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## Conditions for successful reflective use of portfolios in undergraduate medical education

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AIM Portfolios are often used as an instrument with which to stimulate students to reflect on their experiences. Research has shown that working with portfolios does not automatically stimulate reflection. In this study we addressed the question: What are the conditions for successful reflective use of portfolios in undergraduate medical education?

**METHODOLOGY/RESEARCH DESIGN** We designed a portfolio that was aimed at stimulating reflection in early undergraduate medical education, using experiences described in the medical education literature and elsewhere. Conditions for reflective portfolio use were identified through interviews with 13 teachers (mentors), who were experienced in mentoring students in the process of developing their portfolios. The interviews were analysed according to the principles of grounded theory.

**RESULTS** The conditions for successful reflective use of portfolios that emerged from the interviews fell into 4 categories: coaching; portfolio structure and guidelines; relevant experiences and materials, and summative assessment. According to the mentors, working with a portfolio designed to meet these conditions will stimulate students' reflective abilities.

**CONCLUSION** This study shows that portfolios are a potentially valuable method of assessing *and* developing students' reflective skills in undergraduate medical training, provided certain conditions for effective

portfolios are recognised and met. Portfolios have a strong potential for enhancing learning and assessment but they are very vulnerable and may easily lead to disappointment. Before implementing portfolios in education, one should first consider whether the necessary conditions can be fulfilled, including an appropriate portfolio structure, an appropriate assessment procedure, the provision of enough new experiences and materials, and sufficient teacher capacity for adequate coaching and assessment.

**KEYWORDS** education, medical, undergraduate/ \*methods; teaching/ \*methods; teaching materials; Netherlands; curriculum; professional competence; thinking.

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### INTRODUCTION

Portfolios are widely used in health care education, not only as a source of information for authentic assessment but also to help students reflect on their experiences.<sup>1</sup> We regard reflection as a cyclic process of self-regulation in which students look back on their actions, analyse them, think up alternatives, try these out in practice, look back on them, etc.<sup>2</sup> The objective of this process is to learn from experience. Reflection thus becomes a condition for professional development.<sup>2</sup>

Research has shown that a portfolio is no guarantee that reflection will occur. Pearson and Heywood investigated the reflective use of a portfolio by general practice registrars.<sup>3</sup> This portfolio was 'an A5 document containing pages for use as a learning record and including prompts for the identification of learning needs together with space to record teaching and assessment information'.<sup>3</sup> Pearson and

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## Overview

### What is already known on this subject

Research has shown that portfolio use does not automatically stimulate reflection.

### What this study adds

Portfolios are a potentially valuable instrument with which to assess *and* develop students' reflective skills in early undergraduate medical training.

The following conditions for successful portfolio use are proposed: an appropriate portfolio structure; an appropriate assessment procedure; enough new experiences and materials, and sufficient teacher capacity for coaching and assessment.

### Suggestions for further research

Further research – preferably also from the students' perspective – should identify conditions for effective portfolio use, especially factors determining teacher effectiveness in coaching and assessment.

Heywood considered as evidence of reflection '...recording information ... combined with active recollection', consisting of '...either a memory of self-reflection on the information, or discussion of the information with the trainer'.<sup>3</sup> It appeared that the majority of the registrars and their trainers did not use the portfolio for reflection and that its purpose was unclear. Moreover, many trainers were not motivated to work with the portfolio and thus did not encourage its use. This correlated with poor use of the portfolio for reflection. Finally, the strictly prescribed format further hampered acceptability.

Research in teacher education has revealed that portfolios only stimulate reflection if certain conditions are met. According to Wade and Yarbrough, reflective portfolio use stimulates students to develop new understanding and appreciation of their experiences, recognise links between different aspects of these experiences and formulate insights to be tested in future actions.<sup>4</sup> The portfolio in their study consisted of a set of artefacts representing a range of decisions, a record of each student's

personal development and a reflective essay. Wade and Yarbrough identified the following conditions for reflective portfolio use: a good introduction to the portfolio and its intended use, student ownership, a clear structure, and appropriate use of the portfolio in discussions with coaches or trainers.<sup>4</sup>

