# Showcase of Learning: Towards a Pattern Language for Working with Electronic Portfolios in Higher Education

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Like a shop window facing the street and displaying delicate or valuable articles, an electronic portfolio showcase required skills of students and demonstrates that they understand how to apply their prowess. However, the work with electronic portfolios is complex and demanding. Compared to experts, novice users – teachers as well as students – face a number of challenges when they try to draw on the experience of others, especially when they want to implement e-portfolios in their university or college courses and when they try to create their first own e-portfolio views respectively. Even for experts on e-portfolios it is sometimes hard to explain how to best use e-portfolios for learning purposes. There are a few guidelines which help with the basics, but what is missing is a common language for describing e-portfolio practice. This paper, making use of Christopher Alexander's work on patterns and pattern languages, and drawing on pedagogical design patterns which already exist, presents the authors' first steps towards a pattern language for working with e-portfolios in higher education combining different theoretical and practical approaches and, particularly, own experiences of e-portfolio use.

## 1. INTRODUCTION

The present paper is an attempt to use the taxonomy for e-portfolios, which was developed under the two-year research project "*The use of e-portfolios at (Austrian) universities*" [Baumgartner 2008], as a starting point for compiling a catalogue of patterns for working with e-portfolios. These e-portfolio patterns are linked to one another and in this way are forming a small pattern language. The system of categories and characteristics of e-portfolios, which was developed through analysis and monitoring, formed the theoretical basis for the inductive pattern mining process. These are, on the one hand, the three main types of e-portfolios (*reflection*, *development*, and *presentation portfolio*), and on the other hand, the main activities (*selecting*, *assessing*, *organizing*, *planning*, *presenting*, *networking*, and *reflecting*) with the corresponding secondary or synonymous activities (*deciding*, *identifying*, *inspecting*, *approving*, *judging*, *giving feedback*, *appreciating*, *linking*, and *discussing*), which are important for the creation of an e-portfolio. Activities like *collecting*, *documenting*, *illustrating*, and *elaborating*, which are – regardless of the type of portfolio –absolutely essential for any portfolio work are considered invariant with regard to the practical work with e-portfolios and recorded in the catalogue of patterns, despite the fact that these activities could not be incorporated into the taxonomy due to their insufficient selectivity. The same applies to the activity *producing*, even if this activity generally precedes any portfolio work, as well as patterns that fundamentally affect the organization and implementation of e-portfolio work.

The collection of 38 identified design patterns has generative character, i.e. the individual design patterns can be well combined with each other and used in various combinations, and they also form the basic vocabulary of a constantly evolving pattern language for working with e-portfolios. Compared to conventional

didactical guidelines, the identified e-portfolio patterns support a wider variety of application scenarios. Just like the basic vocabulary of a natural language, which consists of different parts of speech (noun, verb, adjective, etc.) with specific functions in terms of possible combinations (sentence and text level), the present collection also describes e-portfolio patterns with different functions: e.g. patterns for the implementation of e-portfolios in courses or patterns for the creation and design of e-portfolios. Analogous to a generative grammar which enables a speaker to understand and to generate an infinite number of sentences, even though there are only a finite number of words available, the described design patterns enable to create an infinite number of e-portfolios.

The pattern language for working with e-portfolios represents the basic vocabulary in the form of different patterns that help lecturers and students to work on and with e-portfolios. For better orientation within the pattern language and for better locating individual patterns, the catalogue of design patterns is divided into five groups:

(1) Patterns for e-portfolios referring to the reflection, development, and presentation portfolio as the three main types of e-portfolios,
(2) patterns for the organization of e-portfolio work,
(3) patterns for individual learning,
(4) patterns for reflective learning, and
(5) patterns for collaborative learning.

These large groups of overall patterns contain other (sub-) patterns. Depending on the particular role users of this pattern language play in the overall structure of the e-portfolio work, they can select those patterns which, according to their individual needs, are relevant in a specific phase of the e-portfolio work.

## 2. AUDIENCE

The patterns presented in this paper were selected from a list of 37 identified patterns for working with e-portfolios written in German language (cf. Bauer & Baumgartner 2012). As mentioned above, the primary audience for our pattern language, are university lecturers and students, particularly those who are new to e-portfolio work. In addition, the presented pattern selection addresses the pattern community and researchers interested in the application of pedagogical patterns.

## 3. PATTERN LANGUAGES

A pattern language is considered a generative system that by using a set of rules (syntax), facilitates the combination of a limited number of clearly defined elements in an unlimited way with each other.

For Christopher Alexander the similarities of pattern languages and natural languages are not far to seek:

> [...] both ordinary languages and pattern languages are finite combinatory systems which allow us to create an infinite variety of unique combinations, appropriate to different circumstances, at will.

| Natural Language | Pattern Language |
|---|---|
| Words | Patterns |
| Rules of grammar and meaning which give connections | Patterns which specify connections between patterns |
| Sentences | Buildings and places |

> [Alexander 1979, p. 187].

In his considerations Alexander follows the possibilities of a natural language: the art of making a lot out of very little. A language system works by combining a smaller unit to the next larger: morphemes form words, words form sentences, sentences form texts. This order, which presents itself as a linear sequence, is taken up in the pattern languages:

> What is most important about this sequence, is that it is based on the connections between the patterns. Each pattern is connected to certain "larger" patterns which come above it in the language; and to certain "smaller" patterns which come below it in the language. The pattern helps

to complete those larger patterns which are "above" it, and is itself completed by those smaller patterns which are "below" it. [Alexander, Ishikawa & Silverstein 1977, p.xii].

The significance of this idea in terms of pattern language for e-portfolios is shown in the following example: The pattern MY MIRROR is at first connected to certain larger patterns: COMPULSORY EXERCISE and VOLUNTARY EXERCISE; but also connected to certain smaller patterns: ASSESSING, LINKING, and REFLECTING. Thus meaning that COMPULSORY EXERCISE and VOLUNTARY EXERCISE are incomplete, unless they contain MY MIRROR; and that MY MIRROR is itself incomplete, unless it contains ASSESSING, LINKING and REFLECTING.

In practical terms, reflecting on her/his personal learning process or on certain artifacts using the pattern my mirror, a student must not only follow the instructions which describe this pattern itself, but must also try to embed her/his reflections in the patterns COMPULSORY EXERCISES and VOLUNTARY EXERCISES. This succeeds by the use of ASSESSING, LINKING, and REFLECTING.

There are no isolated patterns. Each pattern is supported by other patterns:

 [T]he larger patterns in which it is embedded, the patterns of the same size that surround it, and the smaller patterns which are embedded in it. [Ibid., p. xiii].

Applied to a concrete design process this means that it is not possible to design an isolated "thing" – in our case this would be an artifact in the form of a learning diary, embedded in an e-portfolio view – ignoring the world around this artifact (e.g. the Cover Letter to the e-portfolio view, images, videos, etc.) and within this artifact (e.g. attached files). The goal is a holistic approach:

[T]he larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it. [...] Each solution is stated in such a way that it gives the essential field of relationships needed to solve the problem, but in a very general and abstract way – so that you can solve the problem for yourself, in your own way, by adapting it to your preferences, and the local conditions at the place where you are making it. [Ibid.].

The main message of this quotation lies in the definition of the term "solution": Kohls [2009a] points out that a solution to a problem is so vague and abstract that anyone can solve the problem in her/his own way, by adapting the solution to his/her own preferences and (local) conditions. A particular solution should not be misinterpreted as "recipe" or formula of success. The specific context with its general conditions and opposing forces has an impact on potential solutions. An effective method applied in a special situation within a special field will not automatically work in another situation within another field and under completely different conditions.

The individual e-portfolio patterns and the pattern language, respectively, described in this paper, are to be considered against the following background:  The patterns require adaptability and creativity of end-users, and, at the same time, they attempt to be specific enough to prevent arbitrariness and dead ends in the e-portfolio work. Moreover, like any natural language, the pattern language for working with e-portfolios in higher education is under constant development and part of higher systems: the pattern E-PORTFOLIO (aka SHOWCASE OF LEARNING) belongs to the superior pattern DIGITAL ASSESSMENT; the pattern language for working with e-portfolios consists of 38 cross-linked elements and, in turn, is part of a general pattern language of pedagogy and didactics.

4.    DESCRIPTION AND DISCUSSION OF THE USED PATTERN FORMAT

The format for structuring the present e-portfolio patterns is a synthesis of the used description formats by Avgeriou, Papasalouros and Retalis [2003] and Kohls [2009b]. The following two considerations led to this decision:

(1) **Pattern Language for LMS:** Avgeriou et al. [2003] have already described a Pattern Language for Learning Management Systems (LMS). With regard to e-portfolio software, Himpsl, Baumgartner and Schranz [2009] pointed out that individual LMS provide users with some e-portfolio functionalities (such as the learning platforms *Fronter* and *Sakai* or the open-source plugin *Exabis* which was especially developed for

e-portfolio work using *Moodle*). By contrast, the authors continue, e-portfolio solutions like *Mahara* could also be used like conventional LMS. Even though the comparison of LMS and e-portfolios (see Table 1) shows significant differences, the considerations of Avgeriou et al. concerning structure and format for the description of a pattern language for LMS, have immense importance for e-portfolio patterns, since an appropriate software solution is used for each e-portfolio work .

