity on its own."

Tutor from C2E Project, 2nd Chance School, France

Challenges for teachers

"It is the role of a tutor to propose a structure or scaffolding for this development process. It is obvious that there is an initial need to restore the learner's 'self-image' and it is the tutor's role to achieve this whilst accompanying the learner in his e-portfolio (...). The tutor needs to be flexible enough to adapt continually to new situations and scenarios that might arise."

Tutor from C2E Project, 2nd Chance School, France

"Teaching staff must adapt to working with smaller groups, teachers can no longer rely on up-front traditional teaching in which they are the ones that talk and transmit knowledge. They have to get used to a more personalized way of teaching." (Tutor from Dudley Project, Leasowes Community College, UK)

"The main role of a tutor was to accompany the students in reflecting on their own learning and skills as well as their professional practice gained during their work placement. The tutors had a key role in motivating the students to record and reflect on their progress."

Tutor from C2E Project, 2nd Chance School, France

THE PEDAGOGICAL E-PORTFOLIO CONCEPT IN SCHOOLS

3



3 THE PEDAGOGICAL E-PORTFOLIO CONCEPT IN SCHOOLS

This chapter outlines the pedagogical background of the – currently IT-based – pedagogical portfolio concept:

Section 3.1 provides commonly used definitions and summarises different purposes and expectations related to the introduction of e-portfolios in the educational context. Section 3.2 describes the expectations of a typical e-portfolio process. Section 3.3 deals with the role of educational technologies in the e-portfolio process(es). Section 3.4 discusses critical issues faced by teachers when introducing e-portfolios for the first time (assessment of student achievement; ownership and control of e-portfolios, content and curriculum, provision of e-portfolio infrastructure).



3.1 Background to the e-portfolio concept and tools

What is an e-portfolio?

The confusion with e-portfolios derives from different definitions and purposes. In the following we will provide an overview of different definitions.

“A portfolio is often defined as a purposeful collection of student (or teacher) work that illustrates efforts, progress, and achievement in one or more areas over time. An electronic portfolio uses digital technologies, allowing the portfolio developer to collect and organize portfolio artifacts in many media types (audio, video, graphics, text). A standards-based portfolio uses a database or hypertext links to clearly show the relationship between standards or goals, artifacts, and reflections. The learner’s reflections are the rationale that specific artifacts are evidence of achieving the stated standards or goals. An electronic portfolio is a reflective tool that demonstrates growth over time.” (Helen Barrett , 2004; 2005).

Scott Wilson has added his definition:

An e-portfolio “is a repository of information about a particular learner provided by the learner and by other people and organisations, including products in a range of media

that the learner has created or helped to create alongside formal documents from authoritative sources, such as transcripts of assessed achievement, which the learner has chosen to retain.” (Wilson, 2005)

And, reflecting a more technical direction, in contributing to standards development, Cambridge (2003) defines an e-portfolio as:

- | “what is produced when persons collect, select, reflectively interpret, and/or present their own evidence to support their assertions about what they have learned, know and can or should do;
- | a selection of ‘products’ of learning, reflections or interpretations on those products, and representations of relationships between and among the products and interpretations. These relationships may need to be verifiable with some third-party authority and be non-revocable;
- | for our purposes, the set of products, interpretations, and relationships presented to a particular audience. Multiple e-portfolios may be constructed using the same data within an e-portfolio system.” (Cambridge, 2003)

From paper to digital technologies

The idea of portfolio-based learning is not new. Indeed, portfolio concepts have been mainstreamed in art education in most countries for a considerable period of time. Furthermore, in many vocational and practical subjects there is a long tradition of producing and demonstrating artefacts developed through participation in a learning programme. Those artefacts may contribute to learner assessment to a greater or lesser degree. It could also be argued that a CV is to a large extent a portfolio, providing a profile of the individual together with an account of achievement and experience and in many cases some evidence of that achievement. Similarly, it is common practice for academic staff to keep a record of their publications.

It could then be said that the development of e-portfolios is merely the utilisation of digital technologies for the recording, storing and retrieval of such artefacts.

The different purposes of an e-portfolio

To some extent the definition of an e-portfolio depends on the particular use to which the portfolio might be put. Here there are important differences of emphasis between the uses of e-portfolios. It is possible to distinguish between three broad approaches: the use of e-portfolios as an assessment tool, the use of e-portfolios as a tool for professional or career development planning (CDP), and a wider understanding of e-portfolios as a tool for active learning. These differences will be explored in some depth in this report.

For example, in the UK, e-portfolios have come to be seen as a vehicle for personal development planning (PDP). “The term portfolio, as used in the UK, generally describes a collection (or archive) of reflective writing and associated evidence, which documents learning and which a learner may draw upon to present her/his learning and achievements.” (Ward & Richardson) A portfolio therefore encompasses the concept of personal development records (PDRs), including records that may contribute to the HE Progress File (Dearing, 1997), and extends beyond that to incorporate artefacts that may reflect claims made in PDRs. It may also include a range of tools, for example diagnostic tools, and links to material and resources that help the learner to develop the skills required to create the artefacts.

However, despite these different emphases, there is a general agreement that an e-portfolio should allow learners to record and reflect on achievement and facilitate presentations of learning. The developers of the popular proprietary e-portfolio software ‘PebblePad’ say that an e-portfolio is “a personal repository, a personal journal, a feedback and collaboration system ... populated completely by the creators, who can, in any of

their learning identities, selectively record any abilities, events, plans or thoughts that are personally significant.” (Becta, 2007)

e-portfolios as a pedagogical process

Given such trends, it may be more appropriate to define e-portfolios as a process, rather than just a product or a technological system.

A recently published report of a survey into e-portfolio development and implementation by the British Educational Technology Association (Becta, 2007a) says participants generally saw learning as a process of growth. In a typical comment, one primary teacher said: “It’s about having a better understanding of the world in all its shapes and forms. It’s about being more compassionate, it’s about taking into account different people’s needs. And it allows them to do all of that, you know, they’re going home and they’re showing what somebody else has done in school: ‘I worked with this person on ... and we made this together. And that’s what learning’s about, it’s about just growing.’”

In a video interview Roger Ellen (undated) sees e-portfolios as an “approach to students and an approach to learning – a way to involve students in their own learning, to give students the key, to give students the language of learning – what they learn and how they learn – it is an empowerment strategy.” Children growing up today, he says, spend 17 to 18 years in school. “We need to give them the strength to learn – they must be deeply involved in their own learning.”

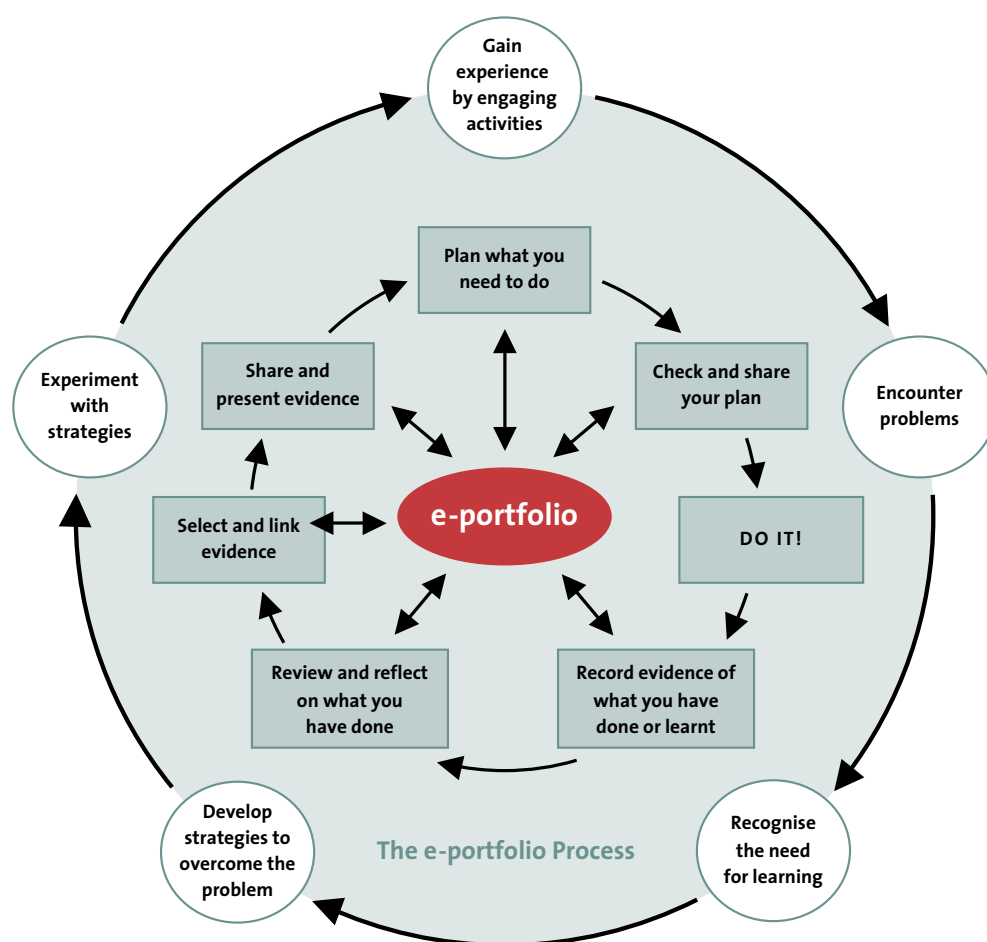
Ellen refers to the ‘3Ps’ of portfolios:

- | Product
- | Process
- | Progression

To this we would add a fourth ‘P’, that of pedagogy. E-portfolios may be best seen as a pedagogical process – as an approach to teaching and learning. It is the pedagogical approach that provides the main focus for this report. In viewing e-portfolios as a pedagogical process, we will examine what competencies are required by learners to develop an e-portfolio and what competencies are required of teachers and trainers and others supporting the development of e-portfolios in order to support learners.

The e-portfolio process encourages the learner to review and reflect on what they have done, made, experienced or learnt. They are encouraged to record their reflections in their e-portfolio and share them with others. This gives value to reflection and requires reflection to be explicit and more visible. This in turn might result in the learner deriving more benefit from the reflection stage, previously something of an invisible process. The e-portfolio process informs and supports the planning process. The learner uses their reflections to plan what it is that they must do to move forward, to learn something, to achieve something, to produce something etc. It simply adds the Record stage to the Plan, Do, Review cycle. The Record stage is very important in that it can make the reflection more ‘explicit’ which in turn enables and encourages the learner to share their reflections with others. The sharing process might help the learner to take more from the learning experience, but more importantly if a learner has to spend time preparing their thinking so that they can share it with others they might engage in ‘deeper’ thinking as they try to make sense out of their experiences and fit it into their existing thinking, memories, structures etc, hopefully enabling them to take more out of the learning experience. The different stages of the learning process (derived from Kolb’s learning cycle) can be combined with the e-portfolio processes. When doing so, a new conceptual model of learning with e-portfolios can be drawn like this:

The e-portfolio process in the Learning Loop



3.2 Expectations related to the introduction of e-portfolios

This section will look at the different pressures and movements that underpin the development and implementation of e-portfolios. Thus the development of e-portfolios can be seen as a response to different pressures on the education and training systems; at the same time the implementation of e-portfolios influences the organisational and pedagogical approaches to teaching and learning.

Improving learning

The reasons for introducing e-portfolios are numerous and varied. Drivers for change may be extrinsic or intrinsic. In some cases e-portfolios have been introduced due to government or examination board pressures. In others it is as a result of funding being made available for innovation and development. Sometimes it is as an attempt to improve the motivation of learners, in other cases to encourage learners to explore their own competence and achievement. In many cases it is because of the desire by teachers and educators to provide a more fulfilling learning experience. Furthermore, we would stress that the introduction of e-portfolios is a process. On their own, e-portfolios are not such a radical change. However, the development of e-portfolios can begin to open up new possibilities for learning.

Elizabeth Hebert, the principal of Crow Island School, Winnetka, Illinois, has written a compelling account of the first ten years of developing e-portfolios in her school (1998). “When we started this project, we didn’t fully understand the possibilities that portfolios could offer. The notion that there could be some child-centered, qualitative supplement

to the single-number characterizations of learning emphasized by our testing culture seemed reason enough to organize our efforts and those of our students. The idea of collecting more substantive evidence of our curriculum and teaching initiatives to counteract narrowly defined test scores seemed innovative at the time. What we didn't know then was that the process of selecting samples of one's own work and assembling them into a portfolio is profoundly important to children. We also learned that all children have a natural ability and desire to tell their story through the contents of the portfolio. Even now, we remain excited about capturing the individual voices of our students through portfolio collections."

Supporting lifelong learning

One of the major pressures behind the development of e-portfolios is facilitating lifelong learning. Lifelong learning is hardly a new idea. Arguably, the idea of lifelong learning was originally rooted in the workers' movement. In the UK, the Mechanics Institutes, the Miners Halls and organisations like the Workers Educational Association organised classes and courses for workers to improve their own education, knowledge and skills as well as providing access to learning resources and social activities. Whilst this provision might aim at developing technical and labour market related skills and knowledge, it was guided by a wider belief in the power of education for emancipation. The more recent focus on lifelong learning, in, say, the last thirty years, has been guided by far narrower discourses. Driven by a shorter product life-cycle, the increasing speed of adoption and

"Use e-portfolios for the recognition and validation of non formal learning."

Graham Attwell, Pontydysgu, UK

implementation of new technologies in the workplace and the increasing instability of employment with the computer-driven information revolution, it was reasoned that workers would need continuous learning throughout their work-life to update their occupational skills and knowledge or to learn new occupational competencies. It was contestable as to who would be responsible for this. Whilst previously continuing vocational training had been the responsibility of employers, and the state was seen as playing a leading role in the provision of continuing education and training, it was now often argued that individuals were responsible for maintaining their own employability, albeit sometimes with the assistance of grants, vouchers and subsidised courses.

But if ongoing learning was the responsibility of the individual, rather than company personnel or Human Resource Departments, there needed to be some way for individuals to record and present their learning achievements and competencies, beyond formal course certification. At the same time employers have been increasingly discontented with formal qualifications alone as the basis for hiring new staff (Attwell, 2007).

They require something that says what a worker can do as well as what exams they have passed. Whilst vocational courses provide a reasonable indicator of skills and competencies, they still fail to record how someone has used those competencies after initial training and what new competencies have been gained in that process.

And whilst continuous lifelong learning may be a policy aspiration rather than a reality for most people, for many learning is now increasingly multi-episodic, with individuals undertaking occasional periods of formal education and training throughout their working life.

The idea of the e-portfolio recognises that learning is continuing and seeks to provide tools to support that learning. It also recognises the role of the individual in organising his or her own learning.

Recording learner progress

For continuing education and training, many programmes may be unaccredited, i.e. not leading to a formal certificate of outcomes. This includes courses provided by suppliers,

short training programmes, courses in adult education or courses provided to enhance formal programmes. In the UK the Learning and Skills Council (LSC) has been working to establish a way of recognising and recording the progress and achievement of learners who are on non-accredited courses – that is, courses that do not lead to a qualification (Becta, 2007b).

From 2006, all organisations who deliver non-accredited learning will be required to demonstrate how they have adopted a new 'staged process' for recording and evaluating learner progress called RARPA: Recognising and Recording Progress and Achievement in Non-Accredited Learning.

Becta say, "Although the acronym is new, this five stage process is not something that will be new to adult tutors. It is a logical process that incorporates practices that many tutors already use in their teaching and learning. This time technology is being used to support that process.

The five-stage process comprises of:

1. aims that are appropriate to an individual learner or groups of learners;
2. an initial assessment to establish the learner's starting point;
3. appropriately challenging learning objectives;
4. ongoing recognition and recording of progress and achievement during the learning session or course (formative assessment);
5. end of session or course learner self-assessment; tutor summative assessment; review of overall progress and achievement.

The staged process has been designed to:

- | focus on and promote the needs and interests of learners;
- | take account of learners' diverse and sometimes multiple purposes in learning;
- | allow for negotiation of the content and outcomes of learning programmes;
- | encourage learners to reflect on and recognise their own progress and achievement, thus increasing their confidence;
- | promote and support informed learner self-assessment, peer assessment and dialogue, about learning and achievement between learners and tutors/trainers;
- | enable both the achievement of planned learning objectives and learning outcomes not specified at the outset to be recognised and valued;
- | promote good practice in teaching, learning and assessment;
- | enhance providers' quality assurance and improvement practices." (Becta, 2007b)

Informal learning

The UK initiative seeks to provide recognition of non-accredited programmes. However, it does not account for informal learning. Informal learning is something of a conundrum. Fairly obviously, we learn throughout our lives, in all kinds of different setting and contexts. Most of this learning does not come from formal educational programmes. Jay Cross (2006) argues that formal training and workshops only account for 10-20 per cent of what people learn at work, and that 80-90 per cent of our learning takes place outside formal settings. Yet there has been little attention paid to informal learning or to how it takes place. Jay Cross goes on to say: "Most corporations over-invest in formal training while leaving the more natural, simple ways we learn to chance."

