Mentoring portfolio use in undergraduate and postgraduate medical education

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Abstract

Aim: Mentoring is widely acknowledged as being crucial for portfolio learning. The aim of this study is to examine how mentoring portfolio use has been implemented in undergraduate and postgraduate settings.

Method: The results of interviews with six key persons involved in setting up portfolio use in medical education programmes were used to develop a questionnaire, which was administered to 30 coordinators of undergraduate and postgraduate portfolio programmes in the Netherlands and Flanders.

Results: The interviews yielded four main aspects of the portfolio mentoring process – educational aims, individual meetings, small group sessions and mentor characteristics. Based on the questionnaire data, 16 undergraduate and 14 postgraduate programmes were described. Providing feedback and stimulating reflection were the main objectives of the mentoring process. Individual meetings were the favourite method for mentoring (26 programmes). Small group sessions to support the use of portfolios were held in 16 programmes, mostly in the undergraduate setting. In general, portfolio mentors were clinically qualified academic staff trained for their mentoring tasks.

Conclusion: This study provides a variety of practical insights into implementing mentoring processes in portfolio programmes.

Introduction

Current views on learning (Dolmans et al. 2005) and societal developments have led to a transition from knowledge-based to competency-based curricula in medical education (Carraccio et al. 2002; Frank 2005). One of the major characteristics of competency-based curricula is that students learn to actively plan, monitor and evaluate their own learning processes. Becoming a self-directed learner is both important and complex and should be viewed as a long-term process (Boekaerts 1997). A crucial activity to foster the development of students' self-directed learning skills is reflection (Ertmer & Newby 1996). Compiling a portfolio is considered an important instrument to enhance students' reflective skills (Snadden & Thomas 1998). However, it is not an easy task to successfully and effectively implement a portfolio programme.

Mentoring is widely acknowledged as being essential for portfolio learning (Mansvelder-Longayroux et al. 2006; Driessen et al. 2007; McMullan 2007). However, few studies have provided insight into the process of mentoring portfolio use. Two qualitative studies have indicated that the learning effects of compiling a portfolio and interacting with a mentor are hard to separate (Challis et al. 1997; Snadden & Thomas 1998). Pearson and Heywood (2004) highlighted the importance of interaction between a learner and a supervisor using the portfolio as a catalyst to guide further learning, while

Practice points

- Mentoring portfolio use enhances the feedback process and stimulates students' reflections.
- During individual meetings based on a portfolio, mentors as well as mentees are stimulated to introduce subjects for discussion.
- Individual meetings often begin with highlighting the main themes of the previous meeting; they are often concluded by formulating agreements for the coming period.
- Small group sessions provide a useful setting for students to learn to discuss their experiences with their peers and practise their reflective skills.
- Special arranged group sessions where teachers can exchange experiences in order to learn from each other, are a feasible way to support them with their portfolio mentoring task.

Austin and Braidman (2008) reported on a group mentoring format used in undergraduate training. In a study by Finlay et al. (1998), students who visited a cancer patient for nine months were supported by small group tutorials twice a month. The students valued these tutorials because they offered them the opportunity to learn from each other. A cross-over comparison of a traditional continuing medical education

and a portfolio-based programme for general practitioners revealed that the latter met general practitioners' needs better (Mathers et al. 1999). An important aspect of this programme were group meetings of six to eight general practitioners, facilitated by a tutor to enhance the process of co-mentoring.

The use of portfolios in medical education has increased over recent years, especially in the Netherlands, where extensive educational reform of all postgraduate programmes has resulted in the compulsory use of portfolios for all residents (Scheele et al. 2008). In undergraduate settings, portfolio use has also increased because it is viewed as a necessary learning and assessment tool in competency-based curricula. As a consequence, Dutch and Flemish educators have been very active in developing and implementing portfolio programmes. In an effort to present the different ways of organising a mentoring programme, we studied the mentoring process in Dutch and Flemish portfolio programmes in undergraduate and postgraduate settings.