(2) **Path metaphor as an example of recurring solutions:** Kohls [2009a] mentions the path metaphor used as starting point for developing the *e-teaching.org* pattern description format. Starting from a given situation, a pedagogical or didactic path is followed to achieve defined objectives: "The path-form is a structure created step by step by the process of progression or problem solving" [p. 63]. Similar things can be found for e-portfolios: They are a tool for structured collection, storage and display of a (learning) path (= process) and a (learning) goal (= product or artifact).

Table 1 LMS compared to e-portfolios[1]

| LMS | E-Portfolio |
|---|---|
| Orientation towards course | Orientation towards students |
| Teachers set the rules | Students create their own rules |
| Course sets a certain structure | Unstructured, students develop their own structure |
| Grading | No grading |
| Content is accessible to all students within a course | Content is only visible when the owner releases an e-portfolio view |
| Formal learning | Informal learning |
| Social networking is limited to course participation | Students determine their social networking |

The e-portfolio patterns of our collection have a uniform structure. For the adequate description of the different patterns the following aspects are/were taken into account:

– **Pattern name:** What is the name of the pattern or keyword that identifies problem and solution? The name is complemented by a short definition of parts of the name. This definition will help the user to approach the name from different perspectives [cf. Schümmer & Lukosch 2007, p. 30].
– **Picture/Figure:** Which picture/figure (metaphorically) captures the basic idea of the pattern? The user should be able to use the picture/figure to remember an aspect of the pattern in a concise and easy way.
– **Context:** What are the origins of the problem? Which scenario illustrates the problem? In which situation/environment is the pattern useful to the user?
– **Problem:** What is the core problem that the solution is addressing?
– **Forces:** What are the indications and contra-indications for the pattern, i.e. what are the goals and constraints, the motivating factors and concerns that the solution is supposed to balance?
– **Solution:** What is the solution that resolves the conflicting forces mentioned in the problem statement and the forces section?
– **Details:** How can the solution be implemented?
– **Obstacles:** What needs to be considered for implementation?
– **Benefits:** What are the benefits of the solution?
– **Liabilities:** What negative consequences must be accepted?
– **Examples:** What are known examples in which the pattern is applied?
– **User role:** Who is the pattern meant for?
– **Tools:** What tools support the implementation of the pattern?
– **Related patterns:** What other patterns are related to the pattern described?
– **References:** Where can further useful information be found?

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[1] A detailed comparison of the Personal Learning Environment (PLE), e-portfolio, and LMS give Schaffert and Kalz [2009].

## 5. TOWARDS A PATTERN LANGUAGE FOR WORKING WITH ELECTRONIC PORTFOLIOS IN HIGHER EDUCATION

I this section we provide a succinct, but not superficial view of a pattern language for e-portfolios. The presentation relies mainly on the basic aspects as illustrated and discussed above. Presentation format and structure are selected in a way that allows inexperienced people in e portfolio work– teachers as well as students who do not have a kind of meta-language for speaking about what they do – to gain a quick overview. Therefore, we want to introduce the basics of e-portfolio work and e-portfolio design by the use of proven examples. This is based on the idea that the learning outcome will be maximized if students try out as many of the proposed patterns as possible in a personal e-portfolio. The main focus therefore rests on operational sequences and the formulation of production rules for e-portfolios.

### 5.1 Structuring of the Pattern Language

#### 5.1.1 *Overview of the Pattern Language for E-Portfolios*

Just as individual words are the living components of any natural language, individual patterns are the living components[2] of any pattern language. In *A Pattern Language: Towns, Buildings, Construction* [1977] Christopher Alexander defined a total number of 253 patterns for the design of cities and buildings. He sees aesthetically perfect and sustainable architecture as a whole, the relationship of its components as a language. The description of archetypal forms and their relationships with each other result in a specific order and structure, a kind of grammar for the use of the (pattern) language. Alexander ordered his patterns according to their scale, i.e. from the larger pattern (city planning) to the smaller pattern (building design). Our pattern language for e-portfolios is structured in the same way.

The patterns within this pattern language form a network of 38 linked patterns. The relationship between the individual patterns provides the basis, the "grammar" for the users' exchange of information on the pattern language for e-portfolios. However, users of this system of patterns must adapt the individual patterns to meet their current needs. Figure 1 shows the five groups of patterns, which can be used for e-portfolio work by students and teachers, and illustrates the function and interaction of the different patterns within the pattern language.

#### 5.1.2 *Patterns for E-Portfolios*

This paper will describe the entry pattern E-PORTFOLIO and three of his subordinate implementation options – REFLECTION PORTFOLIO (aka ACCUMULATION WINDOW), DEVELOPMENT PORTFOLIO (aka OVERVIEW WINDOW), and PRESENTATION PORTFOLIO (aka BRAND WINDOW) (see Figure 2). Regardless of the concept that it is mainly the REFLECTION PORTFOLIO supporting the personal learning processes in higher education – both as a learning portfolio as well as an assessment portfolio (see taxonomy for e-portfolios) –, this pattern collection includes the other two portfolio types as well. On the one hand, a holistic understanding of the e-portfolio concept assumes that e-portfolios created at school and university after graduation do not only remain as loose e-portfolio views in appropriate file storages, but continue to be used or updated as development and presentation portfolio; on the other, a main goal of all e-portfolio work has to be the training and teaching of students about the culture and the technology of e-portfolio use, so that they realize the value of their own development and presentation portfolios, which go beyond the limits of study and training context.

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[2] In the first volume of his book *The Nature of Order* [2004] Christopher Alexander speaks about the concept of "life", "wholeness" and "centers". He defines 15 (in reference to physical space) fundamental properties which he holds responsible for good, holistic design solutions. One of these structural properties he calls "strong centers". These "strong centers" represent a marked reference and starting point, surrounded by other (smaller) centers. Liveliness is supported by strong, particularly dominant centers. They help to identify the most important parts of a design. This reasoning can be equally applied to natural languages as well as to pattern languages: A (pattern) language becomes lively when some words (articles, adjectives, etc.) or secondary patterns form groups around individual words (e.g. nouns) or primary patterns, resulting in groups of words, phrases, sentences and whole texts and thumbnail patterns, patterns or meta-patterns.
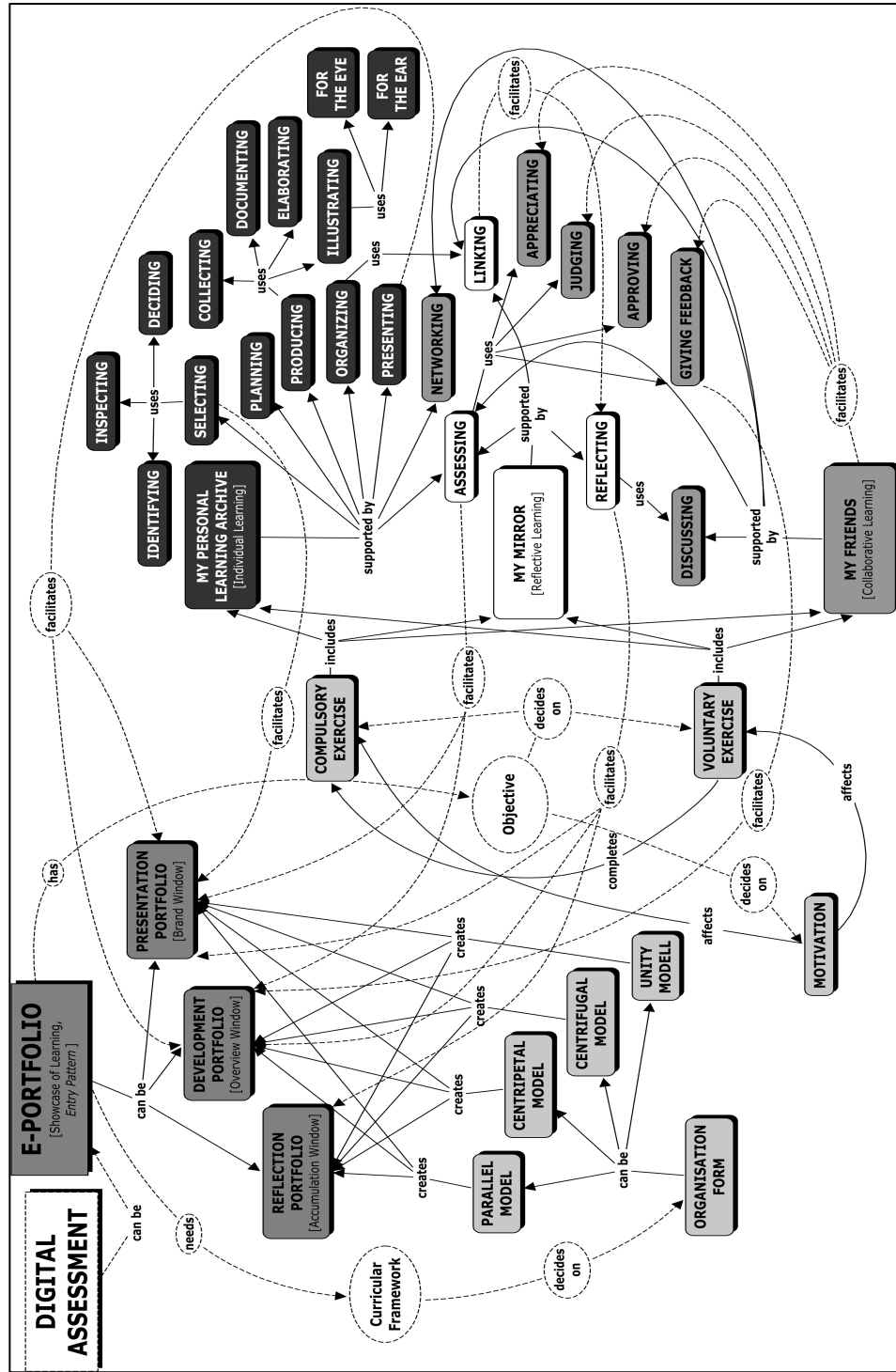
Fig. 1. Pattern Map – This pattern map shows the relation between the different e-portfolio patterns and how they support each other. The map shows that some patterns are applied especially to the organization of e-portfolio work while other patterns are more important for individual, reflective, and collaborative learning. The entry pattern E-PORTFOLIO (aka SHOWCASE OF LEARNING) and the three main patterns REFLECTION PORTFOLIO (aka ACCUMULATION WINDOW), DEVELOPMENT PORTFOLIO (aka OVERVIEW WINDOW), and PRESENTATION PORTFOLIO (aka BRAND WINDOW) will be described in this paper.
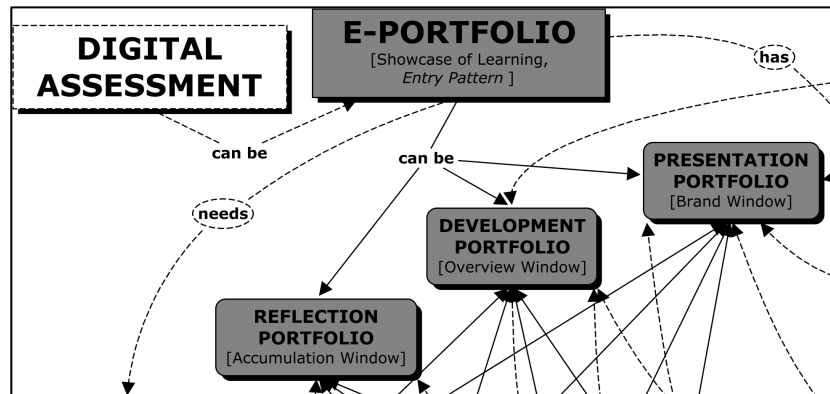
Fig. 2. Entry Pattern and the three main e-portfolio patterns