In most European countries there have been some moves to recognise informal learning. However, most effort has been expended on trying to assess and certify informal learning (whether it then remains informal is a moot point, as is whether most people wish their informal learning to be certified).

There is growing interest in informal learning from the corporate world, driven by the desire to capitalise on the intellectual assets of the workforce, to manage organisational

knowledge and in recognition that informal learning may prove a cost-effective way of developing competence.

At IBM, Yael Ravin has developed two models of informal learning:

“The first model is Enabled Learning. In this model a person has a specific, immediate, learning need. For example they need to brush up on a new product or learn more about an industry trend in preparation for a customer visit the next day. There is no time to take a course. In this case, Enabled Learning can provide a short guiding experience, tailored to the specific need, available immediately, within the context of work. This can be a ‘mini-course’ assembled dynamically in response to the person’s query or a short collaborative session enabled by locating a relevant human expert.

“The second model is Embedded Learning. In this model learning is intimately embedded in the work process itself. For example a person is about to execute the next step in a workflow application. If they are not sure how to proceed, modular learning about this specific step is invoked to bring the person up to speed quickly. Or a chat with a human expert who can guide the user can also be initiated. In this case Embedded Learning allows the user to accomplish their work by providing learning at the moment of task execution.” (Ravin, 2005)

Ravin goes on to say: “Our challenge is to develop tools, technologies, and methodologies to facilitate both enabled and embedded learning.” (ibid)

In terms of educational technology, there has been little attention paid to informal learning. Indeed, it is remarkable that formal learning technology and applications have only really been made available to those enrolled on an educational programme or to those working for larger enterprises.

E-portfolios can extend access to educational technology to everyone who wishes to organise their own learning. In Wales, the Careers Service offers a web-based e-portfolio to all residents. Furthermore, the e-portfolio can include and bring together all learning, including informal learning, workplace learning, learning from the home, learning driven by problem solving and learning motivated by personal interest as well as learning through engagement in formal educational programmes.

Competence development and assessment

One of the major promises of e-portfolios is to recognise, record and bring together the outcomes of learning from formal learning programmes, non-formal provision and from informal learning. An e-portfolio can record and support learning taking place in different contexts, including work-based learning and incidental learning taking place as a result of personal interest. To fully utilise such a development requires new understandings of qualification that go beyond satisfactory completion of a course or learning programme. In this respect, an important development in education in the past period has been the translation of qualifications into outcomes and competencies.

Sebastian Fiedler and Barbara Kieslinger (2006) point out: “It is important to note that the concept of competence is a theoretical construct that refers to a human potentiality for action or its underlying dispositions. Theoretical constructs of this kind can be, and indeed are, used for a variety of descriptive and/or explanatory purposes. This variability is clearly reflected in the current literature on competencies and its apparent lack of coherence and precision.”

They go on to say: “Like the more traditional concept of ability, competence conceptualizations are generally referring to an individual’s potentiality for action in a range of challenging situations. It is thus a concept that foremost indicates a precondition for future problem solving and coping (including the use of adequate tools) in a particular area of action [...]. This is where the old notion of qualification that is based on requirements

analysis oriented in the past and on the acquisition and performance of standardized procedural skills and factual knowledge clearly shows its limits.”

Whatever the different understanding of competence, from the point of view of the e-portfolio the importance lies in the separation of the outcomes which form a qualification from the learning programme which develops competence for such outcomes. This means that learners are no longer necessarily locked in to a particular course in order to gain a qualification but are able to present their learning to prove they possess such competencies or are able to achieve those outcomes. This means that learners could select evidence and artefacts from the e-portfolio for presentation for qualification purposes.



3.3 The role of using educational technologies for e-portfolios

Barrett and Knezek (2003) argue that electronic portfolios should be electronic versions of paper portfolios. The same thinking about purpose, pedagogy and assessment, they say, lies behind both kinds of portfolio. We do not agree with this argument. Whilst the same thinking about purpose may underpin an e-portfolio, we believe that new technologies provide opportunities for new types of portfolio, or more accurately, for different pedagogic approaches to portfolio development and to different and more flexible uses of portfolios. In this section we will look at three developments in technology that are of particular significance for the development of e-portfolios – ubiquitous computing, the development of social software and the increasing capability and usability of multimedia.

Ubiquitous computing

The term ‘ubiquitous computing’ refers to two technological developments. The first is the increasingly ubiquitous nature of Internet connectivity with the development of

wireless and GSM networks, as well as the spread of broadband, resulting in connectivity becoming available almost everywhere in the future. It is also expected that devices will be able to search for, and seamlessly switch to utilise, available networks. The second and associated use of the term is for the many different devices now able to access the Internet, including mobile communication devices such as PDAs but also household appliances and industrial and electronic tools and machinery.

The development of ubiquitous computing may offer new opportunities for the use of ICT for learning and for the development and use of e-portfolios.

Previously, occupational and vocational learning has been divided between the theory and knowledge base to be acquired in training schools and the practice that often takes place in the workplace. With the use of mobile devices and the spread of connectivity it is at least theoretically possible to bring this learning together and to access theory and knowledge in the context in which it is to be applied – in the work process.

Secondly – and possibly more important from a didactical point of view – is the embedding of computer-based communication within the tools of the workplace. This offers the opportunity to develop learning environments while simultaneously accessing and shaping the production and business process through such interfaces. In other words, the context in which learning takes place becomes the context in which the learning is to be applied, and the learning interface – or the learning materials – becomes the occupational tools with which the (work process) knowledge is carried out.

“An educational portfolio documents the accumulation of human capital.”

Helen Barrett, Alaska University, USA

Mobile devices may also have considerable utility within work-based learning, allowing access to educational technology, learning materials and e-portfolios within the workplace and even as part of the work process.

Whilst computing is not yet fully ubiquitous, there are increasing numbers of projects promoting the use of different interfaces and mobile devices in learning. The BBC has recently reported on a new initiative in Scotland for all pupils over the age of 10 to be given their own handheld computers in a project involving local councils in Edinburgh and the Lothians. The device will provide them with free, round-the-clock access to the Internet, the BBC say. Such devices mean that school students can literally carry their e-portfolio round with them and update it at any time in any place.

Social software

Social software is used here with the meaning of software that lets people rendezvous, connect or collaborate by use of a computer network. It supports networks of people, content and services that are more adaptable and responsive to changing needs and goals. Social software adapts to its environment instead of requiring the environment to adapt to the software. In this way, social software is seen as overcoming “the absurd distinction between e-learning and knowledge management software” (Bryant, 2003).

Social software underpins what is loosely referred to as Web 2.0. Whereas Web 1.0 was largely implemented as a push technology – to allow access to information on a dispersed basis, Web 2.0 is a two-way process, allowing the Internet to be used for creating and sharing information and knowledge, rather than merely accessing external artefacts.

Social software is increasingly being used in education and training through such applications as weblogs, wikis, tools and applications for creating and sharing multimedia, and tools for sharing all kinds of different personal knowledge bases including bookmarks and book collections.

In software terms, rather than monolithic vendor-driven and designed applications, Web 2.0 and social software are based on the idea of ‘small pieces, loosely connected’ utilising commonly recognised standards and web services for linking ideas, knowledge and artefacts.

Social software offers the opportunity for narrowing the divide between producers and consumers. Consumers themselves become producers, through creating and sharing. One implication is the potential for a new ecology of open content, books, learning materials and multimedia, through learners themselves becoming producers of learning materials.

Social software has been one of the driving forces behind the adoption of e-portfolios for learners in bringing together learning from different contexts and sources of learning and providing an ongoing record of lifelong learning, capable of expression in different forms.

Multimedia

Recent years have seen considerable advances in the capability and usability of multimedia applications. Computers have become more powerful and at the same time multimedia devices of all sorts have become cheaper and easier to use. These include handheld devices such as the Sony PS2, MP3 players such as the iPod, video cameras and, of course, the mobile phone. Advanced mobile phones now have powerful multimedia functionality including audio and video recording.

While five years ago the use of multimedia in an e-portfolio would have required expensive equipment and much knowledge about computers, many schools are now able to support such applications. This not only allows the development of 'richer' records of learning but also allows the recording of learning where and when it takes place. It also – and importantly – provides access to learners who may not be confident about recording and reflecting on their learning in a purely written format.

3.4 Critical issues in developing and implementing e-portfolios

This section looks more closely at various problematic issues: the problems of the focus on assessment in many portfolio applications and implementations and the issue of ownership. These two issues may be interlocked. As always happens with any innovation, e-portfolio development has taken place in the context of existing paradigms of education and training. This means development has been dominated by universities and, worse, dominated by the assessment goals of higher education institutions. Put quite simply, portfolios have been seen as yet another form of recording and assessing student achievement and content and curriculum and the provision of e-portfolio infrastructure.

Assessing student achievement

The development and implementation of e-portfolios reflects an engagement by the education and training systems and institutions with changing demands for education through society and with changing forms of learning reflected through the use of social software. At the same time, the effective use of e-portfolios implies and requires ongoing change in pedagogic and institutional practice and organisation. Nowhere is this so well seen as in the area of assessment.

With the implementation of e-portfolios within educational institutions, the range of achievement and learning reflected in the portfolio may be constrained by curricula and course objectives. One participant in a debate at Alt C 2005 said that an e-portfolio is neutral with regard to what a disadvantaged learner can actually do, and another that it can be made neutral with regard to how the learners' achievements are recorded (Davies, 2005). However, if the only valid portfolio entries are those that support the attainment of externally imposed objectives, the e-portfolio is not pedagogically neutral, neither do learners own their learning. E-portfolios can be an important tool for recognising, record-

ing and validating non-formal learning especially if the portfolio application provides means for peer group interaction, exchange and sharing. However, the recognition of non-formal learning requires moving beyond formal learning objectives. Many existing e-portfolio applications place considerable restraints on what is seen as valid learning.

Many existing e-portfolio applications tend to conflate the different processes involved in developing a portfolio or focus on only one or two of those processes – usual-

ly recording, presenting and assessing. Helen Barrett has said: “Those tools that purport to be more ‘assessment management systems’ tend to provide an institution-focused structure that makes it much easier to ‘score’ but more difficult for the learner to tell their own story of their learning.” (2005)

Smith and Tillema (2003) see a lack of match between assessment criteria and the goals of the programme of study, or what competencies students are expected to develop. They also see a tension between the measurement of standards and capturing development and reflection. The danger is that learning and reflection will get lost in the drive to measure competency.

Dave Tosh and Ben Werdmuller (2005) have said: “Already within some sectors it seems the term e-portfolio has become synonymous with another learning hurdle for students and staff to overcome. Many institutions view the e-portfolio as a replacement for traditional high stake assessment, the object of the exercise being coverage of all standards and criteria. Looking at a Penn State University study we can see forty-four per cent of students say they will not use the e-portfolio once they have finished the course to which the e-portfolio related and the rest say they ‘were likely to do so’. This is a problem: if the e-portfolio is a course requirement and the motivation for use is because it is mandatory, how do you maintain learner motivation once the course has expired?”

That concern is echoed by Helen Barrett and Joanne Carney (2005). “When portfolios are used for accountability purposes, to document pre-service teachers’ achievement of standards-based competencies, teacher candidates viewed their portfolios as a hoop they needed to jump through to graduate, and not the lifelong reflective tool that had been envisioned.”

They go on to ask: “In the name of assessment (i.e. accountability) are we losing a powerful tool to support deep learning? Are we losing the ‘stories’ in e-portfolios in favor of a skills checklist?”

Rick Stiggins (2004) distinguishes between the assessment of learning and assessment for learning. The assessment of learning seeks to discover how much students have learned as of a particular point in time. Assessment for learning asks how we can use assessment to help students learn more.

The Assessment Reform Group (2002) defines assessment for learning as “the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there.”



Assessment **of** learning is:

- | “Purpose prescribed
- | Artifacts mandated – scoring for external use
- | Organized by teacher
- | Summative (past to present)
- | Institution-centered
- | Requires extrinsic motivation”

In contrast, assessment **for** learning is:

- | “Purpose negotiated
- | Artifacts chosen – feedback to learner
- | Organized by learner
- | Formative (present to future)
- | Student-centered
- | Intrinsically motivating”

Assessment and portfolios are not just a question of the form of the assessment but also the assessment process. It has already been noted that assessment is often text based and this may be a barrier to the development of e-portfolios. Furthermore, assessment is usually based on individual achievement. This is a substantial barrier to collaboration, reflection and feedback and to project-based group work.

Yet, there is no intrinsic barrier to the development of wider and more imaginative processes of assessment including self-assessment and peer group assessment. Most German university degree assessment already includes a verbal presentation; and some courses include the submission of video assignments. In the UK a number of schools have adopted the ideas of Assessment for Learning (AFL) and AFL is being actively promoted by the Assessment Reform Group.

To some extent, the development of wider forms of assessment in e-portfolios has been inhibited by fears over plagiarism. Whilst not wishing to downplay the problem, this does appear to have the character of a ‘moral panic’. When the author of this chapter was undertaking his initial degree in Wales in the 1970s, it was perfectly possible to buy an essay or to commission others to produce one. The Internet has merely changed and globalised the means of distribution. Indeed, the use of the Internet, through such services as the JISC plagiarisation service, has probably led to more awareness of the issue.

The dangers of plagiarism are greatly reduced where students are set authentic work assignments evaluated through authentic assessment. Fundamental to authentic assessment in educational theory is the principle that learners should demonstrate, rather than tell about, what they know and can do (Cole, Ryan & Kick, 1995). Documenting progress towards higher-order goals such as application of skills and synthesis of experience requires evidence beyond what can be provided by standardised or norm-based tests. In authentic assessment, information or data is collected from various sources, by multiple methods, and over multiple points in time (Shaklee, Barbour, Ambrose & Hansford, 1997). Portfolio content can include drawings, photos, video or audio tapes, writing or other work samples, computer disks, and copies of standardised or programme-specific tests. Data sources can include parents, staff and other community members who know the participants or programme, as well as the self-reflections of participants themselves.

Sewell, Marczak and Horn (undated) see the following advantages of an e-portfolio for authentic assessment. An e-portfolio:

- | “Allows the evaluators to see the student, group, or community as individual, each unique with its own characteristics, needs, and strengths.

- | Serves as a cross-section lens, providing a basis for future analysis and planning. By viewing the total pattern of the community or of individual participants, one can identify areas of strengths and weaknesses, and barriers to success.
- | Serves as a concrete vehicle for communication, providing ongoing communication or exchanges of information among those involved.
- | Promotes a shift in ownership; communities and participants can take an active role in examining where they have been and where they want to go.
- | Portfolio assessment offers the possibility of addressing shortcomings of traditional assessment. It offers the possibility of assessing the more complex and important aspects of an area or topic.
- | Covers a broad scope of knowledge and information, from many different people who know the program or person in different contexts (e.g. participants, parents, teachers or staff, peers, or community leaders)."

E-portfolios can be introduced outside the traditional assessment system, and many learners, especially those undertaking Continuing Professional Development, will have no requirements for assessment, at least in the traditional sense. However, if e-portfolios are to be introduced within the educational curriculum, it makes little sense to decouple the portfolio from the assessment process. But at the same time, effective pedagogic processes for the development and support of e-portfolios require wider forms and processes of assessment than are common at present.

John Pallister from Wolsingham School has written:

"Thinking about how the e-portfolio process fits in with what students actually do. Students are given problems to solve or things to investigate. Good practice would encourage students to agree/define their tasks/outcomes and then to plan how they would carry out their investigation or solve the problem. They would go on to complete their investigation, do it. Having done it they would then be encouraged to review their findings/solution.

"The e-portfolio process is consistent with this PLAN, DO, REVIEW process. The e-portfolio process requires students to collect evidence of their learning and achievements; select evidence to add to their e-portfolio IF it would add anything to the existing evidence base; once the decision to add a particular item of evidence, the student then needs to make decisions as to where it should be linked (connected) into their existing e-portfolio.

"Once the evidence has been connected/linked into their e-portfolio the student needs to reflect/think about (review) what they have done, made, learnt or achieved. Having reviewed what they have done, made, learnt or achieved, they then need to Plan how to move forward.

"The only new bit about the e-portfolio process is the 'requirement' for students to record their reflections. Relatively new ground for students, but potentially very valuable in terms of developing learning. Providing a learning environment where students feel safe/comfortable to record and share their reflections prior to planning the next stage would appear to be the biggest challenge. With the exception of the need to record reflections, the e-portfolio process is not really requiring anything new. The process is consistent with good practice in terms of Assessment for Learning, students must know what it is they need to do/achieve before they start anything, and they must be clear about what it is that they will need to have done/produced that will prove/show that they have learnt/completed the task."