Reflection is a prerequisite for learning in the context of real practice, which is a prominent feature of many innovative medical curricula. A portfolio can foster reflective skills, provided the learning environment is favourable. So the question is how to create such an environment. To explore this we addressed the following research question: what are the conditions for successful use of portfolios for reflection in undergraduate medical education? We designed a portfolio intended to stimulate reflection in early undergraduate medical education. The design was based on experiences with portfolios described in the medical education literature and elsewhere.<sup>5</sup> We sought teachers' views on determinants of effective portfolios by interviewing teachers (mentors) who had had considerable experience in discussing portfolios with students. We focused on experienced teachers' views, not only because we believe they have the most accurate insights into the benefits and pitfalls of reflective portfolio use, but also because teachers' perceptions of the use and usefulness of portfolios appear to be a decisive factor in successful implementation.<sup>3,4</sup>

## METHODS

### Context of the study

In the curriculum of Maastricht Medical School, the Netherlands, authentic learning is introduced in Year 1, during which the students' learning environment consists of authentic and real cases. Although portfolios are predominantly used at more senior levels of training, it was decided that it would be appropriate to introduce a portfolio early in the curriculum to help students develop reflective ability. The portfolio consisted of 3 parts:

- written self-assessments of students' personal development in 4 professional roles and the learning goals students derive from these self-assessments to further their role development;
- illustrative materials underpinning the self-assessments, and
- (written) feedback by students' personal mentors on the first 2 parts.

Every year students discuss their portfolios in at least 2 one-to-one meetings with their personal mentors. Mentors evaluate portfolio quality and address aspects that need improvement. Their written feedback is added to the portfolios.

Students' reflective skills are assessed (pass or fail) annually by the Portfolio Committee. In the pre-clinical phase, reflective ability is assessed. In the clinical phase, portfolios contribute to the assessment of students' clinical performance. All mentors sit on the Portfolio Committee, but mentors do not assess the portfolios of the students they are mentoring.

A detailed description of the portfolio and the assessment procedure can be found elsewhere.<sup>5,6</sup>

### Mentors

We interviewed all mentors ( $n = 13$ ) who were coaching Year 1 and 2 students during the period of the study. Over a 2-year period, each of them mentored an average of 20 undergraduate students using the portfolio described above. All mentors had more than 5 years of experience in teaching small groups and individual students. Four of the mentors were women. Participation in the study was voluntary and participants received a small fee and a short report of the finished study.

### Interviews

The interviews lasted approximately 1 hour and were tape-recorded after consent had been obtained from participants. Literal transcriptions were made.

Three topics were addressed in each interview:

- the mentor's (implicit) definition of reflective skills;
- the portfolio's effectiveness in stimulating students to reflect on their experiences and development, and
- conditions for successful reflective portfolio use.

### Analyses

The interviews were analysed according to the principles of grounded theory, using the program ATLAS/ti. After the first 5 interviews, 3 interviews were coded independently by 2 researchers (EWD and JvT). Coding comprised selecting citations and assigning labels to them. The outcomes were

compared and any differences discussed until consensus was reached. The researchers then re-read the interviews to check that no relevant information had been overlooked. The resulting refined interview schema was used in the interviews with the remaining 8 mentors. The final step of the analysis was member checking, or determining whether interviewees agreed that data and conclusions accurately reflected interview content.<sup>7</sup> For this purpose, 2 of the interviewees read and commented on the results and conclusions of the study. This part of the analysis did not necessitate any changes.

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## RESULTS

We report the results for the main interview topics, which were definition of reflective skills, the effectiveness of the portfolio in stimulating these skills, and conditions for successful portfolio use.

### Definition of reflective skills

In the eyes of most mentors, reflection focuses on professional attributes and its purpose is to offer directions for improvement by identifying strengths and weaknesses in performance. The mentors saw reflection as a method of identifying causes in order to answer the question of why things are as they are. The 'why-question' was regarded as essential. One mentor described a portfolio without reflection:

'...as a collection of facts without questioning the whys and wherefores.' (Mentor 1)

Mentors attached great importance to students addressing why-questions from a position outside their personal perspectives. They saw openness to the opinions of others as a prerequisite for objectivity:

'Normally, you observe the environment and yourself from a personal perspective. When reflecting, you look at yourself from the perspectives of others. This means for example appreciating others' opinions and trying to understand them.' (Mentor 11).