## 6. CATALOGUE OF PATTERNS

In the following sections we will describe the entry pattern E-PORTFOLIO, and the three subordinated e-portfolio patterns REFLECTION PORTFOLIO, DEVELOPMENT PORTFOLIO, and PRESENTATION PORTFOLIO.

As students use new tools to create their learning products (artifacts), teachers need new ways to assess their work and help them showcase it. Therefore, E-PORTFOLIO can be used for measuring students' achievement and learning.

The basic goal of REFLECTION PORTFOLIO is to support the student's own acquisition of knowledge or competences via reflection (self assessment) of the learning outcomes after the independent creation of individual (learning) products. Social learning and reflecting together as a group, either on the learning product (peer assessment) or learning process (peer-to-peer learning), are important aspects.

DEVELOPMENT PORTFOLIO supports personal development. Like REFLECTION PORTFOLIO (learning product and learning process portfolio), it also facilitates knowledge and competence acquisition. The difference lies in the learning goals. Although they are self-determined and self-organized with regard to knowledge and competence acquisition, the general objectives are predetermined externally.

The aim of PRESENTATION PORTFOLIO is to demonstrate something, i.e. artifacts with regard to acquired knowledge and competencies. The student generates a portfolio view where all the necessary requirements can be seen, and possibly used for assessment by a teacher or potential employer. This type of portfolio does not necessarily have to be developed for the purposes of job application, but to promote oneself, the "Brand Me".

Table 2 outlines the common and distinctive characteristics between the three patterns mentioned (the large X means that the item is important and has to be considered as distinctive aspect), and Figure 3 visualizes their relationship to each other with regard to time frame, reflection, feedback, and assessment.

It must be noted at this point that all e-portfolios contribute generally to all aspects, although some items have more and some have less importance. This is sharply underlined by the entry pattern E-PORTFOLIO.

Another important point to note is why there is a difference between expected timeframe sequence (retrospective – current – prospective) and timeframe sequence shown in Table 2 and Figure 3: Depending on the type of e-portfolio, its structure may be retrospective, prospective, or current:

– REFLECTION PORTFOLIOs are primarily retrospective, i.e. they are "oriented to the past, although learning has effects on the future as well" [Baumgartner 2009, p. 40]. Reflecting on accomplished work and experience represented by artifacts always means viewing into the past, regardless of whether students draw conclusions for the analysis of their current learning situation and for their future learning products.

– DEVELOPMENT PORTFOLIOs are primarily prospective, i.e. they are "oriented to the future" [ibid.]. They may include reflection on some past learning situations, but normally they are used to overcome qualification gaps.

– **PRESENTATION PORTFOLIO**s are primarily used to present current work and performance, therefore they are oriented by the present.

Table 2 Common and distinctive characters

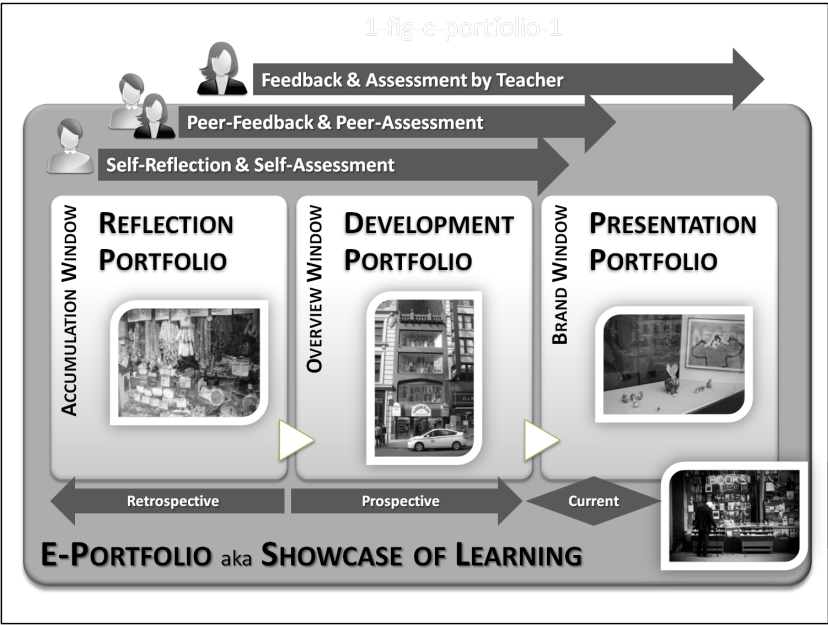| PATTERN | Time Frame | | | Reflection & Feedback | | | Assessment | | |
|---|---|---|---|---|---|---|---|---|---|
| | Retrospective | Prospective | Current | Self | Peers | Teacher | Self | Peers | Teacher |
| REFLECTION PORTFOLIO | X | | | X | X | | X | X | |
| DEVELOPMENT PORTFOLIO | | X | | X | X | X | X | X | |
| PRESENTATION PORTFOLIO | | | X | | | | | | X |



Fig. 3. The patterns of this paper and their direct relationship to each other

## 6.1    E-PORTFOLIO (aka SHOWCASE OF LEARNING)



A showcase, or vitrine, is a glassed-in cabinet or display case for displaying delicate or valuable articles such as objets d'art or merchandise in a shop, museum, or house.[4]

Fig. 4. E-PORTFOLIO aka SCHOWCASE OF LEARNING[3]

### 6.1.1    *Context*

Normally, the final product (artifact) of a learning process is the basis for conventional assessment. The objective of conventional assessment is the identification of deficiencies. The main concern is to identify, everything wrong as accurately as possible. This does not only ignore the fact that errors are essential components of any action and therefore also of learning but also that reflection is an engine for learning and a link to learning products.

### 6.1.2    *Problem*

**How can learning products and learning processes for creating an opportunity to assess records of achievements be simultaneously documented and reflected from a holistic perspective?**

### 6.1.3    *Forces*

– As education systems continue to be results-oriented, today's institutions of higher education operate like private enterprises, "where students are considered more like production units that need to focus on result and exams, than independent learners who can be encouraged to reflect upon what and how they learn" [Blomqvist, Handberg & Naeve 2003].
– Mass courses complicate the use of alternative forms of learning outcomes assessment.
– The control of learning processes by means of appropriate technological tools requires additional time.
– Reflecting learning processes means to learn reflecting. Students have to analyze how they learn. That involves learning by reflecting on their experiences, their feelings, and their theories in use. Schön [1983, p. 68] describes the procedure as follows:

> […] the practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behavior. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation.