Pallister, J. (2007), MOSEP visit to Wolsingham,
<http://mosep.elggspaces.com/jpallister/weblog/archive/2007/02/>, accessed 2 August 2007

Ownership and control

The second major issue is that of ownership and control. Håkon Tolsby (undated) says: "portfolios can be used for controlling what the student should learn and how. They can be designed as an instrumental approach where the activities in the portfolio are shaped as tasks with predefined answers, instead of problems to be solved. Seen from such a

perspective the portfolio is degenerated to a structure for reproduction of knowledge, and is not a tool for experiential learning.”

He warns that “portfolios can be used for watching and controlling the progress and quality of work presented by the owner. It can be used for ‘punishing’ students that do not fill the goals of the education and for discriminating and even discharging teachers that do not behave as expected.”

He goes on to say that, “from a learning perspective these aspects signify a step back towards a learning style, which is far from the ideals of lifelong learning, student-centered learning and self-guided development. It violates fundamental democratic ideas which should dominate school, work life and everyday practice, and in which our students ought to be educated.”

Tolsby points to the work of Dewey (1915) and Kolb (1983) in seeing learning as a process that builds upon experience and reflection. It is important to engage the student in meaningful activities; here the problem belongs to the student and is considered to be a personal goal (Dewey, 1915). This is a prerequisite in order for learning to be accommodated within the problem area (Illeris, 1981).

Furthermore, it is well documented that students are more engaged when working with computer tools (for example, using digital portfolios) if the work is under students’ control rather than teachers’ (Salomon, 1995).

There is a growing appreciation that to be effective, learners need ownership of the portfolio. This has included giving access controls to the learner, often at a fine-grained level (see, for example, the ELGG EduSpaces application). A number of universities, including Brighton, Warwick and Leeds Metropolitan University in the UK and Linz University in Austria, have offered access to social software to all students and have encouraged students to use this space for recording all of their achievements, regardless of the context of learning.

However, in reality, ownership is a complex issue. The following diagram (Figure 1) attempts to locate the different pedagogic processes involved in e-portfolio development within the wider education and learning environment (Attwell, 2005c).

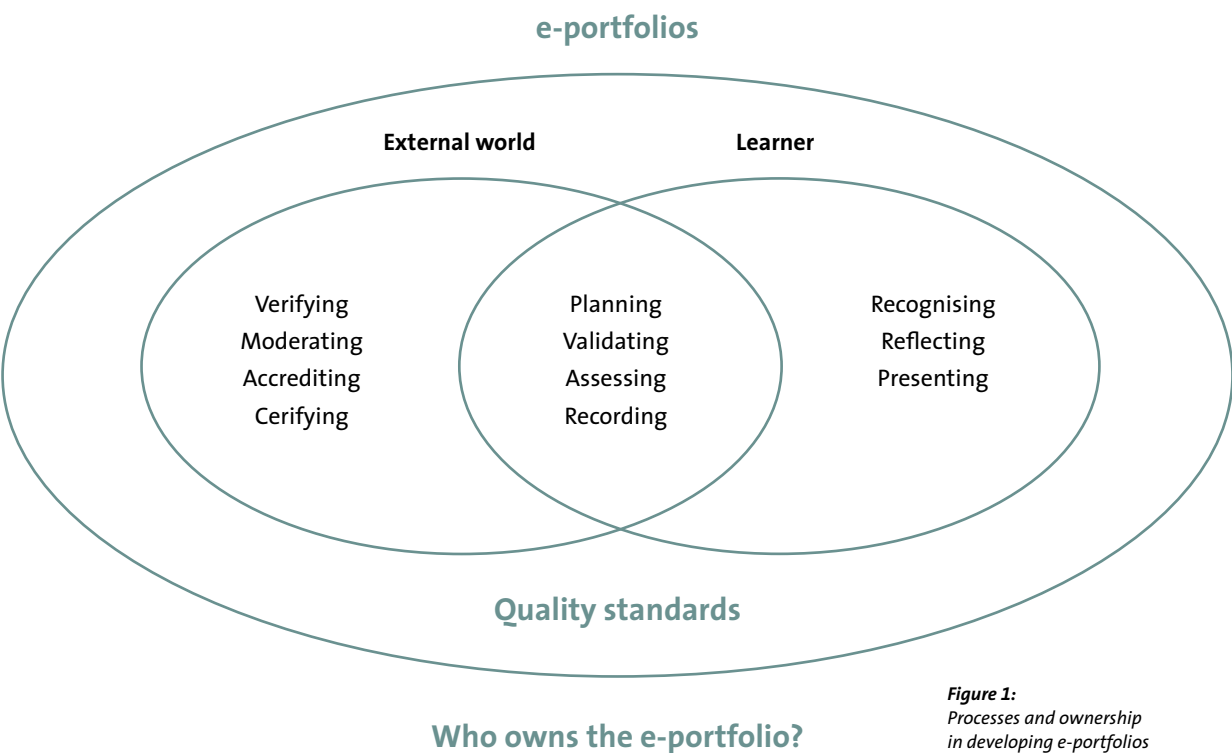


Figure 1:
Processes and ownership
in developing e-portfolios

Within this construct, recognising, reflecting and presenting learning are under the control and ownership of the learner. Responsibility and ownership of verification, moderation, accreditation and certification lie in the external education and training system.

However, the processes of planning, validating, assessing and recording learning are a shared and negotiated process between the learner, teachers and educational institutions. Even so, it could be argued that the learner should ultimately control with whom (and if) they wish to share.

Open to the world?

One issue, not confined solely to e-portfolios, and related to ownership, is who should be able to view the portfolio. This is an issue especially with younger students, for whom some education systems ascribe to schools 'a duty of care'.

If an e-portfolio is open to the world, through the Internet, there may be a much greater opportunity of gaining feedback and of forming the social networks that are increasingly seen as critical to learning. On the other hand, there are obvious concerns over the security of data and for the safety of students. Furthermore, not all learners will always want to share their learning.

An additional question is whether teachers and trainers should have access to the e-portfolio. If the portfolio is owned by the learner, then it follows that they should be able to decide whether or not they wish a teacher to see their work.

Konrad Glogowski explores the dilemma in his blog, the Zone of Proximal Development (2007):

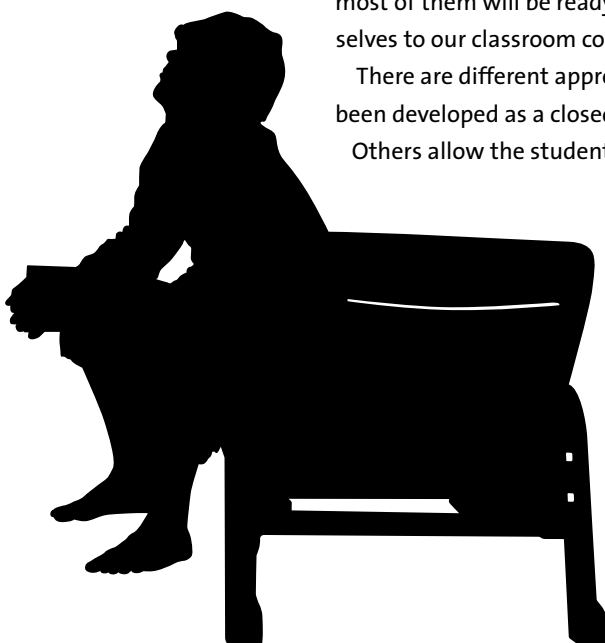
"I'm beginning to think that walled gardens are not a bad strategy in elementary schools and that, at least initially, young learners do need a safe place in which to share their ideas and interact with texts. However, as students begin to exhibit more and more interest in creating their own connections and in building networks, we need to have the flexibility to remove the walls and encourage students to set up their own places outside of officially sanctioned school blogs or wikis.

"So, while the official school policy on privacy is not a problem now, it is likely to be an obstacle in the future. I cannot continue to confine the students to our walled garden because, regardless of how supportive and effective it is now, it will eventually become stifling. Right now, the sense of privacy that the community affords seems to be something that the students really want. However, I'm pretty sure that within a year or so, most of them will be ready to share their work online and will not want to limit themselves to our classroom community."

There are different approaches to this issue in practice. Some e-portfolio systems have been developed as a closed network, only providing access to those registered to do so.

Others allow the students to decide with whom they wish to share their work. Some systems, such as Elgg, have fine-grained access controls, allowing learners to decide for each post whether they wish to keep the entry private, share with a group, or publish openly through the Internet. Elgg also has administration options allowing systems control over whether this level of control is available to the learner or whether access to the outside world should be limited.

Whatever option is chosen, it is important that students learn how to use the Internet confidently and safely. Even if schools provide a safe walled garden, learners will be using the Internet at home in an unrestricted environment. E-portfolios may be a useful medium for learning how to take decisions over access, data security and sharing.



Content and curriculum

Content and curriculum issues tend to be dealt with separately when discussing e-portfolios. However, they may be better viewed as being interlinked.

First, there is the issue – already discussed in this report – of whether e-portfolio content should be restricted to that related to formal course objectives and outcomes or whether learners should be encouraged to include wider content drawn from both formal and informal learning – or indeed the fuzzy interface between the two – and from wider contexts for learning including personal and social activities and from work. Of course, if e-portfolio provision is extended to those not enrolled in formal education programmes or is used for Continuing Professional Development, it is likely that work and personal learning will comprise the bulk of an e-portfolio.

The issue of selecting what to show in an e-portfolio can be largely overcome if the system provides tools to select material for specific presentation. Not only does this facilitate different presentations for different purposes – just as when submitting a CV for a job application or for entry to a course we re-purpose or re-present the materials to suit the particular post or course we are applying for – but the process of selection itself is an act of reflection on achievements and learning.

For those developing an e-portfolio within the context of an institution there would seem to be some major issues concerning whether the portfolio is based on the entire curriculum, is based on a subject or project – or indeed is additional to the curriculum. In a school recently visited in England the portfolios had been introduced essentially for careers planning with the support of the ICT department. This had two consequences. First, they were not linked to the ‘normal’ subject lessons. Neither were they focused on reflection on informal learning from outside the school – although hobbies were included in so far as they were relevant for the careers planning. Secondly, the e-portfolio was largely a presentation portfolio – there was little functionality to make a selected presentation and students tended to see them as the finished goods. Given the lack of links to subject-based learning, some of the students – and probably teachers – failed to see any great value, especially as the University entrance authorities do not at present accept e-portfolios and there is as yet limited awareness among employers of the potential of e-portfolios for employee recruitment.

“The process can engage and motivate the digital natives that we are trying to teach. It harnesses the tools and technology that they have grown up with and want to use, to support their learning.”

John Pallister

However, there is also some evidence that more focused pedagogic development is possible through an e-portfolio related to particular curriculum areas – such as the innovative use of blogs within English language and creative writing courses. Equally, e-portfolios have been used as a tool for motivation with socially disadvantaged learners undertaking vocational project work (Attwell & Brandsma, 2006).

Zeichner and Wray (2001) have produced a useful list of the issues and the decisions that need to be made about why to construct a portfolio, how to go about it, what to include, and what happens after it is completed. These include:

- | What is the purpose of the portfolio: for learning, for assessment, for professional development, or for employment reasons?
- | Who decides what should be included in a portfolio: the student compiling the portfolio, or the people for whom it is being created? How prescriptive should guidelines for creating a portfolio be?
- | How should the pieces of evidence in the portfolio be organised: around themes chosen by the student, around programme goals, or around achievement standards?
- | What kinds of artefacts are acceptable as pieces of evidence? What should, and should not, be included in the portfolio?

- | What kind of input should tutors, lecturers and peers have throughout the process of constructing the portfolio? Should there be a lot of involvement, or just a little?
- | How frequently should students be expecting feedback on their progress?
- | How should the portfolio be assessed: through very specific evaluation criteria and grading rubrics, or a more general pass-fail system?
- | What should happen to the portfolio after it is finished: should there be some kind of public acknowledgement or presentation of students' work? (Zeichner & Wray, 2001)

In a Careers Education Support Programme Briefing, Ward and Richardson (2006) look at the main considerations in selecting an e-portfolio system:

- | Purpose: Who is it for? What is it for? What do we want it to do for us and our learners?
- | Support and guidance: Does the system include structured and supported guidance, e.g. to support overall learner development?
- | Information managed and how it is managed: Whose information? What sort of information? Who will use the information? How will it be used? Who has an interest? Who has an obligation in respect of the information?
- | Functionality: What functions will the e-portfolio support, e.g. usability by all regardless of disability or screen display preference, interoperability with other e-systems so that information can be transferred and read, without re-keying, (e.g. institutional SIMS/VLE, or e-portfolio systems in other institutions or other sectors, including pre-HE or professional bodies)?
- | Form and feel: How does the system look and feel in use, and what do its outputs look like? (Ward & Richardson, 2006)

There are no 'right' and 'wrong' answers to these questions. More important is that all those involved in designing and implementing an e-portfolio should consider these issues at the outset and plan and design formative evaluation to examine their impact.

A head teacher who has pioneered the introduction of e-portfolios says: "After 10 years we realize that there is no best notion of what goes into a portfolio; rather, portfolios serve as a metaphor for our continued belief in the idea that children can play a major role in the assessment of their own learning.

"This perspective, rather than a predetermined list of curriculum samples, should be the guideline for placing particular items into a portfolio (...) We now believe that the selection of the contents of the portfolio is an evolving process shared by child and teacher. When children are just beginning to understand what a portfolio is, they require clear scaffolding. We advise students about including certain pieces of work that we feel will be valued – if not now, at a later time. We have discovered that the conversations that take place as portfolios are being compiled give the children the security to suggest additional entries that are more personal or unique to their own school experience. One message about child ownership is very clear: we do not assign a letter grade or evaluation to the portfolio. We honor the child's world that is represented by the portfolio. We want to learn more about that world so that we can more sensitively help each child grow." (Herbert, E. (1998), *Lessons Learned About Student Portfolios*, <http://www.pdkintl.org/kappan/kheb9804.htm>, accessed 2 August 2007)

Digital natives

Whatever the choices in designing and implementing an e-learning (e-portfolio?) system, it is important to remember that many young people are 'digital natives'. Students carry with them and use naturally iPods, phones with video cameras, devices allowing exchange of data by Bluetooth etc. There seems very little sense in forcing students to use purely text-based systems for developing their e-portfolio.

Provision of an e-portfolio infrastructure

The question of who provides an e-portfolio is not a trivial one. To a considerable extent, the issue of the provider may affect both the pedagogic design and the use of the e-portfolio. Perhaps most common is that e-portfolios are provided by institutions, schools, universities or continuing education providers.

The advantage of this arrangement is that the design of the e-portfolio can be linked to the pedagogic approaches of the institution. It also allows institutions to set access controls to allay concerns about online privacy and safety. However, this may reduce learner control, or at least learner perception of control of their learning space.

There is also a major divide between e-portfolios based on a particular course or project and those based on overall learning provision. The MOSEP project found that e-portfolios based on project work could be extremely effective in motivating learners. It is also possible that e-portfolios are especially suited to particular subjects, for instance creative writing. On the other hand, where the e-portfolio was being organised around only part of the overall curriculum, there might be little understanding or valuing of the portfolio work by the wider body of teachers and possible resulting frustration from learners due to lack of feedback.

In either case, there is a major issue regarding transferability. What happens to the e-portfolio when a student leaves the institution? To a certain extent, this issue may be resolved by the agreement on interoperability standards. Such standards would allow e-portfolio data to be transferred from one system to another. However, despite some progress in this field, there is only limited agreement on standards and little widespread compliance. Many systems do allow the data to be extracted but that still begs the question of how the learner might use that data in the future, still less how they can continue to develop their portfolio in the context of lifelong learning. One UK university is now offering continued support for the e-portfolio as a (paid for) alumni service. Without such agreement on standards and the chance to transfer the portfolio between different applications, there is the danger that learners will see little point in devoting time and effort to developing their portfolio, especially if the portfolio does not contribute to assessment and accreditation.

A second option would be for the e-portfolio to be provided on a city-wide, education authority or regional basis. Careers Wales claims to offer Europe's first nationwide e-portfolio providing tools for lifelong learning and personal development to provide secure storage and online access for personal information about skills, achievements and qualifications for Welsh citizens of all ages (Insight Observatory).

The web-based portfolio offers information, tutorials and interactive tools to support self-assessment, reflection and action planning.

The initiative was launched by the National Assembly of Wales who envisaged "a life-long learning passport delivered online to liberate latent talent from within the community and transform Wales into a 'Learning Country'."

In England a number of local careers service providers are implementing e-portfolios on a regional basis for local schools. Such initiatives require considerable planning and investment.



Another option is for e-portfolios to be provided on a sectoral basis. In Scotland an e-portfolio service is being provided for trainee medical staff.

The advantages of such wider provision are that the e-portfolio has the potential to become a tool for lifelong learning. Furthermore, the e-portfolio is available to those not enrolled on an institutional learning programme. However, to be effective, such provision needs close partnership between the different institutions and organisations involved in learning, including social partners – the trades unions and employers. Although such partnerships may be difficult to organise, they are valuable in developing recognition of the e-portfolio as a record of all learning, not just that gained through accredited course provision.

