
THE USE OF EPORTFOLIOS WITHIN ACADEMIC PROGRAMS

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Abstract: Portfolios are generally considered a suitable tool to structure and support the academic education. First experiences, however, show that the added pedagogical value of portfolios is not always optimized. A framework was developed for (1) portfolio outcomes (What is mentioned in the literature as the added value?), (2) academic objectives (What can be used as a generic description of academic objectives?) and (3) portfolio learning environment (Which features are known as enhancing the intended outcomes?). A questionnaire was developed and distributed among 14 academic universities within the Netherlands. The results are representative for the current portfolio use. As main function of portfolio is mentioned the stimulation of students to take the direction of their learning process in their own hands. In general, the portfolio learning environment is poorly developed, i.e. requirements for the steps of the reflection process, standards for learning lines, frequency of usage, use of peer feedback and training of tutors' coaching skills. Systematically the results were in favour of portfolio usage for professional behaviour, compared to academic functioning and study career management. Requirements for the quality of the reflection process are probably a crucial factor. On the basis of this survey a *Checklist Portfolio learning environment* has been developed.

Keywords: academic functioning, professional behaviour, self-steering

1. Introduction

Since the Bachelor-Master structure has been implemented, we see a growing need to stimulate critical reflective thinking in order to distinguish academic programs from vocational-oriented bachelor and master programs. At the same time, communication skills, learning skills and professional behaviour need to be given more explicit attention, this in addition to cognitive learning goals. Portfolios are generally considered a suitable tool to structure and support the education in those skills. However, the first experiences with portfolios for academic goals show that the added pedagogical value of portfolios is not always optimized.

2. Research questions

These experiences have led us to formulate the following questions: Are the advantages of the instrument used in an optimal way? Are the learning objectives, for which portfolio is used, in itself seen as relevant by students and tutors? And, are the learning environments appropriate to reach these objectives? To answer these questions, we examined the ways portfolio is used at academic universities within the Netherlands.

3. Development of a generic framework for portfolio outcomes, academic objectives and the learning environment

In order to develop a generic framework for portfolio outcomes, academic objectives and the learning environment, we did a quick scan of the Dutch literature on these subjects. (We did restrict ourselves to the Dutch situation: the portfolio usages within the Netherlands have generally less to do with career management than in the UK or USA for instance.) The main goal of this scan was to figure out:

- What is mentioned as the *added value of ePortfolio* in general? Or, in other words: which specific learning objectives or *student outcomes by using portfolio* are found?
- What can be used as a generic description of *academic objectives*?
- Which features of the *portfolio learning environment* are currently known as enhancing the intended outcomes?

3.1. What is mentioned as the added value of ePortfolios?

ePortfolio is an instrument with which a student can document and organize feedback on his development. The archive function and the communication function are the core features of the tool.

The archive function allows a student to document and analyse a variety of comparable products and experiences. In this way he is able to discover patterns in his functioning, his style, the underlying views and attitudes. *Recognition of patterns* is a necessary condition for a self directed growth. Students learn to analyse experiences, to get a deeper understanding of connections, of their own role in and contribution to the common achievement in order to draw conclusions on a higher level of abstraction.

The communication function is useful in two ways. Firstly, it enables the student to compare the estimation of his capacities and ideas about the direction of his further development with the opinions of others and to ask for the specific guidance he might need. Secondly, students can show their portfolio for the sake of, for instance, (midterm) assessments and applications. "From the qualitative research into the functions portfolio can fulfill, we conclude that those functions mainly can be found in the communication which arises with students about the demands for 'self-steering' and development of competences, in depth as well as breadth" (Elshout-Mohr et al, 2004).