– From the teachers'/lecturers' point of view: Learning is often still interpreted as a "learning for grades" [Häcker 2006a, p. 16, our translation], and not as a lifelong process, independent of grades, i.e. students today tend to focus on their learning results (a list of passed courses) rather than on their learning process (reflection upon why, what and how to learn). That means that, e.g., tying written tests to grades does not necessarily work because being capable of storing and reproducing information heard or read in response to specific commands, in the underlying case, in a test, is necessarily no proof that the student has learned anything. The student may have memorized a subject matter without fully realizing or understanding what

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[3] © Jon Nicholls [http://www.flickr.com/photos/fotologic/3163800605].
[4] http://en.wikipedia.org/wiki/Showcase [May 02, 2012].

it means, but nevertheless he/she receives a good grade. That maintains a strong link to the first force described above: Today good grades are still the benchmark used to determine if a student has learned his/her lessons, regardless of whether this is true or false.

– From the students' point of view: In order to be able to take a holistic approach, any learning outcomes assessment must equally consider both product and process description linked with accompanying personal reflections.

### 6.1.4    *Solution*

**An e-portfolio is a specific form of a content management system (CMS), which acts as electronic collection of digital artifacts and as reflection(s) on these artifacts.  Data can be made available to a large number of users over the Internet at which the e-portfolio represents a collaborative approach to assessment.**

### 6.1.5    *Details*

The specific structure of an e-portfolio to which different groups of users have different access (i.e. read and write access) allows students to combine learning material and learning process, thus creating a basis for reflection on their own learning. Access to integrated databases and the ability to place hypertext links between documents (see the pattern map in Figure 1, especially LINKING), enables authors to collect artifacts in the form of various media types (audio, video, graphics, text, etc.) and organize them in their e-portfolios. Linking (learning) objectives, artifacts and reflection not only supports but provides a formative (self-) evaluation of (lifelong) learning.

The collaborative approach to assessment is shown through e-portfolios facilitating both student self assessment (reflection on learning processes and learning strategies) and peer evaluation (helpful feedback on how to continue with individual study and work) and enhancing the professional, personal, and social development of the student.

Due to different uses of (e-) portfolios there are a number of metaphors [Barrett 2009; Häcker 2006b], trying to clarify what is meant by an (e-) portfolio. Bräuer [2000] compares (e-) portfolios with a shop window, a "showcase". What is the essence of a shop window or display window?

> A display window (most commonly called shop window […] or store window […]) is a window in a shop displaying items for sale or otherwise designed to attract customers to the store. Usually, the term refers to larger windows in the front façade of the shop. […] Putting a window display of merchandise in a store's window is called "window dressing", which is also used to describe the items displayed themselves.[5]

Given this definition of commercial windows, the use of the term "shop window " or "showcase" for (e-) portfolios is easily comprehensible: Students purposely design their e-portfolios like shop windows or showcases, and so provide more or less deep insights into their personal learning biographies.

Due to the fact that both lecturers and students have to use appropriate technological tools (e.g. specific software), from an administrative point of view, e-portfolio work requires additional time and might be labor-intensive, especially with regard to large groups. To meet this challenge, higher education institutions have to provide special training and instruction for students and staff members.

A feasible and effective approach to getting away from grade motivated learning is introducing a mentoring or buddy system (see the pattern map in Figure 1, especially MY FRIENDS, supported by ASSESSING, NETWORKING, LINKING, and facilitating GIVING FEEDBACK, APPROVING, JUDGING, and APPRECIATING). E-portfolio work is a constructivist model of learning, with the aim of further developing students' reflective practice, goal setting, and self-evaluation and assessment. Bauer [2009] argues that students cannot limit their reflection process to pure self-reflection, to pure introspection. They must continuously share their ongoing work on e-portfolios with others, in order to gain meaningful feedback from peers and teachers/lecturers, which is essential for reflexive learning processes. Therefore, collaboration (peer-to-peer learning) is an important aspect of e-

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[5] http://en.wikipedia.org/wiki/Display_window [May 02, 2012].

portfolio work. Final exams or tests can be prepared by the student working alone, but the student, who has once experienced the benefits of e-portfolio work, considering both product and process, will recognize that learning is as a lifelong process, independent of grades.

### 6.1.6    *Obstacles*

− The e-portfolio work must be well prepared (training in handling the used technical tool, negotiation of assessment criteria, guidelines for the e-portfolio work concerning timetable, details of compulsory and voluntary exercises, number of posts, set of guidelines for peer feedback as well as dates for e-portfolio interviews, etc.).
− The e-portfolio work should not be an isolated application of a single course. In order that students learn to recognize the value of an e-portfolio as documentation and reflection tool, e-portfolios should result from different working areas of the students (such as language training, academic research, didactics, etc.); this will eventually facilitate the use of contents in other contexts (e.g. application portfolio) as well.

### 6.1.7    *Benefits*

− E-portfolio work completes conventional assessment methods (oral exam, test, etc.). The focus is on skills development of students.
− Reflection on learning comes to the fore, not only the final product is the main purpose of learning interest, but also the path, the learning process.
− E-portfolio work encourages cooperation between students (peer-to-peer learning). Informal and independent learning become more important.
− E-portfolio work will result in the fact that teachers or lecturers transfer the responsibility for the success of learning to the students. This leads to a fundamental change in the teaching and learning culture: students are the center of attention at all times.
− Individual talents and creativity of students will be encouraged.
− E-portfolio work, compared with paper-based portfolio work, opens up new potentials: rearrangement, edition, and combination become easier for students; depending on the target group, e-portfolios offer flexibility of presenting content, both multimedia and text-based; students may link their portfolio elements to external sources and references by using hyperlinks, thus facilitates the reflection on different subject areas, learning experiences and artifacts spread on the web; e-portfolios can be accessed anywhere, anytime, and shared with others.
− Creating an electronic portfolio helps students to develop their ICT skills.

### 6.1.8    *Liabilities*

− Due to the individual nature of e-portfolios, evaluation will be difficult. A purely formal comparison is not possible.
− All parties concerned must expect an enormous amount of time: students in terms of creating their e-portfolios (e.g. correct handling of the selected software), teachers and lecturers with regard to the evaluation of e-portfolios.
− There is a risk that "glossy portfolios" [Bräuer 2006, p. 257, our translation] arise which do not reveal the learning process of their creators.

### 6.1.9   *Examples*



Fig. 5. E-Portfolio view created with the open-source e-portfolio software *Mahara*[6] [Bauer 2012]

The particularity of this example is the linking of several *Mahara* e-portfolio views (different artifacts, research diary, etc.) that facilitates a deeper insight into the ongoing learning process of the creator.

In addition to specific software solutions like *Mahara* , wikis (see Figure 6) and weblogs (see Figure 7) are also suitable for the creation of an e-portfolio.
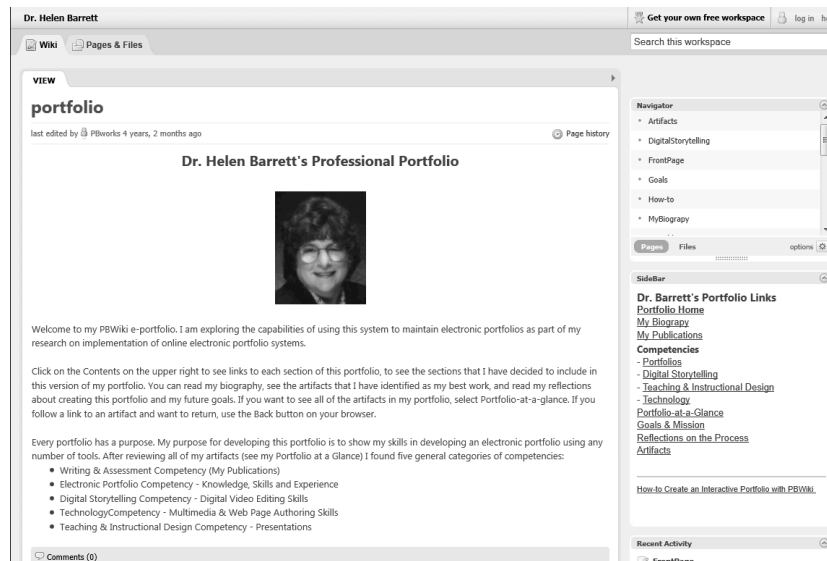


Fig. 6. Professional e-portfolio created with a wiki on PBworks[7] [Barrett 2007]

Fig. 7. Weblog used as e-portfolio [Häfele 2012]

### 6.1.10  *User role*

Lecturers and students

### 6.1.11  *Tools*

– E-portfolio software providing an access framework that facilitates different views of an e-portfolio, as well as features like an integrated weblog, resume builder, and social networking system that enables users to connect and create online learner communities,
– Wikis (e.g. web software like *PBworks*, *MediaWiki*, etc.), or
– Weblogs (e.g. web software like *WordPress*, *Movable Type*, *Drupal*, etc.)