Of course, the wider provision of e-portfolios requires considerable investment and planning. The Wales e-portfolio was initially designed for an uptake of 20,000 participants.

Regardless of which model is adopted, Helen Barrett proposes the following steps in planning and implementing an e-portfolio:

- | Create an action plan for implementing electronic portfolios that involves the following elements:
- | Vision – provide a clear vision for the role of electronic portfolios in the overall programme = reduced confusion.
- | Skills – provide adequate professional development for all stakeholders = reduced anxiety.
- | Incentives – provide appropriate incentives to motivate all stakeholders = faster adoption.
- | Resources – provide adequate resources for full implementation = reduced frustration.
- | Work with your innovators and early adopters during the early exploratory stages, when processes are still fluid. Understand that a lack of structure or defined process may be frustrating for some novices, at either portfolio or technology implementation.
- | Find the natural leaders in your college/school/district, and engage them in the planning and initial implementation. They will be great allies in the transition process.
- | Take the team through a change simulation (The Change Game) to test their assumptions about how to implement a comprehensive change.
- | Assess the competencies of all of your staff who will be doing the full implementation, to determine the targeted staff development needed._
- | Organize training activities based on the needs and readiness of the individuals.

(Barrett, H., 2004, Professional Development for Implementing Electronic Portfolios, <http://electronicportfolios.com/teachers/profdev.html>, accessed 2 August 2007)

The issue of who provides the e-portfolio and the transferability and interoperability of e-portfolios will not be resolved in the short term. There remains a need to test and evaluate different models. Progress towards interoperability is likely to take place in an incremental way. Eifel are developing an interoperable format for generating a European CV (Europass) that can be incorporated in different e-portfolio applications.

NEW SKILLS AND COMPETENCIES FOR E-PORTFOLIO TEACHING AND COUNSELLING

4



NEW SKILLS AND COMPETENCIES

4 NEW SKILLS AND COMPETENCIES FOR E-PORTFOLIO TEACHING AND COUNSELLING

As has been outlined in Chapter 2, teaching young learners needs special skills and this applies to e-portfolios also. What skills and competencies are required by learners to develop an e-portfolio and to guide such development? To answer this question it is important to look at the changing ways in which children and young adults are using computers in their everyday lives for social networking, for accessing information and for (informal) learning. This will be outlined in Sections 4.1 and 4.2 In Section 4.3, the new role of teachers and vocational counsellors in guiding young learners to develop an e-portfolio is discussed.

4.1 The changing way we learn

John Seely Brown, in a speech in 1999, looked at the new dimensions of “learning, working and playing in the digital age”. One dimension he drew attention to was literacy and how it is evolving. The new literacy, the one beyond text and knowledge, he said, is one of information navigation.

Linked to this was learning and how that too is shifting. He pointed to the growth of discovery or experiential learning. As children work in the new digital media, he said, rather than abstract logic they deploy Bricolage. Bricolage relates to the concrete and has



to do with the ability to find something – an object or a tool, a piece of code, a document – and to use it in a new way and in a new context. But to be a successful bricoleur of the virtual rather than the physical you have to be able to decide whether or not to trust or believe these things. Therefore the need to make judgements is greater than ever before.

Navigation is coupled to discovery and discovery to bricolage, but you dare not build on whatever you discover unless you can make a judgement concerning its quality or trustworthiness.

The final dimension Seely Brown addressed was that of action. He suggests that new forms of learning are based on trying things and action, rather than on more abstract knowledge. “Learning becomes as much social as cognitive, as much concrete as abstract, and becomes intertwined with judgement and exploration.”

Seely Brown’s early study has been reinforced by research by Lenhart, Madden and Hitlin for Pew Research (2005). The study found that 56 per cent of young people in America were using computers for creative activities, writing and posting on the Internet, mixing and constructing multimedia and developing their own content. 12 to 17-year-olds look to web tools to share what they think and do online. One in five who use the Net said they used other people’s images, audio or text to help make their own creations. Commenting on the study, Lee Raine (BBC, 2005), said: “These teens were born into a digital world where they expect to be able to create, consume, remix, and share material with each other and lots of strangers.”

In recent years many young people have established accounts on social networking sites including Bebo, Facebook and MySpace. Services such as Facebook are targeted particularly at students. Such social networking services provide tools for content creation and sharing and for developing networks of friends.

In a recent blog post, Ewen McIntosh (2007) says the average Bebo user spends 41 minutes a day online on Bebo, “sharing photos, video, news, what they’re feeling, finding out what their pals are feeling.”

He goes on to say: “That’s nearly a quarter of the average 200 minutes time that kids spend online each day.”

Bebo has been working with Learning and Teaching Scotland and other organisations to develop the Beboism ‘Be One’ attitude website (Bebo, 2007). This comprises four working areas:

- | “Be Inspired – for all of you creative people out there
- | Be Cause – for those interested in social issues
- | Be Enriched – for members seeking a more fulfilled existence
- | Be Well – for anyone interested in health and fitness.”

Of course, there is an issue as to how much learning takes place through participation and engagement in social networking sites. However, the failure of the education providers to engage with this activity risks schools and other educational institutions becoming irrelevant to the way in which young people interact and exchange ideas. As McIntosh (2007) says, “What does education do to try to harness the skills being learned in there? Hmmm ‘Could do better’. Well, we could just do it. The skills are there, the tech’s there, all that’s missing is the desire of those not in the know to learn.”

It is interesting to note that new teachers have themselves grown up with social networking tools. However, Christopher Sessums says:

“Most of our conventional f2f students are young and new to teaching. A majority have MySpace and Facebook accounts so they are familiar with social media/social networking technologies, yet often keep these technologies separate from their professional practice. Many of these student teachers see no connection between their personal use of the Read/Write Web (pdf) and their professional use.”

Lest it be thought that the use of technology for social networking and informal learning is limited to the so-called 'Net generation', a study of the use of ICT for learning in small and medium-sized enterprises (Attwell, 2007a) found that, while there was little evidence of formal e-learning, computers were being widely used for informal learning through, among other things, participation in networks and distributed communities of practice. Furthermore, there was some evidence that older workers were more likely to participate in such activities (probably because of greater autonomy in how they undertook their work). It was also noteworthy that, in addition to being motivated by the need to solve work-based problems, much of the participation was driven by personal interest.

E-portfolios offer an opportunity to allow learners to use computers as they do in their social life, to create, to share and to network. They potentially represent a move to overcome the somewhat alarming gap between educational software and the applications used every day both by young people and in the workplace. Why only 'potentially'? The ability to create, share and network depends on both the design of e-portfolio applications and the approaches to the pedagogic use of the e-portfolio as well as the integration of the e-portfolio in the wider context of curriculum provision.

4.2 Competencies and skills

If young people are using computers in different ways for social networking and for creating and sharing, what are the skills and competencies required for such activities? As early as 2002 the International ICT Literacy Panel had developed wider definitions of digital literacy to address the spreading use of computers for learning.

The Panel, comprised of experts from education, government, non-governmental organisations, labour and the private sector, including representatives from five countries (Australia, Brazil, Canada, France and the United States), defined ICT literacy as "using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate and create information in order to function in a knowledge society." (International ICT Literacy Panel, 2002)

The "continuum of skills and knowledge" required, they said, included:

- | Access – knowing about and knowing how to collect and/or retrieve data;
- | Manage – applying an existing organisational or classification scheme;
- | Integrate – interpreting and representing information. It involves summarising, comparing and contrasting;
- | Evaluate – making judgements about the quality, relevance, usefulness or efficiency of information;
- | Create – generating information by adapting, applying, designing, inventing or authoring information.

This is a useful starting list but the following competencies could be added (Attwell, forthcoming):

- | Define – framing a problem or issue and developing a structure for approaching the issues;
- | Apply – the ability to move between abstraction and practice – and, conversely, between practice and abstraction;
- | Contextualise – the ability to apply knowledge from one context to another;
- | Scaffold – the ability not only to integrate learning in a personal knowledge base but to develop and build ongoing learning;
- | Search – the ability to use different search techniques to find knowledge and information;

- | Make sense – the ability to make sense out of disaggregated sources of information and knowledge (this goes beyond evaluating or integrating);
- | Share – the ability to judge when it is appropriate and useful to share learning.

The acquisition and application of such competencies cannot be undertaken as a stand-alone ‘lesson’ in developing and maintaining an e-portfolio, but requires a broader approach to teaching and learning, embedded in the wider curriculum. For both professional development and socially disadvantaged learning, it suggests the use of e-portfolios cannot be regarded as a separate measure in itself, but has to be introduced as part of an overall approach to the recognition and development of competencies. George Siemens (2005) has used the term ‘connection preparation.’ He asks: “How can I prepare my students? I think I have to ensure that they are comfortable with expressive writing. I think I also need to make sure that they are comfortable using tools that can help them navigate the networks around them and organize their personal knowledge. I also believe that they need to be able to interact with these networks and to contribute to them. Finally, they need the freedom to explore and connect, to co-construct, to learn through discovery. They need to know that the journey takes precedence over the final result.”

“E-Portfolios for flexible learning and teaching in competency focused higher education.”

M.W. Alderlink, Windesheim University, NL

Henry Jenkins (2006) has proposed the following 11 skills for participation in what he sees as a media culture. However, these skills seem to describe fairly well the competencies needed for developing a successful e-portfolio.

- | “Play – the capacity to experiment with one’s surroundings as a form of problem solving.
- | Performance – the ability to adopt alternative identities for the purpose of improvisation and discovery.
- | Simulation – the ability to interpret and construct dynamic models of real-world processes.
- | Appropriation – the ability to meaningfully sample and remix media content.
- | Multitasking – the ability to scan one’s environment and shift focus as needed to salient details.
- | Distributed Cognition – the ability to interact meaningfully with tools that expand mental capacities.
- | Collective Intelligence – the ability to pool knowledge and compare notes with others toward a common goal.
- | Judgment – the ability to evaluate the reliability and credibility of different information sources.
- | Transmedia Navigation – the ability to follow the flow of stories and information across multiple modalities.
- | Networking – the ability to search for, synthesize, and disseminate information.
- | Negotiation – the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.”

It will be apparent from even a cursory consideration of these competencies that such skills are not automatically acquired from everyday life. Such skills need developing and many younger learners will need assistance in developing the competencies. Thus the introductions of e-portfolios can only be seen as part of a wider change in teaching and learning strategies. Furthermore, the fostering of such competencies will have implications for the structure, form and content of the curriculum.

4.3 The role of teachers, trainers and vocational counsellors in e-portfolio work

Case studies undertaken by the MOSEP project suggest that teachers and trainers have a key role to play in supporting young people in the development of an e-portfolio.

While such a role may merely embody the principles and practice of good teaching, it may also reflect a wider change in role from didactic presentation to a more facilitative style of teaching.

Janet Jenkins (1999) sees the following changes for teachers resulting from the growing use of computers for learning:

- | Change in relationship with pupils;
- | Change in role to facilitators and managers who support learning;
- | Change in the content and scope of teaching;
- | Change in locus of control, from teacher to learner.

She comments:

“These are dramatic changes. It is no wonder that the teaching profession is concerned about the implications of integrating ICT in schools. The barriers are formidable. (...) The main difficulty is transforming teaching. What help do teachers need? The principle [sic] barriers faced by teachers in the adoption of new technologies have been summarised by Dillemans et al. as follows: ‘large psychological barriers to trying out and using ICT ... difficult to change the pedagogical beliefs underlying teaching ... difficult to change deep-rooted mental structures on the art of teaching ... teachers are afraid of losing authority and class control because they believe their competence in working with ICT is inferior to that of their students ... rapid pace of change in computer infrastructure and software ... teachers and schools cannot keep up ... problems and pitfalls at the institutional and governmental level ... the effort required from teachers to master new technologies is underestimated.’”

Jenkins (ibid) concludes that teachers need “a new approach to their job and a new vision of what it means to teach and what it means to learn.”

It is not just a question of confidence with technology. Katri Koistinen (2002) points to different pedagogical approaches in changing the role of the teacher. “Current pedagogical way of thinking like constructivism emphasizes the learning as an

“The e-portfolio is the DNA of personal and organisational learning environments”

Serge Ravet

active process. To learn, a student has to construct information in his/her own mind. The traditional role of teachers as information deliverers is not any more valid. The teachers can still serve as ‘building blocks’, but the students have to do the actual knowledge building process by themselves.” She goes on to say: “When using the new communication and information technologies in teaching, the good start might be to forget the traditional authority of teacher. I would like to describe teacher as a coach or a personal trainer. In many cases it can be even seen that teacher becomes a fellow student. In some cases the fellow student can even replace a traditional teacher.”

The following list describes what the new role of the teacher may be in supporting e-portfolio development:

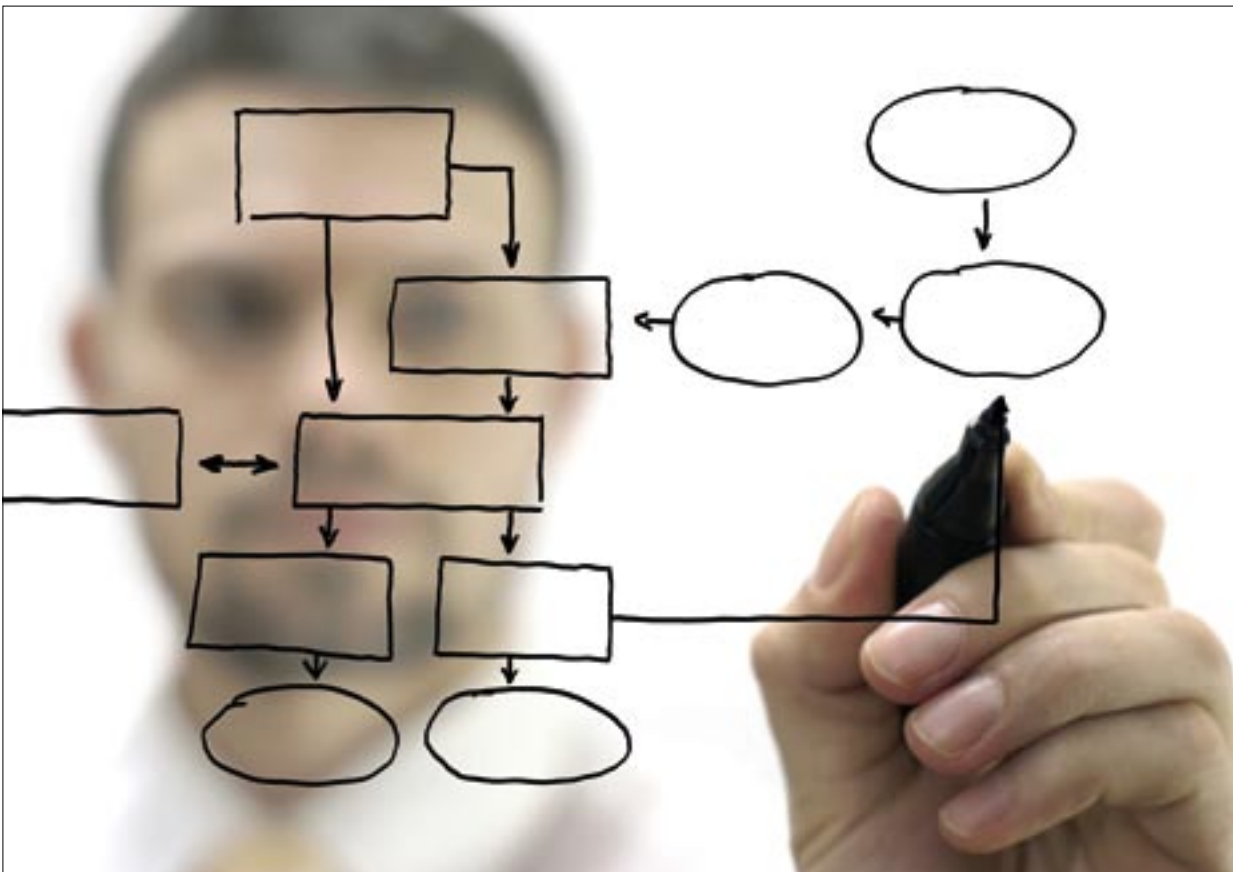
- | “providing technical support and assistance;
- | organising the contexts and communities of learning;
- | formulating organisational objectives;
- | facilitating the structuring of portfolio contents;
- | facilitating reflection;
- | guiding and monitoring the student’s advancement through the integral cycle of investigative learning;

- | helping in the evidencing of competences;
- | supporting planning;
- | interacting and conducting conversation with the students;
- | planning and assessing the overall process.” (Attwell, 1997)

What is perhaps critical is that teachers and trainers themselves develop their own e-portfolios. In part, this is in order to understand the e-portfolio process; it is also a question of credibility.