If one wants students to take more responsibility for their learning process (self-steering), one has to design adequate training tasks and make use of standards for the assessment. Only in this way students can be obliged to properly pass through every phase of the reflection process. When they do this regularly, the self-steering ability will grow. The reflection process is made up of several parts (steps), which have to be carried out successively. It starts with an estimation of one's competences in relation to specific standards; this implies an orientation on the specific learning goals and end qualifications (step 1). The self-evaluation is based on a series of products and learning experiences in relation to the standards (step 2). The third step is identification of patterns in one's own functioning. This identification of patterns will be substantially better when a student is obliged to underpin his claims systematically by a *selection* of the evidence from all the 'rough' material (Van Tartwijk et al, 2003). The last phase in the reflection cycle is the planning of the next step in one's education. In practice, the requirements for the reflection process often end with step 2, the self-evaluation (Elshout-Mohr et al, 2004). When a student has to meet clear requirements for each step, reflection will become more profitable and less 'vague'. Asking and giving feedback enhances further the quality of one's self-evaluations and contributes to a culture in which students get used to take responsibility for their development. Moreover, students become more conscious of standards for their performance and products. From learning psychology we know also that learning is a social event and as such peer feedback can be used to enhance the outcomes.

Requirements for the reflection process reflect the principles of coaching: in the coaching process the support is directed on the recognition of patterns in someone's behaviour and taking responsibility for one's contribution or role, within the context of specific goals and standards (Lingsma et al, 2003). Therefore, tutors have to know these principles as well and get trained in coaching skills.

By making good use of the two mentioned main functions of portfolios, a student is better able to steer his own development. Academic objectives, however, determine the *direction* of this development. Therefore a clear view on what is meant by academic qualifications is indispensable. Without a frame of reference, communication about development is pointless.

3.2. What can be used as a generic description of academic objectives?

Since the implementation of the Bachelor-Master structure, a generic framework for the academic objectives has been provided by the Dublin descriptors: these give a description of the (end) qualifications of an academic graduate. These descriptors were internationally accepted in 2004; they are formulated by a group of experts and adopted by the Dutch-Flemish Accreditation Organisation (NVAO).

The qualifications are described as five distinct competence domains: knowledge, application of knowledge, (reflective and critical) judgment, communication skills and learning skills. They are, however, highly interdependent: reflective judgment, for instance, cannot be shown without a solid knowledge base and communication skills. One of the demands for the accreditation of academic programs is that faculties make transparent in which ways students do obtain the end qualifications. This demand appeared to be a huge stimulant for the thinking in terms of learning paths or learning lines.

The Dublin descriptors are applicable to all sorts of academic disciplines, the more professional (with an extra accent on “learning to do”), the more research-oriented (with an extra accent on “learning to become a researcher”) and the humanities (with an extra accent on “learning to think”).

3.3. Which features of the portfolio learning environment are relevant for enhancing the intended outcomes?

Good use of portfolio makes its own demands upon the learning environment. From the experiences up till now we can distil several elements, which seem important.

Several years ago, together with the implementation of the Bachelor-Master structure, the board of the University of Utrecht decided that all faculties should use portfolios to support the development of academic skills. A survey in 2005 about portfolio use within this university did show that the users experienced the lack of explicit learning lines and lack of standards as the main problem. Also the (lack of) coaching of the student’s reflection skills and unclear status of the portfolio within the study program were reported as a problem. In general, the respondents from medical studies were more positive about portfolios than from the other faculties (Rubens and Oost, 2005). According to Oost portfolios were introduced too early in many faculties: the vision on academic education according to the new demands of the Bachelor-Master structure was not yet sufficiently crystallized (conclusion in his key note at a conference at the Vrije Universiteit Amsterdam, June 2006).

Because the Dublin descriptors are closely connected, the best way to acquire the qualifications is by training in authentic tasks. Ideally, a program consists of series of comparable, but varied authentic tasks (Merriënboer, 2005). A student can only learn to look for patterns in his own functioning if he gets sufficient experience with authentic tasks. In arts and sciences, where “learning to think” and “learning to become a researcher” is the main goal of academic development, authentic tasks are for instance: the organisation of a mini conference, a research project, design task (Milius et al, 2001). In studies where “learning to do” is more central, one could think of doing consultations in the practice of a general practitioner, “where the student can smell, see and feel the practice” (Jansen-Noordman and Merriënboer, 2002). In this way students learn from the start to use knowledge, skills and attitude integrally.