Choosing a useful technical tool in support of the work on e-portfolios is quite difficult and depends on the respective requirements of the higher educational institution, the lecturer, or the student. Different software solutions provide different functionalities.[8]

### 6.1.12  *Related patterns*

E-PORTFOLIO is linked to the super ordinate pattern DIGITAL ASSESSMENT[9]. It is the entry pattern that will be refined within the collection of design patterns for e-portfolio work; REFLECTION PORTFOLIO (ACCUMULATION WINDOW), DEVELOPMENT PORTFOLIO (OVERVIEW WINDOW), and PRESENTATION PORTFOLIO (BRAND WINDOW) are linked to it, but they are subordinated to the pattern E-PORTFOLIO.

After having chosen a particular e-portfolio software – generally done by the teacher or lecturer –, students create REFLECTION, DEVELOPMENT, or PRESENTATION PORTFOLIOS for specific modules or university courses.

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[8] For analysis and evaluation of educational, organizational and technological basis of e-portfolios see Himpsl et al. [2009] and Hornung-Prähauser et al. [2007].

[9] Mor, Mellar, Pachler and Daly [2011], Santos, Hernández-Leo, Navarrete and Blat [2011] and Villasclaras-Fernández, Hernández-Leo, Asensio-Pérez, Dimitriadis and Martínez-Monés [2011] provide detailed information on already existing (e-) Assessment and Learning Patterns.

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## 6.2    REFLECTION PORTFOLIO (aka ACCUMULATION WINDOW)



*Accumulation*: (noun) 1: an increase by natural growth or addition [syn: accretion] 2: several things grouped together or considered as a whole [syn: collection, aggregation, assemblage][11]

Fig. 8. REFLECTION PORTFOLIO aka ACCUMULATION WINDOW[10]

### 6.2.1    *Context*

In general, students produce a lot of work (from exercises through to seminar papers, reports, presentations, notes on scientific projects and papers, videos, podcasts etc.) related to their university courses or modules, in order to use this accumulated work as proof for their knowledge or competencies they have achieved.

### 6.2.2    *Problem*

**Many of these documents created as the basis for assessment are ignored afterwards, left on top of shelves to gather dust, or forgotten in computer files, rather than being used a second time. How can we observe, accompany, and document personal learning experiences (i.e., the achievement of a specific learning objective, or the solving of a given learning task) to define a new, future learning objective?**

### 6.2.3    *Forces*

– Learning products are archived but not used as starting point for future projects.
– To get a positive feedback students often demonstrate a defensive attitude to learning. According to Rihm [2006] that must be interpreted as students simulating learning processes in order to avoid bad results and related drawbacks. With regard to design, structure, and presentation of their work, students focus on expectations imposed from outside, i.e., expectations of both teachers and peers.
– There are many hybrid forms of process and product portfolio. Thus making a distinction between self-directed learning portfolio and other-directed assessment portfolio is difficult.
– Allowing the teacher or lecturer gaining an insight into the different stages of one's learning path is not the primary goal of a learner. Learning processes are intimate and individual. A student will decide whether and how much he/she reveals about his/her learning experiences. Rihm [2006, p. 56] concludes that self-representation is not mandatory, i.e., to turn inside out is not a prerequisite for a profitable completion of a learning loop.
– Due to basic conditions for a learning situation (e.g. time and resources available for the fulfillment of a certain task, possibilities to interact, etc.) a student's work does not always give sufficiently clear information on whether he/she could finish a specific learning project in accordance with his/her learning interests.

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[10] © Reinhard Bauer.
[11] http://www.wordiq.com/accumulation [May 02, 2012].

### 6.2.4 *Solution*

**Students create reflective portfolios in which they record self-reflections (i.e., looking back on completed work, capturing individual thoughts on ongoing work, and reviewing past and present work for setting future goals), peer feedback on their work and different steps in the goal achieving process.**

### 6.2.5 *Details*

The reflection portfolio supports the acquisition of knowledge or competencies via reflection (review, discussion with peers) of the learning outcomes after the independent creation of individual (learning) products. In this context an important role is attributed to retrospection because "reflection on a product is a view into the past: The artifact is already produced and reifies accomplished work and objectified experience" [Baumgartner 2009, p. 40]. For students it is possible to draw "conclusions for the analysis of the current situation and for the next learning product" [ibid.].

In order to be able to observe the personal learning progress and reflect on it, particularly with regard to specific learning objectives, students select all artifacts that arise during the learning process most likely verifying the achievement of the planned objectives, which may be considered as the starting point for the setting of new, future learning objectives.

When designing a reflective portfolio, a distinction (Figure 9) has to be drawn between an e-portfolio with the primary objective of documentation and reflection on the own learning progress with regard to a planned learning objective (learning portfolio) or an e-portfolio used for assessing a learning task in a specific learning context (assessment portfolio, see PRESENTATION PORTFOLIO).
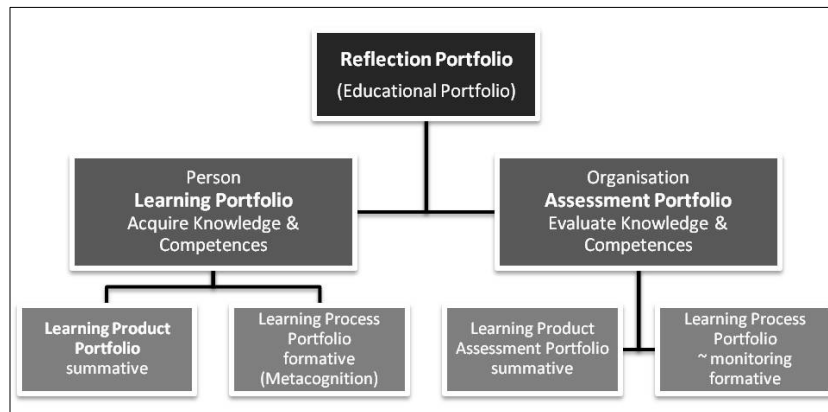


Fig. 9. REFLECTION PORTFOLIO as Learning & Assessment Portfolio [Baumgartner 2009, p. 33]

By applying the metaphor of shop window, a reflective portfolio can be assumed an accumulation window giving customers an idea of the extent of the range of products. In this case, the customers are other learners (peers) and / or teachers, and the products are artifacts, resulting from self-defined learning objectives or a given learning task, and the linked reflections.

Learning portfolios must be managed and maintained by their owners or creators who are motivated by personal incentives and their curiosity. As for assessment portfolios, however, the learning tasks and assessment criteria are coming from the outside, i.e., that they are determined by the teacher. Basically, students and teachers must distinguish between product and process orientation.

### 6.2.6 *Obstacles*

– Using an extract of the reflective portfolio as the basis for assessment (see Presentation Portfolio), the learning results must always be interpreted in relation to the basic conditions (time, resources, interaction, etc.).
– The learning content requires an "active role assigned by the learner" [Rihm 2006, p. 55], i.e., learners need to recognize the importance of learning content for their own development, their lives respectively.

− Students are always the creators and owners of their e-portfolios. With regard to their learning path, they decide on who should see what, when and for how long. This is no minor issue, especially when it comes to using a reflective portfolio for assessment purposes.
− If a learning portfolio will be used as an assessment portfolio, students and teachers or lecturers should agree upon possible assessment criteria already before the actual start of the e-portfolio work.
− Reflection portfolios must be part of a "confidence-building action context" [ibid., p. 58], i.e., there must be times free from censorship, the interests of learners must be the focus, learning objectives and learning tasks must be authentic, and, for the realization of the learning projects, special support by the teachers must be guaranteed.

### 6.2.7    *Benefits*

− Analogous to accumulation windows, reflective portfolios document and reflect all paths to solutions (inclusion of success) and non-solutions (inclusion of failure) for action problems, regardless of their (future) interpretation of teachers and / or peers.
− Collecting and reviewing artifacts allow students to assess their own actions in specific learning situations and to develop competencies, competences for life respectively.
− The focus is not only on learning products, but the whole learning process, from planning to individual learning steps, up to the achievement of each objective, thus making the achievement growth, transparent and comprehensible for both the learner and the teacher or assessor.

### 6.2.8    *Liabilities*

− Students might collect anything that is related to a specific learning project. This poses the risk of ambiguity. So, in order to produce reflective portfolios, students must take responsibility, their learning must be self-determined and structured, as well as they should have a healthy degree of self-evaluation competence.
− Students only provide insight into their learning processes, which they consider meaningful enough to allow drawing conclusions on their learning progress.
− A clear separation of learning and assessment portfolio is often not possible.