Dave Tosh et al. (2005) have written: “In terms of promotion the problem is the people trying to explain it have probably never used it so in a way they have no clue what they are talking about, basically. To put it frankly – after listening to them you would be like, Okay, so you as an outsider who never even used it is telling us we should do this because it is the best thing since sliced bread but you have never used it – you can’t find someone who did use it – you don’t have enough information to tell us how to use it – and now you’re telling us to use it and we’ll grade you on it – this kind of makes it hard for students to accept or appreciate it.”

Helen Barrett (2004) makes the same point in seeing the competencies of learners to develop an e-portfolio as similar to those of a teacher.



Student competencies, she says, are to be able to:

- | “Collect evidence of learning;
- | Select specific evidence that demonstrates a particular outcome, goal or standard;
- | Reflect metacognitively on learning represented in evidence, making a case that the artifacts constitute evidence of achievement;
- | Make connections in their learning;
- | Set goals for future learning”

Teachers need to be able to model all the student competencies. In addition, they should be able to:

- | “Articulate the difference between assessment OF learning and FOR learning;
- | Implement classroom-based assessment FOR learning strategies;
- | Provide specific and detailed feedback to learners about their learning;
- | Support student reflection through modeling and research-based practices;
- | Create an environment that facilitates students’ deep learning.”

To a considerable extent, the changing role of teachers, especially in the context of e-portfolios, is a move towards acting as a facilitator. John Heron and James Kiltie (2006) have identified different dimensions of facilitator style.



Jenny Hughes and Graham Attwell (2006) point out there are no right or wrong approaches – only those that are appropriate or inappropriate. This will depend on the: ‘natural’ style of the teacher. Although good teachers should be flexible and versatile enough to adapt their facilitator style to different contexts, there may be some styles that sit more comfortably with their personality and others that are alien. Experimenting with different styles is good practice but not at the expense of authenticity.

Subject material and course content

The subject material will sometimes determine or predispose towards particular styles of facilitation. For example, a first aid course is likely to be very prescriptive, a course on art history far less so.

Time slot

The time of day, what has happened immediately beforehand or is likely to happen afterwards, is important. For example, the teacher may want to increase the directiveness or tighten the structure when people are tired at the end of the day. Learners perform better in unstructured situations when they are alert – before lunch is probably the optimum time for learners structuring their own time and tasks.

Stage of development of the group

What might be appropriate at the beginning of a learning programme may be inappropriate at the end. For example, the first evening of a computer course for women returners will need a very cathartic intervention from the tutor because it is important that the students are constantly reassured, have fun and are made to feel good. Conversely, in the final year of a course on Counselling, the tutor may deliberately withdraw if tensions develop in the group because the way the group deals with them is part of the learning.

Sequencing of the teaching methods

You may want to change the style of intervention for ‘aesthetic’ reasons – simply to provide variety. Or changing the style can be part of the teaching methodology. For example, the teacher may start the day by structuring a debriefing on an activity that has been completed and offering interpretations as to what happened. This may be followed by the teacher asking the learning group to reflect on an exercise and offer their interpretations. Recommendations: The changing role of teachers and trainers using ICT for learning

There are many different pedagogic approaches to the use of ICT for learning and to supporting technology-enhanced learning. Social-Constructivism is one of the most cited, and misused, terms to describe innovative approaches to teaching and learning. Notwithstanding ambiguities in the use of the term, research into social constructivism may be useful in developing pedagogic approaches to the development of e-portfolios.

Jonassen, Peck and Wilson (1999) describe the principles educational designers or teachers use in the design of learning environments from a constructivist perspective. They argue that ICT-supported learning is only useful (effective and efficient) if learning is active, constructive, reflective, intentional, authentic (contextual and complex), conversational and interactive.

Active learning means that learners are actively manipulating their learning environment and observing the effects of what they have done. In this way, learners are responsible for the results of their learning.

Meaningful learning implies actions, but actions are not enough. Learners have to reflect on their actions and their observations. These reflections could or should lead to the integration of new experiences and ideas with existing knowledge or should at least lead to insight into what the learner has to learn (constructive learning). It is this combination of active and constructive learning that makes learning meaningful. Learning is not a result of practice alone; learners also have to elaborate their knowledge and skills and create or construct new insights.

The authenticity of the learning environment not only leads to a better understanding of cases or principles, but also results in a better transfer of learning outcomes to other cases and contexts.

To make a learning environment authentic, it should include complex and open tasks, as well as simple ones. As in the ‘real’ world or job-related practice, people work together and interact in order to learn and solve problems. Cooperation between learners (both collaboration and conversation) is seen as important as a goal of learning as well as a means of learning other content.

In the context of a formal education programme, learning has to be intentional (although unintentional learning is welcomed also). It is important that learners know what their learning goals are and how they will attain them.

Yet, the issue of reflection is not simple. Indeed, in projects and at conferences about e-portfolios, at some point the discussion always seems to turn to the issue of how to facilitate meaningful reflection.

The following blog entry by a teacher, John Pallister (2007a), is typical.

“We have begun work trying to encourage our students, 11- 18 year olds, to reflect on their learning and achievements. We are also encouraging them to record their thoughts and reflections as part of the review/reflection process.

The e-portfolio process – encourages learners to think about and record their past experiences and future plans. They develop a deeper insight into their learning and achievements, and in turn, they will hopefully develop a ‘positive’ attitude towards themselves and their abilities.

John Pallister

The review stage is informing the Action Planning stage, which again we are trying to get students to record. It seems to me to be a Logical process, having done something, to review what you have done then to revise your original plan or create a new plan. Early attempts have focussed on printed materials providing students with a number of prompts/questions which focus students on

the review process. We have experimented with text based and audio/video formats for recording reviews/reflections. Early stages, not managed to find much help in terms of approaches that help/encourage/support students to reflect and record their reflections – still looking?

“Although I am sure that, having done something, all students will informally think or form some personal evaluation of their performance, I suspect that the review/reflection is at a very superficial level: perhaps enjoyed it, not going to do that again, did not do that very well, too difficult etc. If students walk away only having reflected at this level they will not have made the most of the learning opportunity. The challenge is to somehow encourage students to spend more time on this reflection stage, exploring more what they have done/achieved. I suspect that this would help them to design more useful plans and, by thinking about their learning, become that elusive better learner.”

The problem may be that to move beyond the superficial requires intrinsic motivation. As such, it is not possible to ‘teach’ someone how to reflect. However, it is possible to provide learners with the skills required for reflection and to practise those skills and equally to provide a stimulus to encourage reflection. (Buchberger, G., blog, <http://eduspaces.net/gerlindeb/weblog/>, accessed July 2007)

Buchberger goes on to say:

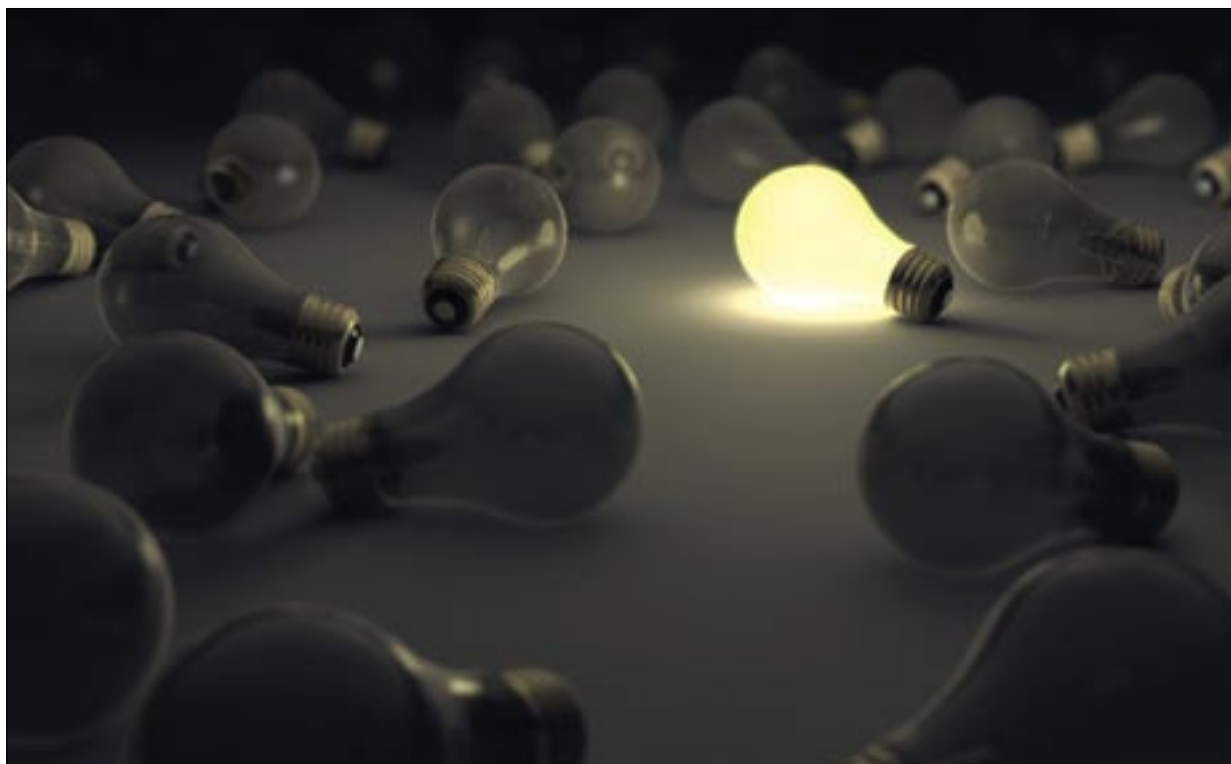
“I have my doubts about the usefulness of written reflection following certain prompts or guiding questions. We have been ‘forcing’ our teacher trainees to hand in written reflections on their performance in class each semester, which hasn’t proved very successful. It’s turned out to make much more sense if trainees, their mentors and the teaching practice supervisor (what a terrible word!) meet after class and in a very relaxed atmosphere analyse the lessons as ‘critical friends’ (with a strong focus on friend!). This is what we do regularly and trainees find it much more helpful than their written reflection papers. Perhaps – from time to time – a few notes summarizing such a talk might be a reminder and starting point for further student reflection. But again it should make sense for the student, not just to satisfy the teacher/trainer.”

Stephen Warbuton (2007) attended a presentation given by a group at the University of the Pacific on ‘Dialogical Reflection in the Digital Age’. “Like many educators,” he says, “Jim Phillips and Erick Marmolejo grappled with the nature of reflection – a term that often eludes definition. Their use of what they called ‘dialogic reflection’ was focussed around reflective activities based on a play between the academic vs. professional portfolios, the production of artefacts and samples accompanied by reflective statement

with a summative assessment process slotted in right at the end. They identified general problems with the reflective process when situated within an educational context in that opinion-laden task lists do not get at the heart of the strength of reflection, feedback loops can be slow and not enough time is allocated to reflection which results in very little reflective speak (there is only play around reflective dialogue). As Kathleen Yancey points out in her book 'Reflection in the writing classroom,' reflection is always a fiction where students write specifically to the needs of the tutor.

"The key philosophy behind their methodology to reinvigorate the process of reflection lies in pushing tutors to unlearn traditional approaches to writing instruction paralleled with the use of reflection as a means to individualise instruction and personalise learning."

Jenny Hughes has adopted a similar approach. In a video of a workshop she takes a group of adult learners through a process of providing constructive feedback to each other. Indeed, it is quite remarkable that adult teachers are not used to this process (Hughes, 2007). Her key point is that there are forms and structure and skills to providing feedback and in a similar way forms and structure to reflection. For learners these skills include:



- | Forming an opinion
- | Expressing an opinion
- | Articulating an opinion
- | Justifying an opinion
- | Defending an opinion
- | Supporting opinions of others
- | Challenging others' opinions
- | Questioning others
- | Seeking clarification
- | Representing others' opinions
- | Building on others' opinions
- | Sorting fact from opinion

Each of these processes can be structured and supported within the e-portfolio development process. However, they also require skills on the part of the teacher or facilitator.

These might include:

- | Facilitator skills
- | Active listening skills
- | Feedback skills
- | Intervention skills
- | Evaluation skills (Hughes, 2007)

Yet, the practising of such skills or competencies or the embedding of such practice within everyday learning activities has implications for both pedagogic approaches to teaching and learning and to curriculum design and organisation. Facilitating reflection is not simple within a largely 'input-based' curriculum where the main goal is to pass a series of prescribed examinations. The danger is that reflection is simply seen as irrelevant to the qualification-driven motivation of many students within their school-based learning (as opposed to outside school). Case studies undertaken through the MOSEP project suggest that development of reflection through e-portfolios may work best in project-based learning and when reflection is linked to activities. It is interesting that, in the Kit Car project case study (Attwell & Brandsma, 2006), the project was developed as an extra-curricular project and was not subject to the normal confines of curriculum and assessment rules.

It may also be that reflection is constrained by the dominant written form of evidencing within e-portfolios. The widespread use of multimedia is a feature of many of the social networking sites referred to earlier. Yet, despite some attempts to encourage more use of multimedia, most e-portfolios remain text based, probably once again due to the demands of assessment policies.

However, it must be recognised that there are substantial and real barriers to the introduction of more radical pedagogies, designed to support more independent learning, self-assessment and reflection. In order to cope with these barriers, the MOSEP project develops and tests a new e-portfolio training course, the structure of which is outlined in the next section.

4.4 The design of the MOSEP e-portfolio training course

In the previous section we looked at the competencies required of teachers for using e-portfolios with students. We concluded that it was not just a question of technical ability but also involved wider issues of a change in role from didactic presentation to more facilitative styles of teaching. The objective of MOSEP is to develop a set of materials for initial teacher-trainers, in-service teacher-trainers and vocational counsellors for the use of e-portfolios with their students. Accordingly, in developing the MOSEP course, we were concerned to integrate both knowledge about e-portfolios and how to create and use e-portfolios with pedagogic approaches to teaching and learning through e-portfolios and the teacher's role in supporting and facilitating learning. This section provides an overview of the structure, modules and content of the e-portfolio training course which has been designed for different training settings, either as a face-to-face or combined learning programme or as a self-learning online programme.

The MOSEP course consists of five modules, namely one 'Foundation module' and modules 1-4. The modules follow on from each other and it is recommended to work with them in the intended order.

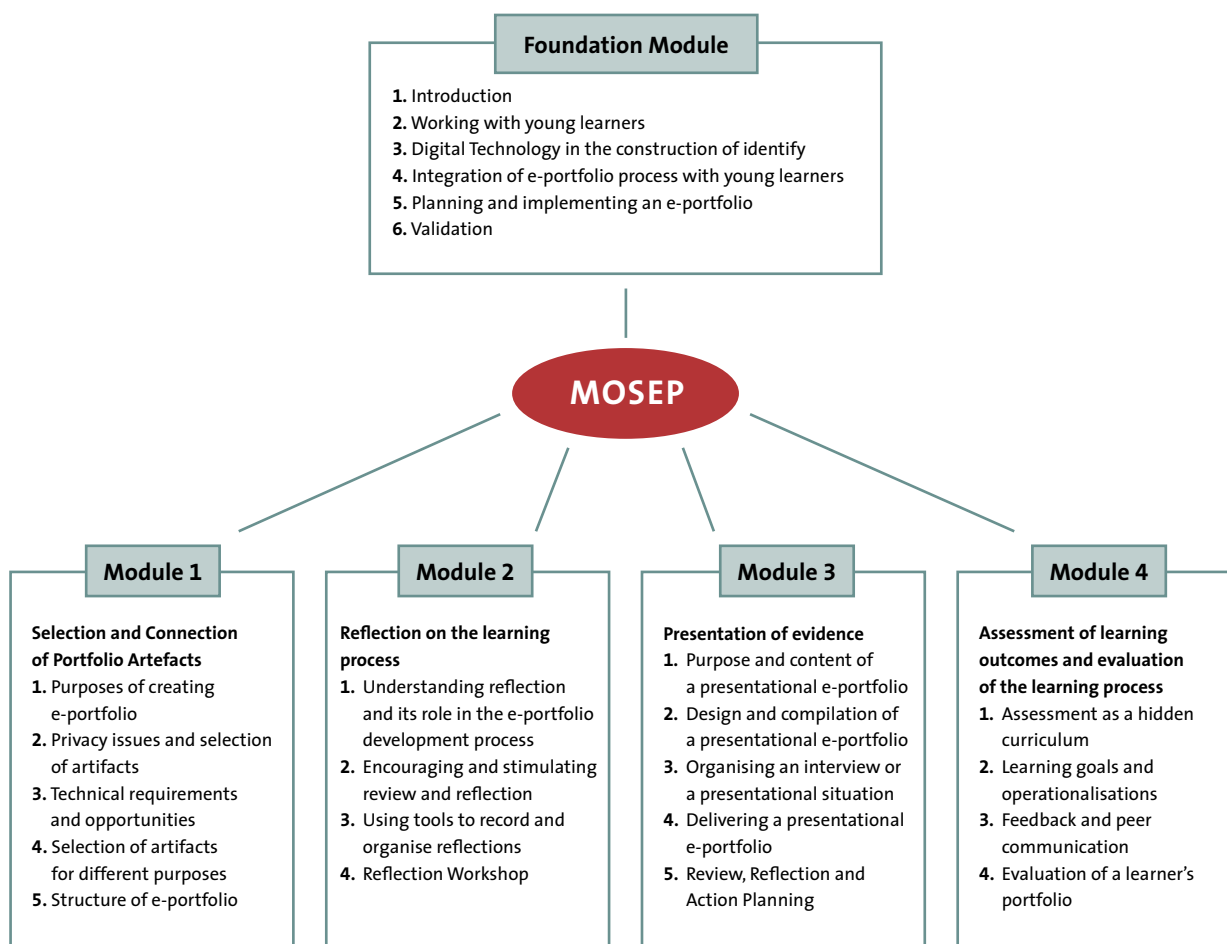


Figure 2:
The MOSEP structure

FOUNDATION MODULE

What is an e-portfolio and what are its advantages?