Method

Context

In 2001, the Netherlands Association of Medical Education (NVMO) started a Special Interest Group on Portfolios for medical teachers and educationalists (Ten Cate 2008). Members of this Special Interest Group were involved in implementing portfolio use in the Netherlands and Flanders, the Dutch-speaking region of Belgium. They attended regular meetings to develop expertise by exchanging experiences, insights and materials. The Netherlands accommodated eight medical schools and Flanders five. The members of the Special Interest Group were informed that eight of these 13 medical schools had implemented portfolio programmes in their undergraduate curricula. Postgraduate training is mainly workplace-based and provided in university medical centres and general teaching hospitals.

Approach

To obtain information on how the mentoring of portfolio use has been set up in different undergraduate and postgraduate settings, we used a combined approach employing semi-structured interviews and a questionnaire.

Semi-structured interviews

For the semi-structured interviews, we approached six educators who had become experts on portfolio programmes. All were active members of the NVMO Special Interest Group. To represent the Bachelor's setting, we selected two portfolio programme coordinators (from Maastricht University and the University Medical Center Groningen); for the Master's setting, we selected two portfolio programme coordinators (from the University Medical Center Utrecht and the University Medical Center Groningen) and to represent postgraduate training we selected the educational programme coordinator of Obstetrics and Gynecology from the VU University Medical Center Amsterdam and the coordinator of Internal Medicine of the

University Medical Center Groningen. The following issues were addressed during the interview: the portfolio programme aims, the position of the portfolio in the curriculum, portfolio content, how mentoring had been set up, the backgrounds of portfolio mentors and the mentor training programme. The semi-structured interviews were performed by the first author. Additional information was gathered with phone calls and email. All interviewees were asked to review the written reports of their own interview, to verify the data and obtain their approval.

Questionnaire

The outcomes of the semi-structured interviews were used to establish a questionnaire. Investigator triangulation was applied to translate the interview outcomes into questionnaire topics. The first author and two co-authors interpreted the interview data independently. Subsequently, they discussed their interpretations to identify the main topics of mentoring portfolio use. This interpretation process yielded four topics: (1) the educational aims of mentoring portfolio use, (2) individual meetings, (3) small group sessions and (4) background/training of the portfolio mentors. A questionnaire was designed to gather additional information about these topics in different medical education settings. For this purpose, the four main topics were elaborated into sub-questions. Three educational researchers with experience in questionnaire design commented on the first draft of the questionnaire (32 questions). This resulted in a 21-question survey in which five-point Likert scales ($1 = --$, $5 = ++$), yes/no, multiple-choice and open-ended questions were used. These open-ended questions were added to offer the respondents the opportunity to mention aspects of mentoring portfolio use that were not included in the questionnaire. All active members of the Special Interest Group were invited to provide names of other educators responsible for coordinating portfolio programmes, which resulted in a mailing list covering the majority of the undergraduate and postgraduate portfolio programmes that had been fully implemented by December 2008. The questionnaire was distributed electronically.

Analysis

The responses to the questionnaire were analysed using descriptive statistics. To improve the readability of the frequency tables, the percentages for '+' and '++' were summed. The same was done with the percentages for '−' and '−−'.

Results

Interviews

The results of the six semi-structured interviews showed a broad variety in portfolio use – different learning objectives, portfolio content and organisation. Furthermore, the position of portfolio programmes in the curriculum differed. In the Bachelor's setting, portfolio learning was organised as a separate course for which students received ECTS credits (European Credit Transfer System). In the Master's setting,

students also received ECTS credits, but these portfolio programmes were interwoven with clinical clerkships. In postgraduate training portfolio use was fully integrated into the workplace environment. In each setting, the process of portfolio mentoring was focused on different aims. The mentoring itself was elaborated in individual meetings and small group sessions. The frequency of these mentoring activities varied widely. Most portfolio mentors had a medical background. All portfolio programmes included staff development training to support mentors; however, the content of these training programmes varied widely.

Questionnaire

The questionnaire was completed by 30 respondents, representing 30 different portfolio programmes.

Aims of mentoring portfolio use

The most frequently mentioned aims of mentoring portfolio use were 'to provide students with feedback on their portfolios' (94%) and 'to stimulate reflection' (90%). The least applied educational aim was 'to support students when drawing up a learning plan for the coming period' (62%) (Table 1).

The responses to the open-ended questions yielded three subsequent mentoring goals: (1) overall mentoring, (2) discussing emotional, social and ethical aspects and (3) verifying whether students meet their educational demands.