According to Merriënboer (2005) transfer to situations in practice is stimulated in this way. Portfolio would enhance this transfer still further because self-evaluation, reflection and self-steering tasks are inherent to portfolio. Experience based learning can be improved by systematic observation tasks.

In short, a clear view on end qualifications and learning lines, translated into sufficient and varied authentic tasks, a clear and well communicated view on the specific place of portfolio tasks within the total program and tutors trained in coaching techniques seem to be minimally required.

4. Questionnaire and method

In order to address the research questions, a questionnaire was developed on the basis of this framework – with the intended learning outcomes, (end) qualifications as frame of reference and the demands on the learning environment. The questionnaire has been tested among four portfolio experts from the Vrije Universiteit Amsterdam, two from departments and two from the Centre for Educational Training, Assessment and Research (CETAR). The revised version was once again filled in, this time by a fifth expert from CETAR.

The final version has been electronically distributed among the staff, involved in portfolio-usage at department level of all 14 academic universities within the Netherlands.

From the results five examples of ‘good practice’ were selected, based on duration of usage and high valuation of the benefit. Secondary criteria were: phase of the program (one bachelor and one master program) and main objective (academic functioning and professional behaviour). Staff and panels of students involved were interviewed in order to get a better insight into crucial factors for success. Citations from the interviews will be used by way of illustration.

5. Results

5.1. General results

Response

We got information about 43 portfolio applications; we missed maximally 5. At ten (of the 14) academic universities the response was 100%. In short, the data are representative for the ways portfolio is used at the moment at academic universities within the Netherlands. The range of applications is 0 to 14 per university (spring 2007). In the tables in the following section we use numbers instead of percentages: the number of applications is relatively small and the number of variables high.

Explanation of the categories used in Table 1 to 9. Main objectives for portfolio and types of programs.

We classified the main objectives for portfolio as follows:

- Academic functioning: learning to do research/to design, and communicate about it in a critical way; development of an independent, critical attitude,
- Professional behaviour: learning to practise an academic profession, independent, responsible and critical,
- Study career management: reflection on study motivation and study choices.

Accordingly, we made a distinction between sciences and arts on the one hand and professional studies on the other. (Reason for this distinction: portfolio for professional programs is more often evaluated positively than in more scientific programs.)

- *Arts & sciences* (arts and literature, social sciences, sciences, technical sciences etc.),
- *Medical studies* (medicine and dentistry),
- *Teacher-training programs* (for pre-university education and HE),
- *“Other of professional studies”* (master pedagogy, bachelor of law and bachelor of pharmacology).

Table 1: Number of usages of portfolio objective and type of program

Type of program	Portfolio objectives			N
	Academic Functioning	Professional Behaviour	Study Career Management	
Arts & sciences	16	5	5	26
Medical programs		4		4
Teacher-training program		8		8
Other of professional programs	2	2		4
N	18	19	5	42

Portfolio is used nearly as many times for academic functioning as for professional behaviour. In Master's programs the main objective is mostly professional behaviour (6 of totally 7). Portfolio for study career management is exclusively used in the Bachelor's phase.

5.2. Intended educational benefit and perceived relevance of main objectives

What was the intended result of portfolio use?

Most respondents answered this question with phrases like: “to give students the direction of their own learning process”, for all three types of objectives. Faculties try to influence the study attitude, to make students more responsible for their own achievements. According to a (science) tutor: “We want students to study actively, we want them to learn to ask for the feedback they need, get insight into the objectives of the program and their level of mastering the subject matter in relation to the end qualifications.”

We were interested to hear some perceptions of the students themselves about the outcomes. One chemistry student: “Peer review was useful. I was not inclined at all to ask feedback. For me it’s OK that I had to do it. Now, in our third year, we still ask each other, while it is not obliged anymore”.