How to plan and implement an e-portfolio.

To start working with e-portfolios, you need to know exactly what e-portfolio work means and how you can plan, implement and use it. These questions will be answered in the 'Foundation module', which gives an introduction to the whole topic and should be read first.

1. Introduction | Why e-portfolio?
2. Working with young learners | How can I support young learners?
3. Digital technology in the construction of identity | Why might they need it?
4. Integration of e-portfolio process with young learners | e-portfolio and curriculum – which barriers, which strategies?
5. Planning and implementing an e-portfolio | How to plan and implement an e-portfolio
6. Validation

MODULE 1

Selection and connection of portfolio artefacts

How can I select artefacts and connect them to each other?

In this module you will develop the skills and understanding that will enable you to support learners as they select appropriate digital artefacts for their e-portfolio.

1. Purposes of creating e-portfolio | Why create e-portfolios?
2. Privacy issues and selection of artefacts | Who owns the e-portfolio?
3. Technical requirements and opportunities | What do I need, what do I get?
4. Selection of artefacts for different purposes | Why do I need what for which reason?
5. Structure of e-portfolio | What is the best way to structure it?

MODULE 2

Reflection on the learning process

How can I reflect on my own learning process during e-portfolio work?

As you have learned in the Foundation module (or already knew), the learner's reflection on his own learning process is one of the main issues of e-portfolio work. In this module you will work with your course tutor to develop the skills and understanding that will enable you to support learners in order to reflect on their learning process.

1. Understanding reflection and its role in the e-portfolio development process | Why is reflection important?
2. Encouraging and stimulating review and reflection | How can I encourage my learners?
3. Using tools to record and organise reflections | What exists and what is appropriate?
4. Reflection Workshop | How to set it up

MODULE 3

Presentation of evidence

How can an e-portfolio be presented?

In this module you will learn how to organise a possible presentation of e-portfolios and their artefacts and how an interview could be initiated.

1. Purpose and content of a presentational e-portfolio | What is a presentational e-portfolio and what are its purposes?
2. Design and compilation of a presentational e-portfolio | What possibilities are there for designing and compiling the e-portfolio?
3. Organising an interview or a presentational situation | How to plan and design
4. Delivering a presentational e-portfolio | What do I have to consider?
5. Review, Reflection and Action Planning | What are the next steps?

MODULE 4

Assessment of learning outcomes and evaluation of the learning process

How can assessment be carried out and the learning process evaluated?

Here you will learn why assessment is important, how to plan and guide assessment of e-portfolios, and how feedback and evaluation can be carried out.

1. Assessment as a hidden curriculum | What does that mean?
2. Learning goals and operationalisations | How can I create them?
3. Feedback and peer communication | How can I initiate and motivate my learners' feedback and communication?
4. Evaluation of a learner's portfolio | How can summative assessment be carried out?

THE OPEN SOURCE APPROACH TO E-PORTFOLIO SOFTWARE

5



5 THE OPEN SOURCE APPROACH TO E-PORTFOLIO SOFTWARE

This chapter provides an overview of the current e-portfolio software market (Open Source and commercial) and describes the main functional features of selected software products. Furthermore, it provides an assessment of how suitable currently available software is for young learners and teachers who are 'e-portfolio beginners'. It strives to offer information about and orientation on the software market and to support educational institutions in the choice of e-portfolio software products (see also the Annex and Hornung-Prähauser, Geser, Hilzensauer & Schaffert, 2007).*

5.1 Approach, selection and analysis method

The analysis was (where possible) carried out by means of demonstration accounts, examining the main features from the students' point of view. If it was not possible to set up a demonstration account, descriptions, documentation and demonstrations on the web pages of the respective suppliers were consulted to obtain the relevant information.

The software products were selected according to their degree of popularity and the frequency of references in relevant literature, as well as according to the frequency of being named or cited in international discussion. In this chapter a detailed list of 19 software products is presented, giving information about the range of functions and applicability of the products. In addition, the 5-level model by George Siemens is used to create a well-structured classification. Siemens distinguishes between individual and institutional benefits of e-portfolio software and thus offers a useful survey with respect to expected benefits.

5.2 The importance of Open Source systems in education

As early as September 2004 the European Commission decided, on the basis of expert recommendations, to consider Open Source systems (OSS) a decisive factor for Europe.³⁾ In Austria, OSS is also gaining importance in the field of education, which is shown clearly by campaigns initiated and supported by educational policy, such as 'Desktop4Education'⁴⁾ or 'Edumoodle'.⁵⁾

Open Source software is in use in various areas such as content management, design of web pages, online learning management and social bookmarking. The advantages of OSS are widely known and acknowledged. Furthermore, many EU projects deal with this subject and the EU has set up an Open Source observatory, focusing on developments in this area and supporting the introduction of OSS.⁶⁾

In the field of e-portfolio software, Open Source activities can also be identified, and currently three trends can be distinguished:

Independent e-portfolio software products:

Software solutions like OSP⁷⁾ and Mahara⁸⁾ are potential software products developed especially for, and used for, portfolio applications. In the field of Open Source software more products are available. Helen Barrett, an internationally acknowledged expert on e-portfolios, has compiled a list of 12 Open Source e-portfolio products.⁹⁾

* This chapter is based on a study conducted by the EduMedia Group at Salzburg Research, in which a detailed analysis of today's most common e-portfolio tools was evaluated with regard to implementation in higher education institutions (Hornung-Prähauser, Geser, Hilzensauer & Schaffert, 2007).

Learning management systems with e-portfolio functions:

For the widely used learning management system Moodle, two potential portfolio modules are available as plug-ins (Moofolio¹⁰) and Exabis¹¹). This is particularly interesting for institutions already using Moodle, as the introduction of e-portfolio processes is comparatively simple. (In the field of commercial learning management systems, plug-ins with e-portfolio functions are also available.)



Figure 3:
The LIPSTICK – web portal of the University of Linz (<http://elearn.jku.at/cms/>; accessed 5 April 2007)

Social Software, Web 2.0 and Social Networking Tools:

Social software is highly focused on the learners. Also, it can be assumed that wikis, blogs and other elements of social software will be available as standard tools for educational aid in the near future. The Johannes Kepler University Linz, for example, offers a large number of systems for teachers and students via e-learning platforms. The LIPSTICK project¹²) (Learning Improvement Peer Support and Teaching Innovation Community) aims at promoting Internet-based teaching at the university.

5.3 Analysis of e-portfolio software products

Compilation and short description of existing e-portfolio software products

The compilation in this section summarises the most important information about 19 e-portfolio software products and gives a survey of the most significant details. All the information was taken from the respective web pages and categorised. The short description is also based on information from the web.

For a more effective survey, the e-portfolio software products were classified into five categories:

- | Commercial e-portfolio software products
- | Open Source software products
- | Learning management systems, with portfolio functions via plug-ins or the like

- | Content management systems with extended e-portfolio functions
- | Integrated systems and system families

Commercial e-portfolio software products

Angel E-Portfolio, Fronter, PebblePad, EPET, iWebfolio, RAPID, eXact Portfolio, LiveText, TaskStream

Open Source software

Elgg Learning Landscapes, Mahara, Keep Toolkit, OSP – Portfolio

Learning management software with integrated e-portfolio functions

Blackboard / WebCT with portfolio module, Moodle with Exabis plug-in, Moodle with Moofolio plug-in

Content management systems with e-portfolio functions

Factline Community Server

Integrated systems and software families

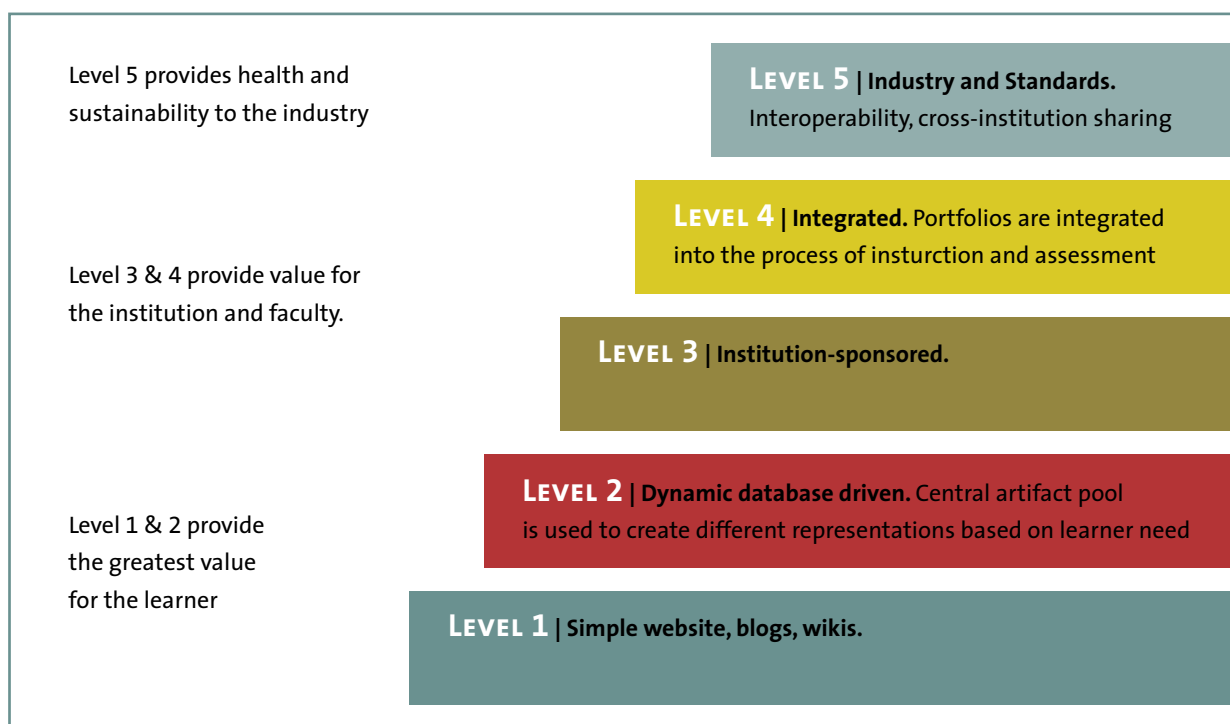
Scioware – Concorde (integration of portfolio functions with existing learning management functions), Winvision – MS-Sharepoint Server Portal

5.4 Classification according to institutional and individual benefit

(Analysis according to the 5-level model by George Siemens)

George Siemens, founder of Complexive Systems, Inc., an independent research institution and learning lab, has developed a 5-level model in his work about 'connectivism', which describes and defines the functional requirements on learning software.¹³⁾ This model has been used by Helen Beetham for a classification and extended by functional requirements on institutions and individuals (cf. Beetham, 2007, 13ff.)

Figure 4:
George Siemens, Stages of e-portfolio development (<http://www.elearnspace.org/Articles/eport>)



Siemens defines five levels, characterising various e-portfolio tools with respect to conflicting priorities between individual and institutional benefit. Levels 1 and 2 offer greatest benefit for the learners, levels 3 and 4 for institutions, and level 5 for regional and industrial development.

The functional requirements on e-portfolio software products can be described as follows on the basis of the above-mentioned five levels:

LEVEL 1 | Static web pages

These are e-portfolio systems without database-driven interactivity. Demonstrations of acquired skills are published by means of simple web-developing tools (PowerPoint, Dreamweaver), online file structures (e.g. an FTP fileserver) or simple publishing and authoring tools (Mediator). Weblogs and wikis also come under this category (though, from a technical point of view, these software tools are regarded as database-supported systems)

LEVEL 2 | Dynamic, database-supported document management systems

Systems assigned to this level fulfil all the requirements of level 1, but in addition offer technical support for learners (e.g. a database-supported document centre) as well as for the institution (multiple use and transfer of information and presentations, standardised presentation of portfolios for the entire institution via public portal, access to and transfer of individual portfolios).

LEVEL 3 | Institutional systems

Software tools assigned to level 3 have the complete range of functions available at the individual level, but are linked to institutional requirements and demands. The system is used throughout the institution; functions and processes correspond to the institution's workflows and are coordinated accordingly. Information about the learning progress of individuals is accessible via a central system and can be used for evaluation processes.

LEVEL 4 | Integrated portfolio systems

The portfolio process is supported by elements such as communication (between students and tutors, students and peers), integration of a curriculum, as well as data transfer between the portfolio system and a learning management system. Institutional development plans and educational policy-related development plans (PDPs) are supported by the system

LEVEL 5 | Overall, cross-institution solutions, implemented on the basis of industrial standards

Software tools in level 5 are incorporated into a network of institutional systems and can be used in regional activities and strategies. International standards for interoperability are used for data interchange.

In the following illustration it was attempted to classify the e-portfolio software products described above, but they could not always be assigned to a definite group. The illustration is therefore intended to serve as a basis for discussion for decision-makers.

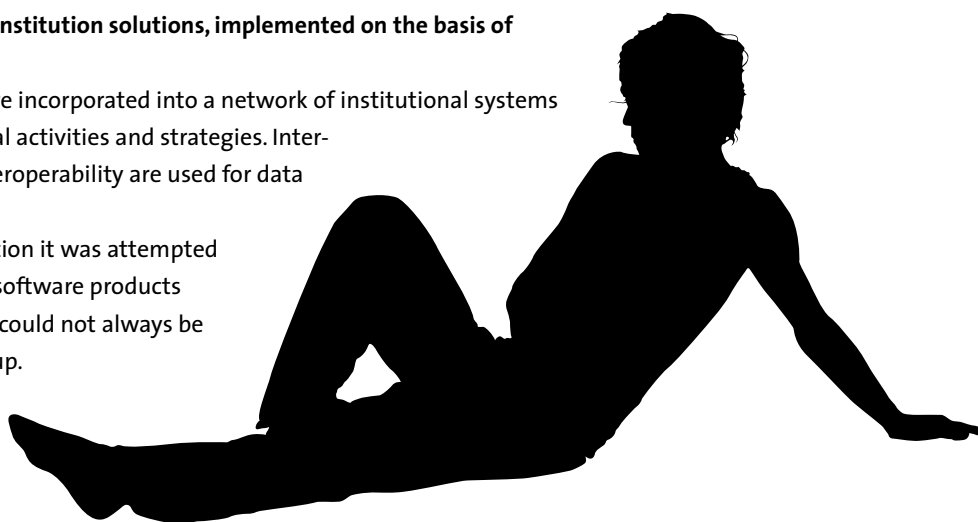




Figure 5:
Classification of e-portfolio software products according to G. Siemens (Salzburg Research, 2007)

Figure 5 shows that commercial systems can be assigned to levels 3 and 4 and therefore (compared with classical Open Source tools) have a tendency to be orientated towards institutional requirements rather than individual ones.

For Open Source software products, no consistent classification can be made, which indicates that, depending on the orientation of the functional features, individual or institutional demands have been taken into consideration.

The area of 'integrated systems' must be assigned to a high level, which indicates that the level of integration into existing systems and data environments can be supported by these tools.

That not only software classed as e-portfolio software is in use is shown by the example of the 'E-Me'¹⁴⁾ project at Wolsingham School & Community College,¹⁵⁾ where pupils build their presentation portfolios using an authoring tool (Matchware Mediator). Another example is the Swiss learning log project,¹⁶⁾ where weblogs are being used for e-portfolio work and learning logs.

5.5 Description of functional features

In this section, several of the criteria of WCET EduTools¹⁷⁾ were used for the description of the functional features.

The criteria for analysis are given in a feature list, specially developed for the analysis of e-portfolio software by a group of e-portfolio experts. The list was published with a Creative Commons license and is available free of charge as a matrix for individual e-portfolio analysis.

For the present study, the majority of criteria/functional features from this catalogue were translated into German and used as a guideline for description.