### 6.2.9    *Examples*

Figure 10, Figure 11 and Figure 12 show different students' e-portfolio views. These e-portfolios support lifelong learners in reflecting on their personal and professional goals.
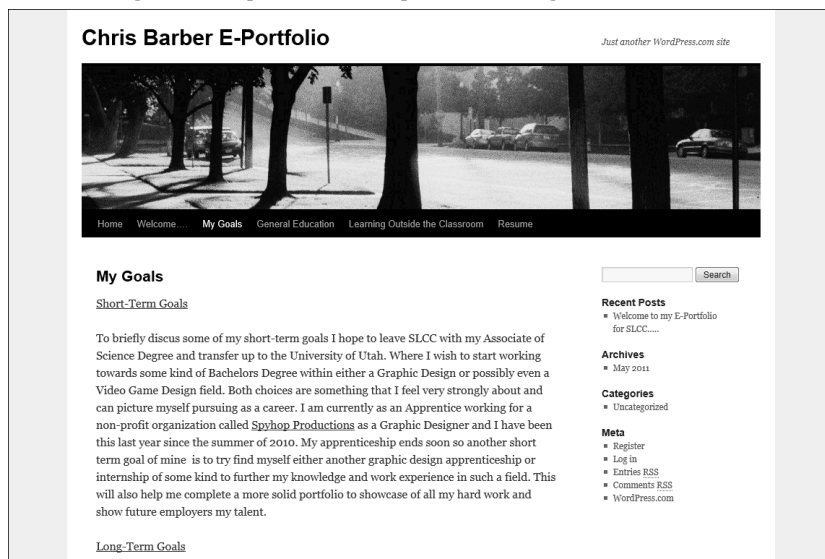


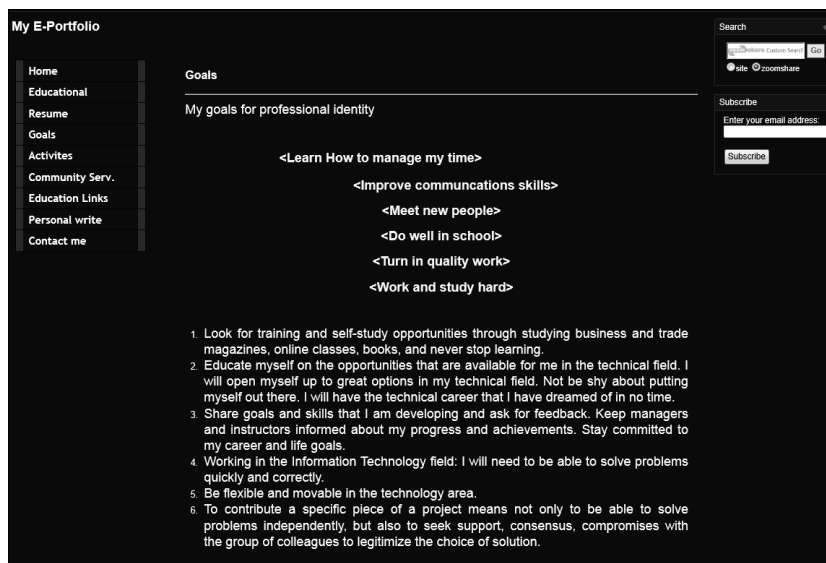Fig. 10. A list of general learning goals [Barber 2012]

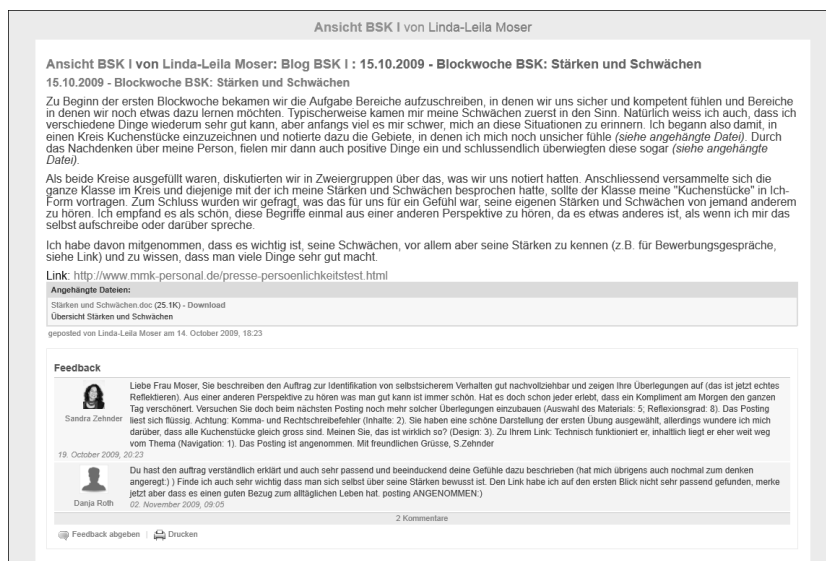Fig. 11. A list of personal learning goals [Lozada 2012]



Fig. 12. Analysis of strengths and weaknesses [Moser 2009]

### 6.2.10   *User role*

Lecturers and students

### 6.2.11   *Tools*

Databases or file storage systems for archiving artifacts, learning journals / weblogs to reflect the artifacts, user profiles with detailed competence information, community-systems for discussion (ideas, views, etc.), communication, and user and policy management; different systems and platforms for the e-portfolio design, and technical implementation.

### 6.2.12   *Related Patterns*

The pattern REFLECTION PORTFOLIO, along with DEVELOPMENT PORTFOLIO and PRESENTATION PORTFOLIO, is a subordinated pattern, linked to the primary and entry pattern E-PORTFOLIO (see Figure 3).

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## 6.3  DEVELOPMENT PORTFOLIO (aka OVERVIEW WINDOW)



*Overview:*  (noun) 1: a general summary of a subject; "the treasurer gave a brief overview of the financial consequences"[13]

Fig. 13. DEVELOPMENT PORTFOLIO aka OVERVIEW WINDOW[12]

### 6.3.1  *Context*

In formal and informal learning processes, students gain valuable experience, which they incorporate into a variety of different documents on learning achievement and learning products (artifacts), increasingly in electronic format, and stored in different places.

### 6.3.2  *Problem*

**How can relevant evidences of learning products (artifacts of personal learning processes and learning outcomes), over a long period of time and across formal educational contexts and institutions, be summarized in an overview for the purpose of continuous planning of the own further development?**

### 6.3.3  *Forces*

− The dislocation and the lack of structure of the existing material prevent the use of this material as source for planning of personal development (e.g. formulating and setting of personal work-related goals), the certification of skills and competences, self-assessment, biographical reflections, etc.
− A large number of documents results in chaos and confusion: "[…] uploading a raft of digital documents to a Web site or storage space does not necessarily create much value or convenience for the user because those documents have to be read and reviewed to make them useful" [P. Seldin, Miller & C. A. Seldin 2010, p. 67].
− Organizing and structuring ongoing work is time-consuming because students have to take on the challenge and constantly update the entries related to their improvements in learning performance.
− Before online storage becomes useful, students must think about the differences, benefits and liabilities of traditional possibilities for storing data and electronic ones, as well as "small islands" of information spread across the Internet using different storage space: "[…] the transition from old ways […] to new ways […] requires more than just substituting one format to another. It requires rethinking the whole process under transition" [P. Seldin, Miller & C. A. Seldin 2010, p. 64].
− Looking for the big picture, i.e., getting an overview of artifacts and corresponding data like reflections require an organized folder structure so that the materials are easily retrievable.

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[12] © Reinhard Bauer.
[13] http://www.wordiq.com/overview [May 02, 2012].

### 6.3.4   *Solution*

**Students keep electronic development portfolios which, over the years, provide a summary of individual learning plans, accomplishments, assignments, experiences etc., and which will thus help students think about their future.**

### 6.3.5   *Details*

Lifelong learning must be regarded as work in progress and is therefore limited not only to learning in formal educational contexts. Much of the learning takes place outside of educational institutions in informal (learning) contexts. Compared with reflective portfolios (especially learning product and learning process portfolio, see REFLECTION PORTFOLIO) development portfolios illustrate higher levels of acquired knowledge and competence due to the growing maturity and expertise of the students. Baumgartner [2009, p. 35] argues that "the learning goals are not set up completely freely or voluntarily by the learning individual himself, but are orientated around a bundle of operationalized goals […]. Although the breakdown of these goals is self-determined and self-organized, the general objectives are predetermined externally." Therefore, substantial parts of the portfolio which prove specific competence of a student may as well be used for assessment and incorporated into a presentation portfolio (see PRESENTATION PORTFOLIO).

The most important aspect of a successful development portfolio is an explicit statement of self-reflection: "Unexplained evidence is difficult for readers to understand and interpret" [P. Seldin, Miller & C. A. Seldin 2010, P. 37].

Personal development depends on failure and success, i.e., "something that did not work can lead to thoughtful revision of the approach so that it is more likely to succeed when tried again" [ibid., p. 38]. Therefore, development portfolios have to include a section where the student reflects e.g. on how he/she learned from the failure of a learning strategy.