Individual mentoring

Students were mentored individually on their portfolios in 26 programmes. Individual meetings were scheduled one to two times a year in 14 programmes, three to four times in 10 programmes and five or more times a year in two programmes.

Most of the time, students (92%) and mentors (81%) introduced points for discussion, and feedback was provided on the points for discussion from the previous meeting (84%). In 75% of the programmes, agreements were recorded in writing as a result of the individual meetings, while a fixed agenda was used in half of the programmes (Table 2).

The responses to the open-ended questions revealed that during some individual meetings a summative assessment format was used. Another aspect of individual mentoring mentioned was the evaluation of students' development. In programmes where small group sessions were scheduled to complement individual mentoring sessions, reflection on group processes was also a subject for discussion. Additionally, individual meetings sometimes resulted in subsequent email correspondence between mentor and student.

Small group sessions

Small group sessions to support portfolio learning were held in 16 programmes, mostly in the undergraduate setting. The frequency of small group sessions was one to four sessions a year in 10 programmes, five to eight sessions a year in two programmes and nine or more sessions a year in four programmes. The group size varied from six to 11 students, though five programmes had a group size of more than 12 students/clerks/residents. During the small group sessions, most attention was paid to discuss clinical or other experiences (68%), followed by practising reflection skills (54%) and practising providing and receiving peer feedback (50%). Very little attention was paid to compiling a portfolio (12%) (Table 3).

The responses to the open-ended questions also revealed that attention was sometimes paid to (1) discussing personal learning styles, (2) discussing social/ethical themes and (3) clinical reasoning based on patient cases.

Table 1. Application of aims of mentoring portfolio use in practice.					
The student/clerk/resident …		−−/− (%)	± (%)	+/++ (%)	N
1. is helped and advised when compiling a portfolio	Undergraduate	0	20	80	15
	Postgraduate	14	7	79	14
	Total	7	14	79	29
2. is given feedback on the portfolio or parts of it	Undergraduate	6	0	94	16
	Postgraduate	0	7	93	14
	Total	3	3	94	30
3. is stimulated to reflect	Undergraduate	6	0	94	16
	Postgraduate	0	14	86	14
	Total	3	7	90	30
4. is monitored in his/her competence development	Undergraduate	13	19	68	16
	Postgraduate	0	14	86	14
	Total	7	16	77	30
5. is supported when drawing up a learning plan for the coming period	Undergraduate	26	13	61	16
	Postgraduate	21	14	65	14
	Total	23	13	64	30
6. is encouraged to develop an understanding of his/her strengths and weaknesses	Undergraduate	6	25	69	16
	Postgraduate	0	14	86	14
	Total	3	20	77	30
7. is motivated and inspired	Undergraduate	6	31	63	16
	Postgraduate	0	31	69	13
	Total	3	31	66	29

Table 2. Application of aspects of individual mentoring meetings in practice.					
During the individual mentoring meeting …		−−/− (%)	± (%)	+/++ (%)	N
1.	the mentor introduces points for discussion based on the portfolio handed in	Undergraduate	0	7	93	14
		Postgraduate	8	26	66	12
		Total	4	15	81	26
2.	students are stimulated to introduce subjects for discussion themselves	Undergraduate	7	7	86	14
		Postgraduate	0	0	90	12
		Total	4	4	92	26
3.	there is feedback on what was discussed during the previous meeting	Undergraduate	0	14	86	14
		Postgraduate	8	8	84	12
		Total	4	12	84	26
4.	a fixed agenda is used	Undergraduate	50	14	36	14
		Postgraduate	25	8	67	12
		Total	38	12	50	26
5.	the agreements are recorded in writing to conclude	Undergraduate	16	0	84	12
		Postgraduate	16	17	67	12
		Total	16	8	76	24

Table 3. Application of aspects of small group sessions in practice.					
During the small group session …		−−/− (%)	± (%)	+/++ (%)	N
1.	making a portfolio is practised	Undergraduate	69	16	15	13
		Postgraduate	33	67	0	3
		Total	63	25	12	16
2.	students/clerks/residents practise giving and receiving peer feedback	Undergraduate	39	23	38	13
		Postgraduate	0	0	100	3
		Total	31	19	50	16
3.	reflecting is practised	Undergraduate	23	15	62	13
		Postgraduate	33	34	33	3
		Total	25	19	56	16
4.	experiences are discussed	Undergraduate	23	15	62	13
		Postgraduate	0	0	100	3
		Total	19	13	68	16
5.	co-mentoring is practised	Undergraduate	54	9	37	11
		Postgraduate	0	0	100	1
		Total	50	8	42	12