A medical student told us: “You remember the points you are told you have to improve and you try to pay attention to them. Also, you see the changes in the way you see yourself as a practitioner in the future. You can follow your self, experience your development by seeing that your image is becoming richer. Now it feels quite natural to think about yourself and how you are functioning in practice.”

Another student mentioned the tutor groups as a useful supplement to peer feedback and peer reviews: “We got a very open discourse about ourselves and the quality of our work.”

Perceived relevance

Do users perceive professional behaviour as a more relevant objective for portfolio use than academic functioning or study career management?

Table 2: Relevance of objective as perceived by students and tutors

Objective perceived as relevant by	Portfolio objectives						N	
	Academic Functioning		Professional Behaviour		Study Career Management			
	Students	Tutors	Students	Tutors	Students	Tutors	Students	Tutors
Minority	10	8	3	2	4	1	17	11
Half	6	6	10	2	1	2	17	10
Majority	2	4	6	15		2	8	21
N	18	18	19	19	5	5	42	42

According to the respondents, students as well as tutors more often see the relevance of portfolios for professional behaviour than for the other two main objectives. One remarkable outcome is that tutors in general think more favourably about the relevance of portfolios than students. This is the case for all types of objectives. Students are reported as the most ‘sceptical’ when portfolios are used for academic functioning and for study career management.

When asked to mark the educational benefit for the students on a scale from 1 (extremely negative) to 10 (extremely positive), about two third gives a mark higher than 6. The marks vary from 2 to 9.

In general, portfolio use for academic objectives gets lower marks than for professional objectives. *Within* these categories, however, there is a huge variety.

In the following we will try and find explanations for these differences by looking closer at some specific features of the (portfolio) learning environment.

5.3. Features of the learning environment and valuation of the learning outcomes

In this section we will zoom into the aspects of the learning environment we mentioned before. Does portfolio practice differ on these features and is this reflected in the valuation of the estimated learning outcome (the marks given by our respondents)?

Requirements for the steps of the reflection process

We assumed that, when a student has to meet clear requirements for each step in the reflection process, reflection will become more profitable and less 'vague'. Therefore, we asked if students have to meet requirements, for each step specifically.

In Table 3 is mentioned how often a positive answer has been given (to each question/step). For example, three times identification of patterns is required for reflection on specific aspects of academic functioning.

Table 3: Frequency requirements are made upon step 1 to 5 of the reflection process

Steps	Portfolio objectives			N (N=42)
	Academic Functioning (N=18)	Professional Behaviour (N=19)	Study Career Management (N=5)	
1. Requirements for reference to standards (end qualifications/ competences) in self-evaluations	6	10	1	17
2. Requirements for incorporation of products and learning experiences in self-evaluations	7	16	1	24
3. Requirements for identification of patterns	3	11	1	15
4. Requirements for systematic underpinning of claims	1	11		12
5. Requirements for planning of the next stage of development	6	11	2	19

To summarize, systematically more requirements are made upon the reflection process for professional behaviour than for academic functioning.

Valuation of learning outcome

Only 8 times students have to meet requirements for (almost) all steps, i.e. 4 or 5. All 8 times professional behaviour is concerned. In all these cases the learning outcome is valued high by the respondents (mean score of nearly 8).

The meaning of reflection tasks is given

Before making requirements upon reflection tasks, one has to explain the meaning of the task, i.e. why students have to reflect at all.

Table 4: Explanation of reflection and portfolio objectives

Reflection explained	Portfolio objectives			N
	Academic Functioning	Professional Behaviour	Study Career Management	
No	13	8	1	22
Yes	5	11	1	17
N	18	19	2	39

Predominantly, where professional behaviour is concerned, attention is paid to the meaning of reflection, this in contrast to portfolio use for academic functioning. No relation has been found with the estimated learning outcomes by portfolio use.

Standards for learning lines are used

For reflection and self-steering students need a frame of reference: standards for the various levels. Do they exist, in theory and in practice?