'That you can objectify your own attitude and behaviour and try to eliminate all bias so as to obtain a clear view of your position and understand how you are seen by others.' (Mentor 2)

Some mentors wondered how far they should go in asking students to self-reflect. One mentor said:

‘Self-reflection may cause students to recognise or become aware of situations in their personal lives that are less than ideal. The question is how to deal with this. The question is also whether this is desirable and whether it is appropriate.’ (Mentor 2)

### **Effectiveness of the portfolio in stimulating students to reflect on their experiences and development**

All mentors said that compiling portfolios and writing reflective reports fostered a critical attitude in students towards their own performance and helped them manage their own development. The mentors said that the portfolio not only stimulated students to examine their experiences retrospectively and systematically, it also offered directions for development. This process was seen as affecting the pace of students’ development:

‘Some of the things I myself had to learn the hard way could have been dealt with at a much earlier stage of my medical training with the use of a portfolio system.’ (Mentor 4)

The mentors said that ability, attitude and motivation determined how easily students learned to reflect:

‘I think there are 3 types of students who are poor portfolio compilers. You have the students who lack analytical ability. You have the group of students who think compiling a portfolio is completely pointless; the characters of these 2 student groups are incompatible with reflection and portfolios. Finally, you have the students who just aren’t motivated.’ (Mentor 13)

The need to identify those students who lack the ability to critically appraise their own performance was emphasised by the mentors, because this is considered to be a vital skill for medical doctors. Discussing portfolios with students is 1 way of identifying this group.

### **Conditions for successful reflective portfolio use**

Four categories of conditions for successful reflective portfolio use emerged from the interviews: good coaching; structure and guidelines; adequate experiences and material for reflection, and summative assessment.

### *Coaching*

Coaching plays a crucial role in reflection. As reflection does not come naturally to most students, it is an important task for coaches or mentors to show students what questions to ask themselves when reflecting on their performance. Several mentors said they had not realised this was difficult for many students. Mentor 12 put it this way:

‘I didn’t know self-analysis was so difficult for students. I thought that everybody would include a self-analysis in their portfolios.’ (Mentor 12)

Another important function of coaching involved helping students to identify learning needs and design learning plans. According to the mentors, these learning plans were often no more than a list of resolutions, rather than well thought out, realistic steps towards relevant learning goals.

Student motivation was also mentioned as an important factor in successful reflective portfolio use. The mentors indicated they sometimes had to go to considerable lengths to convince students of the benefits of reflective portfolio use:

‘I explain to them what my idea of reflection is and I try to make them see the value of the portfolio and sometimes I show them something from another student’s portfolio.’ (Mentor 1)

### *Structure and guidelines*

According to the mentors, a portfolio should be well structured and guidelines should tell students what is expected of them and what are suitable subjects for reflection. Several mentors also pointed out that a more open portfolio structure was preferable once students had learned how to reflect. Although weaker students needed structure and guidelines, too much structure may become an obstacle for students with good reflective skills. These students should have more freedom in compiling their portfolios.

### *Experiences and material*

Another condition for an effective portfolio was sufficient variety and quantity of interesting experiences as subjects for reflection. The mentors reported that lack of experiences was problematic if student–mentor meetings were planned too closely together. If students have no subjects for reflection, it becomes a rather futile exercise:

'It seems to me that they are actually repeating themselves, i.e. they are doing what they have to do just because it is obligatory.' (Mentor 8)

#### *Summative assessment*

The mentors indicated that the portfolio should be used for summative assessment of reflective skills to ensure that it is taken seriously by students and mentors. Reflective portfolio use is labour intensive for both students and mentors. There was agreement among the mentors that, without assessment, portfolios would be taken less seriously and students and mentors would not consider it worthwhile investing the necessary time and energy:

'I really think students take the portfolio much more seriously when the portfolio is assessed.' (Mentor 5)

'It prevents you from thinking: Oh well, I'll have a talk with this student and that's my main goal and I don't need a portfolio. It stops you from failing to take the portfolio seriously, I think.' (Mentor 13)