Portfolio mentors

The mentors from 27 programmes mostly had medical backgrounds. In some programmes, portfolio mentors included social scientists (10 programmes) and basic scientists (four programmes). The responses to the open-ended questions suggested that a portfolio mentor should preferably be independent, meaning that the same mentor should not also be the student's daily supervisor during rotations. An independent mentor should have a good overview of the aims of the portfolio and the content and structure of the different rotations. Another suggestion was that 'problem' students should be mentored by mentors who are particularly skilled in that area.

Nineteen out of the 22 programmes offered educational support to mentors. Various kinds of support were provided: instructions on paper (19 programmes), one-off personal instructions (15 programmes), general pedagogic training lasting several days (three programmes) and specific training aimed at mentoring portfolio use (13 programmes). The support was not solely focused on training mentors before they started their mentoring tasks, but also on their training during the process. Regular meetings were arranged in nine programmes where mentors could share experiences

and expertise. The responses to the open-ended questions emphasised the fact that training is important, but very time-consuming.

Discussion

Our study provides a description of mentoring processes in 30 undergraduate and postgraduate portfolio programmes. Most programme coordinators reported several educational aims for mentoring, which are in line with the 'coaching domain' of a recently described framework for teaching competences (Molenaar et al. 2009). This coaching domain comprises: (a) exploring students' coaching needs, (b) supporting students in defining and redefining learning objectives and looking for alternative ways to reach their goals, (c) supporting students to reflect critically and (d) enhancing students' ability to direct their own learning processes. All aims mentioned are reported back in two-thirds or more of the programmes. The most frequently reported mentoring aim was 'providing feedback', which is in line with the widely acknowledged opinion that feedback is the driving force behind improvement (Kluger & DeNisi 1996; Hattie & Timperley 2007; Van de Ridder et al. 2008). Students also emphasise the need for

feedback on their portfolios to assist them in determining whether they are on the right track (McMullan 2007). The second most frequently reported aim of mentoring portfolio use was 'stimulating reflection', which is necessary because reflection does not come naturally to most students (Driessen et al. 2003; Regehr & Mylopoulos 2008). Students also stress the need for more guidance on the reflective aspect of portfolio learning (Davis et al. 2009). The following educational aims of mentoring are also often reported: supporting students in compiling a portfolio, monitoring students' competency development, supporting students in developing a better awareness and understanding of their strengths and weaknesses, supporting students in drawing up a learning plan for the coming period and motivating/inspiring students. It is unclear why some portfolio programmes do not apply all the educational aims of the mentioned mentoring. One reason could be that some portfolio programmes are still not fully developed. Another explanation could be that some aims relate directly to the portfolio content, for instance, if a learning plan is not included in the portfolio, the aim of supporting students with such a plan is not applicable. However, the results of our study revealed that the aims of undergraduate and graduate portfolio programmes did not differ or only differed slightly. Apparently, the manner and context in which a portfolio is implemented has little influence on the educational aims of mentoring portfolio use.

Students were mentored individually with their portfolio in almost all programmes. For postgraduate programmes, the Dutch Central College of Medical Specialties prescribes a fixed number of individual mentoring meetings (i.e. progress interviews) – four during the first year and decreasing from two per year in the following years to an annual individual meeting. Furthermore, the implementation of portfolios contributes to scheduling individual mentoring meetings, especially in a clinical setting. This is a positive result, because individual mentoring is often challenged by increased clinical, administrative, research and other educational demands on medical faculties (Sambunjak et al. 2006). Another benefit of the implementation of portfolio is that it offers a focus on individual mentoring, which is seen as a requirement for successful mentoring (Tobin 2004), and which is enhanced by the mentor introducing points for discussion based on the portfolio handed in. Students are also encouraged to introduce subjects for discussion themselves in almost all portfolio programmes. This is in line with the idea that self-directed learners play an active role in their learning process (Dolmans et al. 2005). To enhance the students' longitudinal development, it has become common practice in individual mentoring to consider the main themes (intentions and discussion points) of the previous meeting and to conclude the meeting with new plans and agreements. A fixed agenda is more useful in a postgraduate than in an undergraduate setting. This is in line with a Canadian study that highlights a need for structured mentorship in postgraduate training programmes (Donovan & Donovan 2009). Future research is required to determine the characteristics of an effective individual portfolio meeting and to explore the optimal frequency of individual meetings. Another interesting aspect for further research is the content of the meetings – what kind of topics based on the portfolio are discussed during individual mentoring meetings?