Table 5: Learning lines and portfolio objectives

Learning lines	Portfolio objectives					
	Academic Functioning		Professional Behaviour		Study Career Management	
	exist? N	used? N	exist? N	used? N	exist? N	used? N
In progress	8	8	5	2	1	2
Yes	3	2	7	9	1	1
N	11	10	12	9	2	2

Only 2 times clear standards are used in practice for academic functioning and 7 times for professional behaviour. In all programs in which a clear frame of reference is used, the learning outcome for students is valued high (mean of almost 8).

Embedding of portfolio within the program and frequency of use

A change in attitude (“becoming the director of one’s own learning”) does not come about by incidentally performing a (marginal) task. We assume that students only can acquire the desirable disposition by regular and integrated use of portfolio within learning paths.

We categorised types of portfolio use as:

- limited: just for study career management or connected to one or two subjects,
- integrated: portfolio used as educational and assessment tool within substantial learning path(s).

Table 6: Embedding within the program and main objectives

Embedding	Portfolio objectives			N
	Academic Functioning	Professional Behaviour	Study Career Management	
Limited	11	6	3	20
Integrated	7	12	2	21
N	18	18	5	41

Limited and integrated use are found equally. For professional behaviour integrated use occurs the most, for academic functioning limited use.

Table 7: Frequency of portfolio use and main objectives

Frequency of use	Portfolio objectives			N
	Academic Functioning	Professional Behaviour	Study Career Management	
Incidentally/ once or twice every year	10	4	2	16
Regularly/ minimally once every month	8	9	2	19
Intensive/ weekly		5		5
N	18	18	4	40

Portfolio is used more frequently for professional behaviour than for academic functioning. Intensive use occurs only for professional behaviour (portfolio is used also more often as assessment tool or skills dossier).

Valuation of the learning outcome

Integrated use is generally valued positive; only 4 times a negative mark was given. The learning outcome is mostly valued high, when students use their portfolio every month or week; only 3 out of 24 marks were negative.

Use of peer feedback and requirements on the feedback

Table 8: Use of (criteria for) peer feedback and portfolio objectives

Peer feedback	Portfolio objectives			N
	Academic Functioning	Professional Behaviour	Study Career Management	
Peer feedback is used	4	8		12
Criteria for feedback are used	2	5		7

The opportunities we mentioned in 3.1 to stimulate the quality of the reflection processes by use of peer feedback are seldom used in practice. We even have to put into perspective the cases where peer feedback was given. According to the students, the feedback is often superficial, restricted to technical aspects. Furthermore, the feedback is often given too late and therefore less useful than it would have been when given immediately. A student told: “At the end of the year we found, oh there is missing five feedback reports on my presentations. John, can you remember my presentation in October? Can you give feedback on it?” They report the phenomenon of gathering feedback just before the finish. Besides, students are not always happy about the form peer feedback takes – with checklists. “Sitting together works, filling in the form not. Talking about working together and your role in the group is not common and that is really a big plus of tutor groups”. Another student adds: “Sometimes you are extremely surprised how other people look at you and that’s a very important educational aspect of it”.

Table 9: Preparation of students and tutors

Preparation	Portfolio objectives						N	
	Academic Functioning		Professional Behaviour		Study Career Management			
	Students	Tutors	Students	Tutors	Students	Tutors	Students	Tutors
Written & oral information	16	11	15	10	4	4	35	25
Use of ePortfolio	6	1	8	1	2	2	16	4
Training in coaching		2		5		0		7

Generally, tutors are less informed about and trained in the use of ePortfolio's than students. Only 17% is explicitly trained in coaching skills. This training has to be put into perspective as well. In interviews we were told that training was not obligatory and coaching skills were not the main focus of the training.

In practice, tutors often do execute their role in an informal way. As one student told us: "In the USA tutors are made responsible for the outcomes of their students. Here a tutor said: "Tutoring is taking too much time. Next year I will not do it anymore." The students interpreted this as a signal that portfolio was seen by the tutor as an irrelevant part of the program.