With regard to a developing portfolio of course, in principle, we have to distinguish whether it is a personal development portfolio (qualification or competence portfolio), or an organizational career portfolio (see Figure 14). In practice, however, the boundaries are usually very smooth.
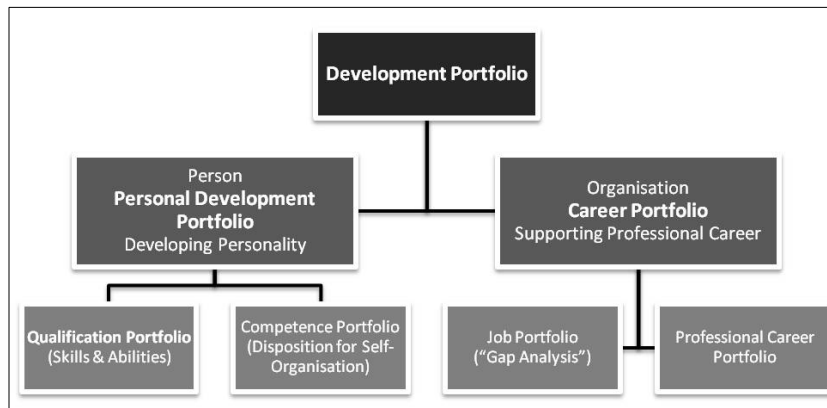


Fig. 14. DEVELOPMENT PORTFOLIO as Personal Development & Career Portfolio [Baumgartner 2009, p. 33]

By applying the metaphor of shop window, an electronic development portfolio gives a brief overview of the whole range of products; that means that the owner of the e-portfolio actually collects significant documents which are directly or indirectly related to personal development, whether short notes or complex project documentation. The most important thing is to structure the personal file storage so that every little learning product can be found as quickly as possible.

Another important aspect concerns the integration of feedback (peers, teacher). In this context, it is very important that the design of the formal framework of the development portfolio and its ownership rests with the students. They add and delete from the portfolio as they progress through formal and non-formal education opportunities. The same also applies to the patterns REFLECTION PORTFOLIO, PRESENTATION PORTFOLIO, and E-PORTFOLIO respectively.

### 6.3.6 *Obstacles*

− To maintain an overview of number and importance of all the materials gathered, the students have to be very consistent in choosing only appropriate documents to include in their development portfolio.
− Work on development portfolios is only successful when students and teachers focus on collaborative and competence based learning. In order to be able to adapt and transfer their learning from one setting to another, students have to be prepared for collaboration (e.g. peer-feedback and peer-assessment).

### 6.3.7 *Benefits*

− Students decide how they will use their development portfolio and whether only they have access to it, or whether they will share some parts with peers or lecturers.
− A development portfolio is work in progress and helps students to identify, focus and reflect on areas of interest across formal educational contexts and institutions.
− All the materials (artifacts and reflections) collected in development portfolios may be used to build a presentation portfolio (see Brand Window) which helps e.g. in applying for jobs, or as part of a formal course evaluation process.
− Development portfolios provide, over a long period of time, a kind of personal learning environments for recording, documenting and reflecting students' individual knowledge, skills, competences, achievements and expertise, and against that background they may be considered as a framework for lifelong learning.
− Development portfolios enhance reflective processes and keep students motivated.

### 6.3.8 *Liabilities*

− An electronic development portfolio without reflection(s) on learning/work objectives is "just a multimedia presentation, […] a fancy electronic resume or a digital scrapbook" [Barrett, 2000].
− Working with an electronic development portfolio gives rise to many questions concerning format, sustainability, hosting, server space, and accessibility.

### 6.3.9 *Examples*

Figure 15 shows the file storage of a personal DEVELOPMENT PORTFOLIO. Each individual portfolio view is assigned to a separate folder.
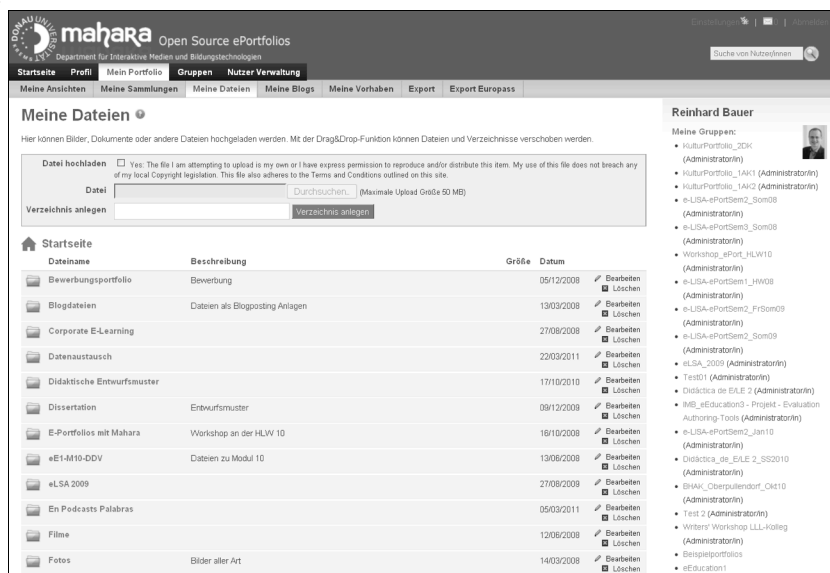


Fig. 15. File repository of a DEVELOPMENT PORTFOLIO

The owner of the e-portfolio shown in Figure 16 provides under the heading "Cockpit" an overview with regard to the work on her master thesis.
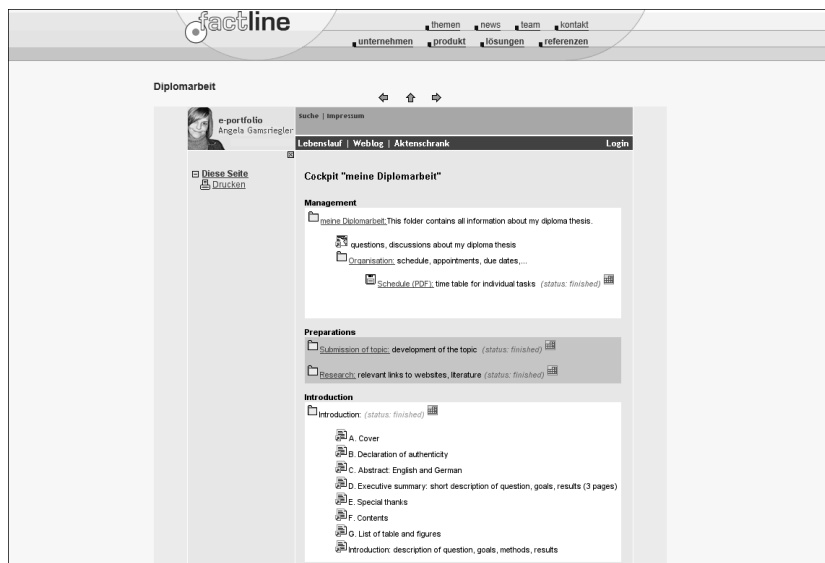
Fig. 16. File repository titled "Cockpit" and used planning a master thesis (Gamsriegler 2006)

### 6.3.10   *User role*

Students

### 6.3.11   *Tools*

Databases or file storage systems for archiving artifacts, learning journals / weblogs to reflect the artifacts, user profiles with detailed competence information, community-systems for discussion (ideas, views, etc.), communication, and user and policy management; different systems and platforms for the e-portfolio design, and technical implementation.

### 6.3.12   *Related patterns*

The pattern DEVELOPMENT PORTFOLIO, along with REFLECTION PORTFOLIO and PRESENTATION PORTFOLIO, is a subordinated pattern, linked to the primary and entry pattern E-PORTFOLIO (see Figure 3).

### 6.3.13   *References*

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## 6.4 PRESENTATION PORTFOLIO (aka BRAND WINDOW)



Personal branding is the process in which people and their careers are marked as *brands*. It has been noted that whereas previous self-help management techniques were about self-improvement, the personal branding concept instead suggests that success comes from self-packaging. Further defined as the creation of an asset that pertains to a particular person or individual; this includes – but is not limited to – the body, clothing, appearance and knowledge contained within, leading to an indelible impression that is uniquely distinguishable.[15]

Fig. 17. PRESENTATION PORTFOLIO aka BRAND WINDOW[14]

### 6.4.1 *Context*

Students are increasingly realizing that a simple collection of learning products or course certificates is becoming pointless, especially without providing any insight into individual learning processes that have led to the collection or certificates.

### 6.4.2 *Problem*

**How can students make their work and their progress in different (learning) contexts available for a specific target group within or outside their training or work site, work progress that has been documented, commented, and reflected on over a longer period of time, and that shows that they have dealt critically with the content of training, a course or module and personal learning processes?**

### 6.4.3 *Forces*

– Students as well as teachers may not be satisfied with the fact that their work and study results are documented and recorded and that their working and learning achievements were identified and assessed. The idea is to recognize that behind the collected learning outcomes are learning processes which have to become visible.

– In order to make available comprehensive information on personal work and progress, students have to develop personal learning objectives and to develop strategies to achieve these objectives. One of these strategies is reflection (see REFLECTION PORTFOLIO).

– Students need to learn how to easily identify what could be useful as evidence of progress towards a learning objective.

– By nature, self-reflection is subjective, an act of introspection about experiences and ideas. Therefore, especially if they want to enhance their personal brands, students have to use a clear language for reflecting and commenting on their artifacts in order to prevent misunderstandings and incomprehension arising from them.

– Students must be aware that learning is an ongoing process, not one-off or something that can be done and documented at the end of a course.