In undergraduate programmes, small group sessions were frequently organised alongside individual meetings. The focus of these meetings was on training the skills necessary for effective portfolio use. Students discussed experiences and practised reflective skills. This kind of peer discussion is of great importance to reflective learning (Tigelaar et al. 2006; Schaub-de Jong et al. 2009). Further research is needed to examine whether students who have learned to reflect within a group context and who have been trained to discuss their experiences perform better than students without such training.

Practising how to give and receive peer feedback or co-mentoring were less common activities during small group meetings. This is in contrast with a study by Mathers et al. (1999), who found that co-mentoring in continuing medical education is a crucial aspect of portfolio learning. Making a portfolio is seldom a subject of discussion during the small group sessions, even though in most programmes it was highlighted as a very relevant educational aim. Mentors probably consider helping students to compile their portfolios as a more individual activity. The results of our survey showed a great variety in the number of small group sessions for each year and group size. The research results on group size in a problem-based learning curriculum are not unequivocal, though it is generally acknowledged that a group size of six to eight students is optimal (Moust et al. 2005). Further research is needed to determine whether this group size is also optimal for small group sessions aimed at discussing experiences and practising reflective skills.

Most of the portfolio mentors in this study were clinically qualified academic staff. In the early years of the medical education continuum, social scientists or basic scientists were also active as portfolio mentors, alongside clinically qualified mentors. This is in line with a study by Austin and Braidman (2008), who found that mentors do not think it necessary to have a clinical background when supporting student portfolio use in undergraduate training. Future research should determine the competencies and the skills required for successful portfolio mentoring in both undergraduate and postgraduate training.

Since mentoring portfolio use is a relatively new but crucial task, training portfolio mentors is vital (Pearson & Heywood 2004; Thomé et al. 2006). In most of the programmes, mentors were supported by training; however, the applied training formats varied widely across the programmes of study. Four respondents mentioned specially developed training courses for portfolio mentors, during which the mentors practised selecting subjects for individual meetings based on authentic portfolio materials. The actual discussion was practised through role-play and, subsequently, the role-play mentor received feedback from the other participants. Some medical schools and hospitals organised regular sessions, in which mentors were encouraged to exchange experiences to learn from each other. The importance of such peer meetings has recently been highlighted in a review about effective faculty development (Steinert et al. 2006). Since the time of most portfolio mentors is often limited, future research should focus on the feasibility and effectiveness of different training formats.

The strength of our study, compared with studies reporting on a single mentoring format, is that it provides a description of the mentoring process for 30 different portfolio programmes. Almost all of the Dutch and Flemish undergraduate portfolio programmes we knew were included in our study. Representing the postgraduate setting, a smaller part of the total number of portfolio programmes was involved, possibly due to the fact that some postgraduate programmes were still in the process of implementation. A limitation of our study is that we only provided a descriptive overview of implemented mentoring formats and that we did not examine which portfolio mentoring format most effectively affects the learning process.

Conclusion

The mentoring process within portfolio programmes has a strong focus on providing feedback and stimulating reflection. Students are mainly mentored individually. In addition, some programmes provide small group sessions to offer students an opportunity to discuss experiences and practise reflective skills. Some institutions also facilitate peer meetings for their portfolio mentors to share experiences and expertise. This study reveals that Dutch and Flemish medical education programmes show a wide variety in why, what, where and how the mentoring process in relation to portfolio use is carried out. Further research should elucidate the most effective way of mentoring portfolio use.

Acknowledgements

The authors thank all portfolio programme coordinators for completing the questionnaire and Tineke Bouwkamp-Timmer for her constructive comments on this manuscript.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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