Even in teacher training programs, where portfolio was first implemented, the coaching has not been fully developed yet. According to a tutor: "We should relate the feedback more to the main roles of teachers." He hoped that, by doing so, tutors would concentrate less on feedback on details of the performance and give more support to deep learning (get insight into connections, causes, underlying views).

6. Conclusions and discussion

The number of portfolio applications is relatively small, while at the same time the number of variables is large. Although it is impossible to make more sophisticated analyses on our data, interesting conclusions can be drawn for the improvement of portfolio use in practice. We found that in many cases the advantages of the instrument are not used in an optimal way. Systematically the results were in favour of portfolio use for professional behaviour. This goes for the appreciation of the portfolio outcomes as well as for the suitability of the learning environment.

The main reason being given for the use of portfolios, is stimulation of students to take the direction of their learning process in their own hands. In practice this is realised better for professional goals than for academic functioning or study career management. We suppose that this has to do partly with a difference in the *urgency* to improve one's achievements. Where professional behaviour is concerned, students reflect mostly on experiences in authentic situations, for instance handling of anxious patients in a dentistry practice, subjecting patients to an anamnesis, giving a series of lessons, going through a pedagogical apprenticeship, doing archaeological field research. These experiences in the 'real world' can be quite confronting and distressing. Reflections on academic functioning on the other hand, have mostly to do with products and experiences like a research project, a design task, essay writing, presentations. This is generally done within the faculty, i.e. a relatively safe environment, compared to an external practice.

Besides urgency to improve one's functioning, the *requirements* of the quality of the reflection process are probably a crucial factor as well: they are systematically higher for professional behaviour.

Tutors seem to see more often the relevance of ePortfolios than students. This holds good for all three types of portfolio objectives. An explanation for this finding might be that tutors are confronted with a group of students who know better than their predecessors what they want and what sort of guidance they need. ePortfolio enables tutors (and students) to prepare themselves better for discussions. Furthermore, many tutors see a positive difference with their own study: nowadays there is much more explicit attention for communication skills and professional or research skills integrated in the whole program.

Students on the other hand, can't make any comparison with a previous situation. Also, students usually don't appreciate and put effort in ('soft reflection') tasks when they are not obliged, not assessed seriously and barely given feedback. And this is exactly what happens all too often, even more so when portfolios are used for academic education and student career management rather than for professional behaviour.

In many cases ePortfolio has been implemented, while the learning environment wasn't sufficiently prepared for it. On the other hand, ePortfolio has often been a stimulant to screen programs on coherence within learning lines and place of skills and reflective thinking within the program.

The relatively negative results concerning ePortfolio use for academic development do not imply that ePortfolio's shouldn't be used for these objectives. This would be a premature conclusion, because generally learning environments are not fully developed yet.

Finally, various applications do show that ePortfolios can be used to the complete satisfaction of students and tutors.

For the further development of the ePortfolio learning environment the following checklist can be used.

Checklist Portfolio learning environment

1. The portfolio has a clear status / is connected to substantial learning lines.
2. Learning lines involve core competences of university graduates and not just separate skills. The objective is academic and professional education, in breadth and in depth.
3. Clear levels and standards within the learning lines are communicated.
4. Comparable experiences are necessary for pattern identification. Within learning lines students get sequences of varied learning experiences in authentic situations.
5. In order to enhance the self-steering process, portfolio tasks / reflection tasks are given after sequences of practical experiences (academic and / or professional).
6. Students are trained to reflect upon their functioning, and requirements are being put upon pattern identification and formulation of the next step in the development ('self-steering').
7. Students organize and get feedback on their functioning or products immediately after their achievements.
8. Systematically students bring forward evidence for their progression on the learning lines.
9. The requirements for reflection reports by students are mirrored in the requirements for tutor skills (i.e. a tutor has to be dedicated to the goal, be an expert as well as a coach).
10. The performance of the tutors is part of a plan for improvement and control of the quality of educational programs: they are being trained and assessed.

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