Some mentors argued that test-directed portfolio compilation was a potential pitfall of summative assessment. This is a very real danger if the above-mentioned conditions are not met, if there are not enough new and relevant experiences for students to reflect on, if students are given too many rules and guidelines, or if portfolio content is not the subject of serious discussions with mentors. Mentors generally thought that students were 'honest' in their portfolios and 'open' in student-mentor meetings. They did not think students looked upon them as assessors:

'The fact that the portfolio is assessed has in my opinion had no effect whatsoever on the openness from both sides.' (Mentor 9)

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## DISCUSSION

The interviewees agreed that compiling and discussing portfolios enhanced the development of students' reflective abilities. The findings suggest that, although reflection may initially be difficult for Year 1 students, almost all students can learn how to reflect, provided favourable conditions are created. Only a small minority fails to develop reflective skills. According to the mentors, it is important to identify

this minority because the ability to critically appraise one's performance is a crucial professional skill for medical doctors.

A limitation of this study is that we examined the teachers' perspective only and not that of the students.

The mentors thought the success of portfolio learning depended on 4 categories of conditions: good coaching; appropriate portfolio structure and guidelines; a sufficient number of relevant experiences on which to reflect, and summative assessment. The first 2 categories have also been reported in other studies.<sup>3,4</sup>

A supportive teacher (mentoring) or peer feedback are widely recognised as key factors in the success of reflective portfolios.<sup>3,4,8</sup> This was confirmed by the results of our study. Pearson and Heywood even went so far as to say that reflection was primarily stimulated by supervisors and that a portfolio offered little added value as a stimulus for reflection.<sup>3</sup>

The same authors reported that the purpose of the portfolio they studied was rather unclear, trainers were poorly motivated and the portfolio format was too rigid.<sup>3</sup> Similarly, Wade and Yarbrough identified structure as an important factor in the effectiveness of a reflective portfolio.<sup>4</sup> In our study, mentors advocated a careful balance between a highly prescribed structure and full freedom. A well defined structure was thought to be mainly helpful at first, when lack of structure might cause frustration, especially when students are new to portfolio compiling.<sup>9</sup> However, students with good reflective skills should be offered leeway to display their personal qualities. As Wade and Yarbrough put it, students should have ownership of their portfolios.<sup>4</sup>

The mentors also pointed out that the effectiveness of the portfolio depended on students having different and meaningful experiences on which to reflect. This may well be a decisive factor in the successful introduction of a portfolio in early undergraduate medical education. In the first pre-clinical years, most students have fewer relevant and salient experiences than during clinical training. Students who are told to reflect without being exposed to challenging experiences can easily become 'portfolio tired', a phenomenon also encountered by Snadden and Thomas in the context of general practice training.<sup>8</sup>

The results of our study show that summative assessment prevents students and mentors from

adopting too casual an attitude towards the portfolio. Effective portfolios require substantial effort and time from students and mentors. If a portfolio is not graded, students and mentors may question whether the whole exercise is worth the effort. In the literature we found some examples of disappointing portfolio experiences that may be attributable to this phenomenon.<sup>8,10</sup> Snadden and Thomas reported a study in which a portfolio of general practice trainees was not assessed summatively.<sup>8</sup> Trainees appeared to stop working on their portfolios as soon as other, summative, assessments made demands on their time.

Reflection was characterised by the mentors as thought processes that help students improve their professional performance. The prevailing opinion was that reflection should focus on actions – and their consequences – which are directly related to students' future work as medical professionals. In other fields, such as teacher education, more emphasis tends to be placed on student teachers' individual identities and beliefs, because these are regarded as crucial to their professional development.<sup>11</sup> The mentors we interviewed did not focus on students' personal opinions and motives in portfolio discussions.

The results of our study suggest that portfolios are a potentially valuable instrument for the assessment and development of undergraduate medical students' reflective skills. Portfolios can be a powerful tool for learning and assessment, but the method is vulnerable to adverse conditions and may easily lead to disappointment. Those intending to implement a portfolio should carefully consider whether they will be able to create the favourable learning environment needed for successful portfolio use.

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