EduTools is a project of the independent WCET consortium, the Western Cooperative for Educational Technology,¹⁸⁾ whose aim is to promote the use of educational technologies in university work. For this purpose, WCET is supporting various projects and activi-

ties investigating the added value of these technologies. One of the projects initiated and supported by WCET is EduTools, which carried out an analysis of seven commercial e-portfolio software products in spring 2006 in cooperation with seven universities. For this analysis, a categorisation system was developed to enable a structural description of the various features and functions of e-portfolio software. This categorisation system was published under the Creative Commons license 'by-nc 1.0',¹⁹⁾ is accessible without restriction, and can be adapted.

For the present study, a range of relevant categories was selected, translated into German and used for the analysis of 11 software products.

5.6 Categorisation and assessment of the range of functions

In the course of the analysis it became obvious that the 'existence' of certain functional features in a system does not give any information about the flexibility and range of these functions. Therefore, it was attempted to include a simple and comprehensible system to assess the range of individual functional features.

Figure 6:
Range of functions of
e-portfolio software products
(Salzburg Research, 2007)



Range of functions		PebblePad	iWebfolio	E-Folio	OSP 2.0	ELGG	Mahara	WebCT	Moofolio	Exabis	FCS	WinVision
Free text input	Annotations											
	Online content editing											
	Internal linking											
	External linking											
	Upload documents											
Templates	Advice											
	Reflection											
	Evaluation											
	Presentation											
	Modification of templates by users											
	Assessment											
Publication	Access control											
	Types											
	Publish to Web											
	Commenting											
	Syndicate											
	External/internal Communication											
	Searching											
Organise	Collecting space/document management											
	Categorisation											
	Selection											
Analysis tools	Tracking											
	Comparing											
	Assessments											
Sustain-ability	Systems integration											
	Migration and export											
	Technical support											

The assessments used the following values:

- | (dark blue) Clearly available: the functional feature exists and provides additional functions for the user
- | (medium blue) Available: the functional feature exists and fulfils the purposes indicated
- | (light blue) Not available: the functional feature is not provided by the system
- | (white) Empty: the respective information could not be identified in this analysis

The above-mentioned analysis model has been transformed into a graphical representation to enable direct comparison between various e-portfolio software products.

To the above-mentioned evaluation criteria a colour code has been added, as shown in the chart below (Figure 6).

Figure 6 shows that commercial software products tend to have a wider range of functional features. Open Source products in particular have some weaknesses; therefore it seems that these products have been developed for specific aims and not for multiple purposes.

A weakness of all software products is the function of 'comparison' of e-portfolio artefacts. Only the Factline Community server has such a function available.

Furthermore, it is obvious that the 'syndication' of portfolio content and portfolio web pages does not seem to be an important objective at present and is supported by only a few systems (in other words, only a few references to 'syndication' could be found during the analysis).



5.7 Assessment of appropriateness for e-portfolio beginners

The aim of this section is to support decision-makers and show to what degree e-portfolio software products are appropriate for use in individual application areas. Besides technical and organisational matters, usability also has to be taken into consideration.

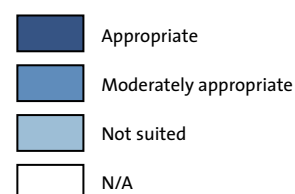
This analysis does not apply elaborate usability procedures, as described by Nielsen (Nielsen, 1992) and other authors, as neither the required setting (laboratory) nor the required software (e.g. mouse tracking, eye tracking) was available. Instead, it was attempted to compare the functional features of the software with the required portfolio

lio skills of the learners. It was assumed that the functional features and their processes and usability support the user in various ways in the individual work. The question to be answered in this analysis is: Is the described functional feature appropriate for portfolio beginners? How much do the functions and functional features provided support the user without making tutor intervention necessary?

The values are as follows:

- | (dark blue): The functional feature is appropriate for beginners: The characteristics of the functional feature predefine the portfolio process as such. Therefore, few portfolio skills are required from the users in order to be able to use the features in the portfolio process.
- | (medium blue): The functional feature is moderately appropriate for beginners: Users need to have basic portfolio skills to use this functional feature, or external instruction is required.
- | (light blue): The functional feature is not really suited for beginners: A high level of e-portfolio skills is required to use this feature. The user must have a clear idea of his/her own portfolio conception and be able to use the system and its functional features individually and flexibly.
- | (white): The functional feature is not provided or an assessment of the required portfolio skills was not possible.

Figure 7:
Appropriateness of functional features for portfolio beginners (Salzburg Research, 2007)



Appropriate for e-portfolio beginners		PebblePad	iWebfolio	E-Folio	OSP 2.0	ELGG	Mahara	WebCT	Moofolio	Exabis	FCS	WinVision
Free text input	Annotations											
	Online content editing											
	Internal linking											
	External linking											
	Upload documents											
Templates	Advice											
	Reflection											
	Evaluation											
	Presentation											
	Modification of templates by users											
	Assessment											
Publication	Access control											
	Types											
	Publish to Web											
	Commenting											
	Syndicate											
	External/internal Communication											
	Searching											
Organise	Collecting space/document management											
	Categorisation											
	Selection											
Analysis tools	Tracking											
	Comparing											
	Assessments											

Conclusion:

This analysis of the appropriateness of functional features for portfolio beginners shows that the majority of e-portfolio software products seem to be perfectly appropriate for beginners.

Software-aided portfolio work can never replace tutorial guidance, but the usability of the software products on the market makes them suitable for carrying out portfolio processes with portfolio beginners.

The graphical representation above shows that commercial software products and software dedicated to portfolio processes are more appropriate for beginners than other products. The leading tools are iWebfolio, PebblePad, Winvision and WebCT/Blackboard. Their manufacturers seem to have contributed a lot of experience and know-how to the development of user-friendly features.

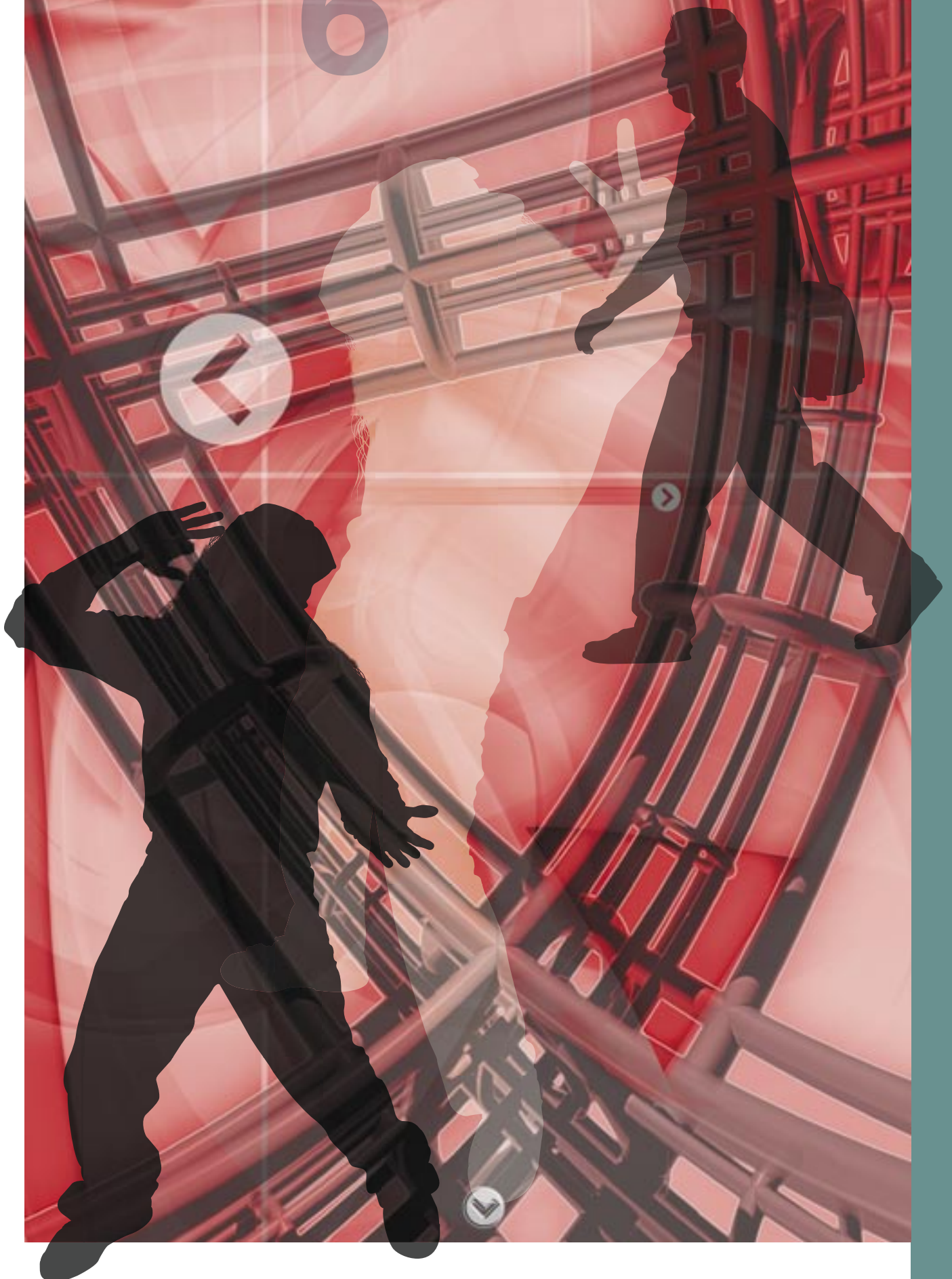
The weak points of OSP2.0 and FCS are their complex and scarcely comprehensible internal process sequences. It can be assumed that the link-up between OSP2.0 and the learning management system Sakai was detrimental to usability, and that FCS offers too many features facilitated by the system. With instruction provided, the system is very good and is flexible to use; its installation as an e-portfolio system at the Fachhochschule Burgenland²⁰⁾ proves its successful application as a portfolio system.

The large number of white fields shows that the majority of software products do not provide all the functional features recommended by WCET Edutools. This can be attributed to the fact that only commercial e-portfolio software products were developed for a variety of applications. 'Homemade' software solutions and Open Source software products focus on a principal aim and therefore provide only a limited range of functional features.

To sum up, it can be concluded that, with regard to usability in portfolio processes, commercial software products offer greater support for portfolio beginners. Furthermore, software solutions developed or promoted by an educational institution orientated to coursework, or adapted for application in such institutions (e.g. PebblePad), are more appropriate for portfolio beginners.

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6



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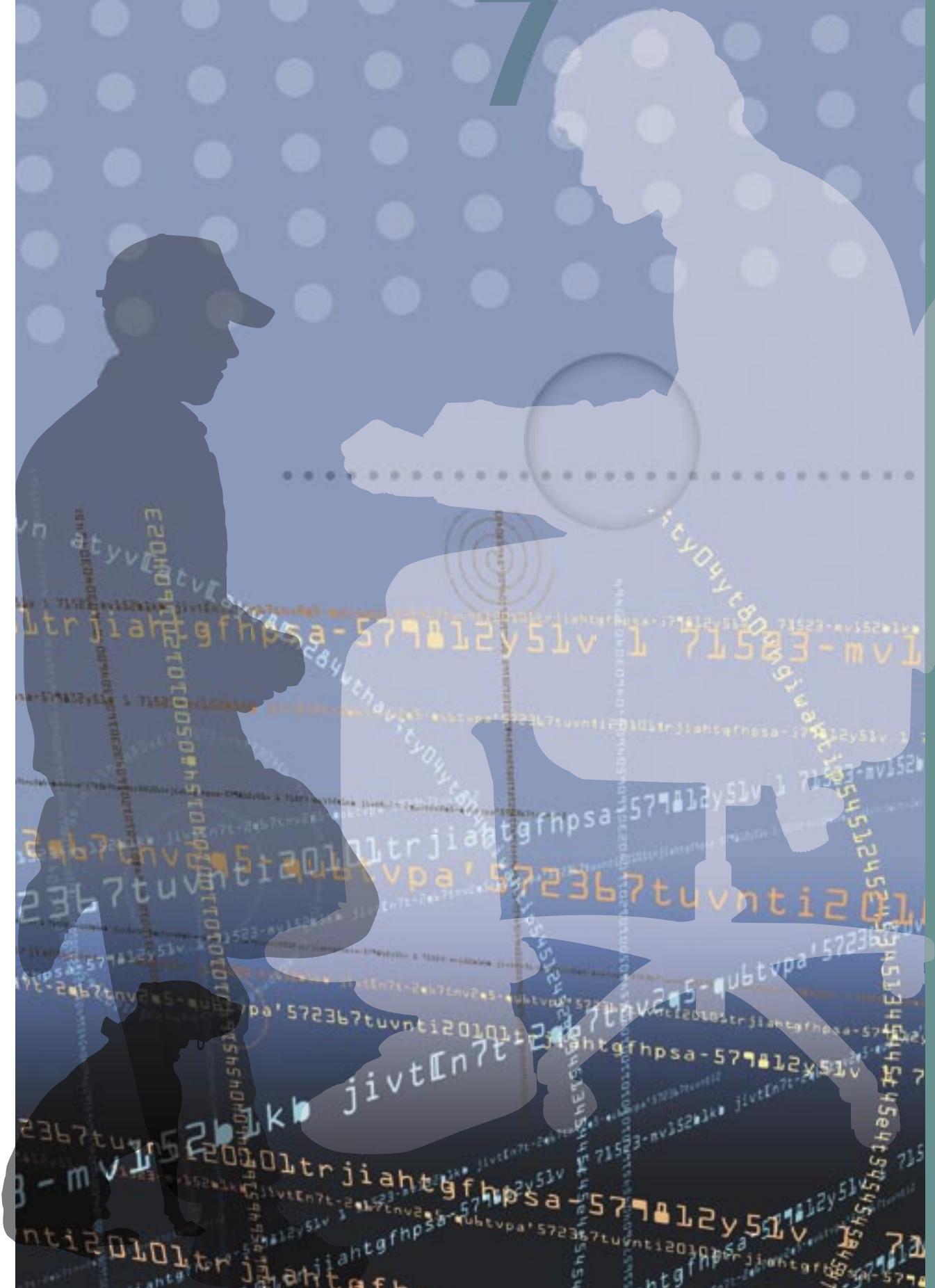
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FOOTNOTES

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- 10) <http://moodle.spdc.org/moofolio/>
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- 13) <http://www.elearnspace.org/Articles/eportfolios.htm>
- 14) http://www.e-me.org.uk/live_site/index2.htm
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- 18) <http://www.wcet.info/home.asp>
- 19) <http://creativecommons.org/licenses/by-nc/1.0/>
- 20) <http://fhw-wiss.factlink.net>

ANNEX: PRACTICAL LINKS

7



PRACTICAL LINKS

7 ANNEX: PRACTICAL LINKS

Best practices of e-portfolio in schools

NAME OF SCHOOL AND INITIATIVE	COUNTRY	TYPE OF E-PORTFOLIO	CONTACT DETAILS
College of Business Administration, Zell am See	Austria	Student development portfolio	www.edustream.at/moodle
Secondary School, Baden	Austria	Learning portfolio	www.uehsbadenac.at
DotFolio	Australia	Technical implementation of a system	www.dotfolio.org
Internet Generation Project BIG	Bulgaria	Student development portfolio	www.cisco.com/global/BG
TieVie	Finland	Personal development portfolio	www.Virtuaaliyliopisto.fi
2nd Chance School C2E	France	Reflection portfolio	www.e2c93.fr
Career Development Centre, National University of Ireland, Maynooth	Ireland	Personal development portfolio	careers.nuim.ie/students/jobsearch/applications/index.shtml
Evete Project	Lithuania	Personal development portfolio	www.evete.org

NAME OF SCHOOL AND INITIATIVE	COUNTRY	TYPE OF E-PORTFOLIO	CONTACT DETAILS
ePortfolio Club	Poland	Assessment portfolio	www.ceo.org.pl
Notschool, TheCademy	United Kingdom	Personal development portfolio	www.thecademy.net/inclusiontrust.org/NS-overview-notschoolhome.html
Wolsingham School and Community College, eMe	United Kingdom	Assessment portfolio	www.wolsinghamcollege.durham.sch.uk www.e-me.org.uk
Leasowes Community College, Dudley	United Kingdom	Personal development portfolio	www.leasowes.dudley.gov.uk
South Cheshire College, Crewe; Kit Car Project	United Kingdom	Learning portfolio	www.s-cheshire.ac.uk/new_scc/home.asp
Career Wales	United Kingdom		www.careerswales.com
Florida State University Career Portfolio	United States	Personal development portfolio	www.career.fsu.edu
Upper Secondary School Leonhard, Basel	Switzerland	Learning Portfolio	www.gyml.unibas.ch
Upper Secondary Level MPS Riedmatt, Wollerau	Switzerland	Personal development portfolio	www.begabung.ch