– Traditional learning strategies must be reviewed: a lifelong learning process is connected with peer learning activities (e.g. peer review).

– Informal learning processes in all areas of life become an elemental means of acquiring skills.

– The audience is the guiding factor for setting out selection criteria for appropriate artifacts.

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[14] © Reinhard Bauer.

[15] http://en.wikipedia.org/wiki/Personal_branding [February 11, 2011].

### 6.4.4    *Solution*

**Students create a presentation portfolio (showcase portfolio) by selecting the most successful works (good or best practice examples) or those they believe are most appropriate to clarify certain aspects of their learning biography, in order to leave an indelible impression of personal competences, skills and expertise that create awareness of their "Brand Me".**

### 6.4.5    *Details*

By using concrete works, the presentation portfolio provides any target audience with an impression of personal knowledge and skills acquired during formal and informal learning processes. The idea is to understand learning as a process that, for an entire lifetime, is never completed, and that e-portfolios are "open containers" [Schwarz 2008, p. 12, our translation] which through different windows provide differentiated insight into the personal development steps of a student and thus will contribute to the development of his/her digital identity, in the widest sense to the construction of the "Brand Me".

Comments and reflections are an essential part of the presentation portfolio. Each artifact presented is combined with appropriately informative details on why this work has just been selected and what are the potentials that can be illustrated by it.

Besides the presentation of essential experiences with regard to a long period, a presentation portfolio is suitable for the comprehensive representation of a self-chosen topic or individual sub topics of the overall topic.

If we compare the presentation portfolio with a shop window, it most closely matches the type of brand window. Among other reasons like dating, establishing friendships, self-expression, etc., obtaining a job is frequently an important goal of personal branding: "Similar to product branding, personal branding entails capturing and promoting an individual's strengths and uniqueness to a target audience" [Labrecque, Markos & Milne 2011, p.39].

As for the decoration of a brand window for a presentation portfolio a person selects certain artifacts. In principle, the range of possible artifacts is very large: from articles of books and journals, podcasts, photos and films, examples of collaborative learning using case studies, research papers, reviews, excerpts from learning journals, certificates of achievement (e.g. diplomas) to internship reports, transcripts of interviews or discussions, summaries of scientific articles, and much more.

A presentation portfolio can be created by an individual author, but also by an authoring team. In principle, with regard to presentation portfolios, however, we have to distinguish whether it is an e-portfolio in the form of a demonstration portfolio with the goal of applying for a (new) job or as a part of comprehensive self-promotion, or whether it is – at institutional level – a special company portfolio, i.e. a showcase or representation portfolio (see Figure 18).
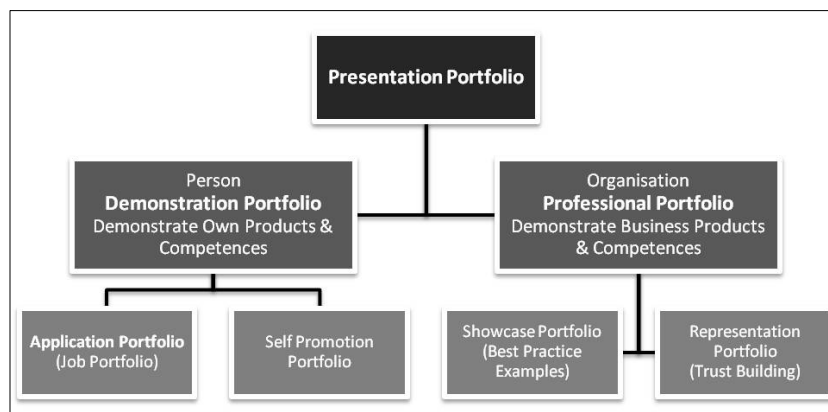


Fig. 18. PRESENTATION PORTFOLIO as Demonstration & Professional Portfolio [Baumgartner 2009, p. 33]

Students often create a presentation portfolio for a final exam or presentation, but it can, as well, stay with them for the rest of their lives (e.g. as application portfolio). If the e-portfolio is constantly updated, it will provide information about past and current phases of the career.

### 6.4.6 *Obstacles*

– The presentation portfolio must be concise and well-structured, and the student himself/herself may not be the best judge of the own work. Since it is often difficult to be objective about own work (artifacts selected and appropriate reflections), the student might have someone who comments critically the e-portfolio view (peer-to-peer feedback) prior to granting access to a potential employer or assessor (teacher, lecturer). This will ensure that the works selected, commented, and, finally, shown are the student's strongest works.
– The student's presentation portfolio should only provide a limited number of artifacts.

### 6.4.7 *Benefits*

– The presentation portfolio is a constant accompaniment to lifelong learning and an essential component of personal branding online.
– By creating presentation portfolios, researchers and scientists not only record their own career, but provide insight into their (professional) expertise offering downloadable articles, project reports, etc. Compared with reflection (Accumulation Window) and development portfolios (Overview Window), presentation portfolios exclusively focus on external presentation (and discussion) of selected artifacts.
– The artifacts (texts, audio and/or video files, etc.) in a presentation portfolio reflect the "implementation of the learning process, the application of abstract knowledge" [Baumgartner 2007, p. 21]. E-portfolio artifacts (documents and reflections) give more precise information on skills and abilities of the owner or the author than the use of marks as a form of assessment.
– For their presentation portfolio students do not only select the artifacts but also determine the type of presentation. Their different works can only be provided with an accompanying commentary, or presented using other documents which are closely linked to their development process.
– Presentation portfolios are "dynamic application folders" [ibid.], i.e. their creators and owners can, at any time, complete them with new and additional artifacts and reflections, and / or adapt them for specific target groups (the creators have the access control). That way they become "a strategic tool for planning of personal (career) development in a lifelong learning process" [ibid.].

### 6.4.8 *Liabilities*

– During the phase of implementing presentation portfolios (especially with regard to the selection of and reflection on meaningful artifacts) are very time consuming and moreover they require from their creators a very high level of creativity in order to contrast with the masses.
– Students must periodically update their presentation portfolios (update of used software, review of hyperlinks, etc.).
– The artifacts selected for a presentation portfolio reflect the personal preferences of the portfolio creator or the technical possibilities and limits of the chosen software.

### 6.4.9 *Examples*

Figure 19 shows a screenshot of an application portfolio. In this PRESENTATION PORTFOLIO the owner of the e-portfolio provides information on his academic and professional career, a comprehensive insight into his previous work and reflections. The artifacts selected relate mainly to his postgraduate master's degree and his (professional) involvement with the issue of e-learning and its theoretical and practical framework. Using selected examples, he wants to demonstrate the diversity of his broad expert competences.

Fig. 19. Part of a PRESENTATION PORTFOLIO [Bauer 2008]

Figure 20 shows a section of a weblog where the owner does not only provide an insight into his professional agendas, but in a special download section into his expertise as scientist.
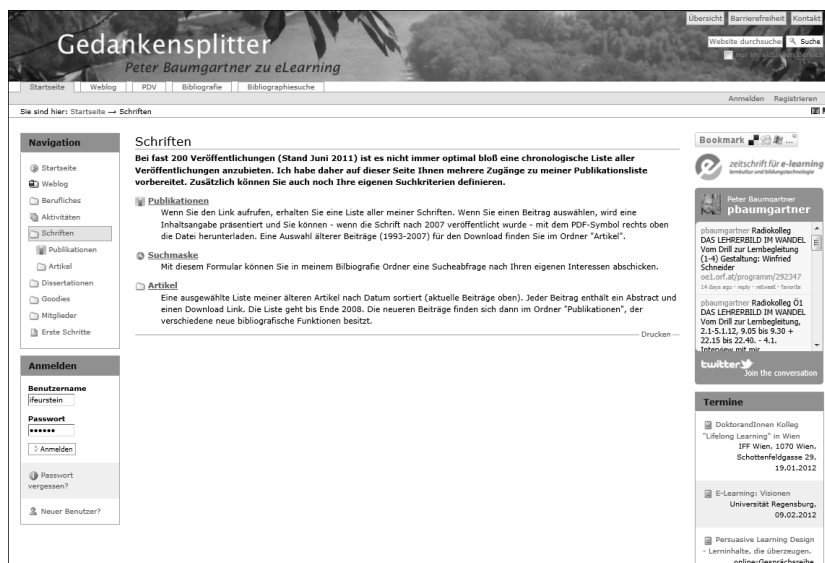


Fig. 20. A researcher's weblog [Baumgartner 2012]

### 6.4.10  *User role*

Lecturers and students

### 6.4.11  *Tools*

Databases or file storage systems for archiving artifacts, learning journals / weblogs to reflect the artifacts, user profiles with detailed competence information, community-systems for discussion (ideas, views, etc.), communication, and user and policy management; different systems and platforms for the e-portfolio design, and technical implementation.

### 6.4.12  *Related patterns*

The pattern PRESENTATION PORTFOLIO, along with REFLECTION PORTFOLIO and DEVELOPMENT PORTFOLIO, is a subordinated pattern, linked to the primary and entry pattern E-PORTFOLIO (see Figure 3).

### 6.4.13  *References*

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## 7.  ACKNOWLEDGEMENT

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