7.1 LIST OF E-PORTFOLIO SOFTWARE

Commercial e-portfolio software products

- PRODUCT NAME:** ANGEL E-Portfolio
WEBSITE: <http://www.angellearning.com/products/eportfolio/>
DEVELOPER: Angel Learning, Inc.; 7601 Interactive Way; Suite 100; Indianapolis; IN 46278
CONTACT: E-mail: sales@angellearning.com; Tel: +1 (317)-333-7300
TECHNICAL REQUIREMENTS: Microsoft Windows Server and SQL data base
COSTS/LICENSED VERSION: No details (individual offers on demand)
SHORT DESCRIPTION Angel E-Portfolio is a portfolio module for the 'Angel Learning Management Suite 7.2'.
OF FEATURES: The features offer (besides classical learning management software and e-portfolio functions) integrated workflows (e.g. for automated increase of learning efficiency) as well as an integrated podcasting module for sending lectures automatically to students).
- PRODUCT NAME:** EPET – E-Portfolio extension Toolkit
WEBSITE: <http://www.eportfolios.ac.uk/ePET>
DEVELOPER: University of Newcastle upon Tyne, UK; School of Medical Education Development
The Medical School; University of Newcastle upon Tyne; Newcastle NE2 4AB, UK
CONTACT: E-mail: S.J.Cotterill@ncl.ac.uk; Tel: +44-191-222-5020
TECHNICAL REQUIREMENTS: ZOPE, MySQL, Apache
COSTS/LICENSED VERSION: Costs/licensed version:
SHORT DESCRIPTION Open Source, free of charge for JISC members
OF FEATURES: EPET is a project supported by JISC, providing a set of special e-portfolio functions within existing generic learning management systems.
The functions are available via a web service and can be integrated into existing systems. Besides CV drafts (as offered in OSP 1.5), assignment of tasks by tutors, document management and structured learning study journals are among the available functions. Furthermore, a personal development plan with instructions (with SWOT analysis) and drafts for a standardised curriculum vitae are among the range of functions. This tool has an IMS-compatible XML interface.
- PRODUCT NAME:** eXact Portfolio
WEBSITE: <http://www.giuntilabs.com/info.php?vvu=35>
DEVELOPER: Giunti Interactive Labs; Abbazia dell'Annunziata; Via Portobello;
Baia del Silenzio; 16039 Sestri Levante (GE) – Italy
CONTACT: E-mail: mbox@giuntilabs.com; Tel: +39-0185-42123
TECHNICAL REQUIREMENTS: No details
COSTS/LICENSED VERSION: No details
SHORT DESCRIPTION The eXact Portfolio is part of the Giunti LearneXact Learning Suite, consisting of: HRMS – Human Resource Management System; RMS – Recruiting Management System; LMS – Learning Management System; DR – Digital Repositories; LCMS – Learning Content Management System. The portfolio module can be used on its own as well as along with all the above elements.
OF FEATURES: According to Giunti, applications for their portfolio range from school to university, HR management to recruiting agencies.
The features tend to be product-related and orientated to current (de facto) standards (IMS e-portfolio specification, HR-XML).

- PRODUCT NAME:** iWebfolio
WEBSITE: http://www.nuventive.com/products_iwebfolio.html
DEVELOPER: Nuventive LLC.; 3996 Mt Royal Boulevard; Allison Park; PA 15101
CONTACT: E-mail: sales@nuventive.com; Tel: +1-412-487-8700
TECHNICAL REQUIREMENTS: No details
COSTS/LICENSED VERSION: No details
SHORT DESCRIPTION OF FEATURES: iWebfolio aims to support the whole learning process and offers functions for the entire student life-cycle.
 The tool is intended to accompany learners from 'K12' to college and university and through their professional career. The added value lies in smooth integration into existing systems and support of interaction between students and tutors and interaction with external portfolio target groups.
- PRODUCT NAME:** LiveText
WEBSITE: <http://www.livetext.com>
DEVELOPER: LiveText; Inc.; 1 S. La Grange Road; 2nd Floor; La Grange; Illinois 60525-2455
CONTACT: <http://college.livetext.com/purchasing/> ; Tel: +1-866-548-3839
TECHNICAL REQUIREMENTS: No details
COSTS/LICENSED VERSION: No details
SHORT DESCRIPTION OF FEATURES: College LiveText edu solutions are a set of web-based tools that enable schools and universities to manage and assess student programmes. They offer a combination of curricular learning support and individual learning documentation and the system is in use in many English and American universities.
- PRODUCT NAME:** PebblePad
WEBSITE: <http://www.pebblelearning.co.uk/>
DEVELOPER: Pebble Learning Ltd; e-Innovation Centre; University of Wolverhampton; Shifnal Road; Telford TF2 9NT
CONTACT: Shane Sutherland, Colin Dalziel;
 E-mail: enquiries@pebblepad.co.uk; Tel: +44-(0)-1952-288300
TECHNICAL REQUIREMENTS: No details
COSTS/LICENSED VERSION: Individual accounts from £ 14.95 annually; institutional hosting on demand.
SHORT DESCRIPTION OF FEATURES: PebblePad has been developed mainly for use in schools. On a (very well-structured and attractive) flash interface learning artefacts can be saved step-by-step in a structured way, linked to other objects and compiled into so-called 'webfolios'. The predefined steps of the processes in the system permit little individual freedom in dealing with the program, but the user interface and predefined templates support portfolio work with children and older students at school.
- PRODUCT NAME:** Rapid Progress File for PDP
WEBSITE: <http://rapidprojects.lboro.ac.uk/progress.html>
DEVELOPER: University of Loughborough; Leicestershire; UK; LE11 3TU;
 E-mail: <http://www.lboro.ac.uk/>
CONTACT: Alan Maddocks; E-mail: A.P.Maddocks@lboro.ac.uk ; Tel: +44-(0)-1509-263171
TECHNICAL REQUIREMENTS: No details
COSTS/LICENSED VERSION: Free-of-charge for universities in the UK, but with specific licensing agreements.
SHORT DESCRIPTION OF FEATURES: The system has been developed for the specific PDP requirements of UK universities and supports the following tasks:
 Stores achievements of the university, Draws up personal portfolios,
 Drafts curricula vitae, Evaluates and assesses competencies,
 Documents personal progress, Documents development of competencies

PRODUCT NAME:	TaskStream
WEBSITE:	http://www.taskstream.com/pub/electronicportfolio.asp
DEVELOPER:	TaskStream; Inc. ; 248 W. 35th Street; New York, NY 10001
CONTACT:	E-mail: learnmore@taskstream.com ; Tel: +1-(212)-868-2700
TECHNICAL REQUIREMENTS:	No details
COSTS/LICENSED VERSION:	No details
SHORT DESCRIPTION	Presentation Portfolios – Create a professional and personalised collection of work to share within TaskStream or to publish to the Web. Collect and organise artefacts to showcase learning achievements.
OF FEATURES:	Learning/Work Portfolios – Document the history of learning progress while working to achieve specific goals. Include reflections on the learning process while generating an archive of growth over time. Resource Portfolios – Create a digital collection of resources that organises files, links and media. E-mail, publish and distribute these collections to others and manage them in real time.

Open Source software

PRODUCT NAME:	Elgg Learning Landscapes
WEBSITE:	http://www.elgg.com
DEVELOPER:	Curverider Ltd; UK
CONTACT:	Dave Tosh; Ben Werdmuller ; E-mail: info@curverider.co.uk
TECHNICAL REQUIREMENTS:	Apache Webserver, MySQL data base, PHP Script
COSTS/LICENSED VERSION:	Open Source, hosting possible
SHORT DESCRIPTION	Elgg is a 'Social networking system' with a strong focus on networks and community building. Each object can be 'tagged', and the tags automatically join together in a 'tag cloud', an automatic network. Advanced versions focus on integration of media, presentation interface and usability.
OF FEATURES:	

PRODUCT NAME:	Knowledge Exchange Exhibition and Presentation Toolkit KEEP-Toolkit
WEBSITE:	http://www.cfkeep.org/html/index.php
DEVELOPER:	Knowledge Media Lab of The Carnegie Foundation for the Advancement of Teaching 51 Vista Lane; Stanford, CA 94305
CONTACT:	E-mail: comments@kml.carnegiefoundation.org ; Tel: +1-650-566-5100
TECHNICAL REQUIREMENTS:	No details
COSTS/LICENSED VERSION:	Open Source – GPL
SHORT DESCRIPTION	Keep Toolkit works on the assumption that snapshots, i.e. information objects, can be collected in a structured way and displayed in various contexts as presentations.
OF FEATURES:	The focus is on templates, web-based patterns, which, in addition to the information objects, provide central ideas for each type of 'summary', individual 'aims', personal 'reflection', external 'references' and for the actual data It is very easy to upload elements and to compile them into a portfolio focusing on a central theme. The developers of Keep have recently announced their participation in the 'Sakai' project, 14 which also serves as a basis for OSP.

PRODUCT NAME: Mahara Portfolio
WEBSITE: <http://www.mahara.org>
DEVELOPER: New Zealand's Tertiary Education Commission's e-learning Collaborative Development Fund (eCDF); Bible College of New Zealand; Private Bag 93104; Waitakere 0650
CONTACT: Meredith Henson; E-mail: M.J.Henson@massey.ac.nz; Mark Nichols ; Tel: +64-9-837-9752
TECHNICAL REQUIREMENTS: Apache, MySQL, PHP
COSTS/LICENSED VERSION: Open Source, GPL
SHORT DESCRIPTION Mahara is a PHP-based portfolio tool, developed by an association of universities in New Zealand.
OF FEATURES: All user activities are locked and completely invisible to other users, and are made accessible for internal or external users via (easily scalable) 'views' (presentation levels). Templates for these 'views' determine structures for the required information. The main elements and features are:

- | Blogs: the user can create various blogs and share them with other persons, groups or make them accessible to an audience.
- | Files: files are saved in structured folders, as in the Elgg software (but without tagging)
- | Administration of contacts: the administration of users, groups and communities enables scalable data access rights for the user.

PRODUCT NAME: OSP – Open Source Portfolio
WEBSITE: <http://www.osportfolio.org/>
DEVELOPER: The rSmart Group; 4343 East Camelback Road; Suite 210; Phoenix, AZ 85018
CONTACT: Chris Coppola; E-mail: chris.coppola@rsmart.com; Tel: +1-602-840-7300
TECHNICAL REQUIREMENTS: JAVA 1.4.2., Tomcat Server 5.5, Maven 1.0.2, MySQL 4.1. or Oracle 9i+ DB
COSTS/LICENSED VERSION: Open Source
SHORT DESCRIPTION OSP – Open Source Portfolio has been an independent Java-based presentation tool and is (from version 2.0 upwards) linked with the learning management system Sakai. The e-portfolio functions are based on the classic division into four portfolio areas: collect, reflect, design and publish. These basic functions are performed with the help of wizards, i.e. the individual steps are preset in templates. OSP offers course portfolios and individual portfolios, which users can build themselves.
OF FEATURES:

Learning management software with e-portfolio functions

PRODUCT NAME: Blackboard Portfolio for Vista and Campus Edition
WEBSITE: http://www.blackboard.com/products/academic_suite/portfolio
DEVELOPER: Blackboard, Inc.; 1899 L Street NW, 11th Floor; Washington, DC 20036
CONTACT: E-mail: info@blackboard.com; Tel: +1-202-463-4860-2371
TECHNICAL REQUIREMENTS: Windows 2000 Server + MS-SQL + IIS; Sun Solaris 8 + Oracle DB (8.1.7) + Apache Red Hat Linux 7.2 + Oracle DB (8.1.7) + Apache
COSTS/LICENSED VERSION: No details (individual offers)
SHORT DESCRIPTION The Blackboard and WebCT Portfolio is an e-portfolio module, completely integrated into the Vista or CE learning management systems, and facilitates individual integration of student data from courses and activities.
OF FEATURES: In addition to the functions of collection, annotation, presentation of learning achievements (also extracts of discussions can be integrated), the system offers a revision function for teachers and comprehensive guest management and tracking.

- PRODUCT NAME:** Moofolio
WEBSITE: <http://moodle.spdc.org/moofolio/>
CONTACT: Matt Oquist; E-mail: moquist@majen.net
TECHNICAL REQUIREMENTS: Moodle Installation from 1.6 (Apache PHP MySQL) upwards
COSTS/LICENSED VERSION: Open Source
SHORT DESCRIPTION Moofolio is a 'third-party' development for the Moodle learning platform. The plug-in
OF FEATURES: makes two additional 'blocks' for individual work available: Portfolio Keeper, File Keeper
 The Portfolio Keeper enables users to build, inspect and administer their own portfolio and go through portfolios of other users with the help of a portfolio search function. Each portfolio can be assigned to certain course subjects and contains artefacts to which students' reflections can be added. When tutors have been granted access, they can add commentaries in the 'teachers' reflections' section.
- PRODUCT NAME:** Exabis
WEBSITE: <http://moodlekurse.org/moodle/>
DEVELOPER: Exabis Internet Solutions ; <http://www.exabis.at>; riepl & angerer oeg; Panholzerweg 1; 4030 Linz
CONTACT: Andreas Riepl; E-mail: info@exabis.at; Tel: +43-(0)732-717869-0
TECHNICAL REQUIREMENTS: Moodle Installation (Apache PHP MySQL)
COSTS/LICENSED VERSION: Open Source (GPL)
SHORT DESCRIPTION This e-portfolio module is installed as a "Moodle block" in the learning platform Moodle.
OF FEATURES: The current software works with all Moodle versions (up to 1.7+). As it is integrated as a "block", the e-portfolio module can be made available to all courses by the administrator. Teachers can activate the e-portfolio module for individual courses via the block configuration and make it available to students. Students' entries are generally visible in all courses in which the students have respective rights (as participants of a course) and for which the teachers have activated the module.

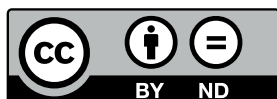
Content management systems with e-portfolio functions

- PRODUCT NAME:** Factline Community Server – FCS
WEBSITE: <http://www.factline.com>
DEVELOPER: factline Webservices GmbH; Praterstraße 15/3/22; 1020 Wien
CONTACT: Paul Meinl; E-mail: paul.meinl@factline.com; Tel: +43-1-2188503
TECHNICAL REQUIREMENTS: Perl-based system with Linux or FreeBSD; Apache with OpenSSL, mod_perl and PHP4; PostgreSQL 7.2 or update version; Java 2 Runtimeenvironment 1.3
COSTS/LICENSED VERSION: Hosting of single platforms from 850.00 euros upwards, single payment, plus 39.00 euros monthly.
 Individual server installation available on request.
SHORT DESCRIPTION The FCS from Factline combines the areas of individual knowledge management, learn-
OF FEATURES: ing management and portfolio work through a unique referencing model for objects (factID) and an individually scalable access rights system. Though no templates or work-flows are defined or definable, an individual portfolio focusing on process documentation (e.g. through commentaries on different versions) can be built because of the flexibility of FCS and the possibility to 'aggregate' content (factInclude). Advanced computer knowledge is required to take best advantage of the system.

Integrated Systems

- PRODUCT NAME:** Winvision – Digital Portfolio
- WEBSITE:** <http://www.winvision.nl/Products/EN/Products/Digital+Portfolio.htm>
- DEVELOPER:** Winvision Products bv; Marconibaan 12; 3439 MS Nieuwegein; Netherlands
- CONTACT:** E-mail: info@winvisionproducts.nl; Tel: +31-30-6580158
- TECHNICAL REQUIREMENTS:** MS-Server 2003 + MsSQL
- COSTS/LICENSED VERSION:** No details
- SHORT DESCRIPTION** Winvision is an e-portfolio system developed for the education sector, focusing on PDP (Personal Development Planning) and PAP (Pupil Action Planning) as well as on the assessment of learning achievements by tutors.
- OF FEATURES:** Winvision is strongly linked to Microsoft and can therefore be integrated smoothly into existing Microsoft set-ups, such as Class-Server, Microsoft Learning Gateway or MS-Sharepointserver Portal.
-
- PRODUCT NAME:** Scioware Portfolio Presentation Manager
- WEBSITE:** http://www.concord-usa.com/scio_ppm.htm
- DEVELOPER:** Concorde USA, Inc., Canada and US
- CONTACT:** E-mail: info@concord-usa.com
- TECHNICAL REQUIREMENTS:** No details
- COSTS/LICENSED VERSION:** No details
- SHORT DESCRIPTION** Short description of features:
- OF FEATURES:** The Scioware Portfolio Presentation Manager was developed by Concorde USA, Inc. In a pilot scheme with Windesheim University (The Netherlands), the portfolio module was developed and installed as an integrated e-portfolio system for the entire university in only six months.
- Great importance was attached to supporting the 'Personal Development Planning' process already in use at this university.
- The most important factor was to support students in the planning and realisation of individual learning goals, in close cooperation with teachers and fellow students, as well as the possibility to export presentations to CDs/DVDs and smooth integration into the existing learning management system (Blackboard).

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Education and Culture

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