

Portfolios in continuing medical education – effective and efficient?

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Introduction A cross over comparison between ‘traditional’ continuing medical education (CME) activities and portfolio-based learning in general practice is described.

Method Thirty-two volunteer general practitioners (GPs) were divided into two cohorts; each cohort spent six months following a ‘traditional’ route to postgraduate educational accreditation (PGEA) and six months following a portfolio-based learning route supported by three CME tutors.

Outcome Measures These were the submission of a completed portfolio with evidence of the completion of learning cycles and participants reflections on the educational process. Qualitative and quantitative evaluation data were collected by questionnaire, semi-structured interview, participant observation and review of completed portfolios.

Results The themes identified by GPs as hopes for the portfolios were largely fulfilled and the anxieties generally confounded. The flexibility of the portfolio learning process was particularly important to the participants. The breadth of topics covered by the portfolios was extremely wide and comparison with the submissions for ‘traditional’ PGEA showed a much

smaller spread of learning activities and fewer subjects of study.

Effectiveness The use of the portfolios of critical incidents and the completion of learning cycles with application to practice provided evidence of the effectiveness of such learning.

Efficiency The mean number of hours spent by GPs preparing the portfolios was 24.5 ± 12 (SD) which was significantly more than the 15 hours of PGEA awarded.

Conclusions This study demonstrates that a portfolio-based learning scheme can meet the needs of GPs relevant to their professional practice; it can give learners control over how, what and when they learn and encourage active and peer-supported learning; it can build personal and professional confidence and be thought both valid and reliable by participants. Learning outcomes can also be reliably assessed by PGEA within the context of an individually created learning plan.

Keywords Continuing medical education, *economy, methods: family practice, *education; random allocation; cohort studies; Great Britain; mentors; questionnaires.

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Introduction

Portfolio-based learning

The current arrangements for the continuing medical education of GPs are unsatisfactory.¹ Many courses are of very poor quality and any learning, if it occurs at all, is passive and essentially reactive. Constraints of time, energy and finance can lead to GPs choosing the

nearest and cheapest accredited courses to gain their Post Graduate Education Allowance (PGEA) with no assessment of their ability to meet their individual learning needs.

Such learning is contrary to most of the theory and principles of adult learning. These emphasize the importance of interactive methods such as small group teaching and the encouragement of autonomy and self-direction by identifying educational need, and planning to meet individual learning objectives.^{2–4}

Structured reflection is a key component of such educational processes which, if they involve a process of thinking critically about experiences³ are more likely to result in ‘deep’ learning (as opposed to ‘surface’ learning) than input-driven courses. Reflection is

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facilitated by offering support to the learner in defining his/her educational need and in formulating learning plans, through clarification, challenge and approval.¹ It also involves validation of the learning which has been achieved. Such facilitated support may occur within a co-mentoring (or co-tutoring) group.⁵

There is, however, a wide variety of definitions of mentoring in the literature.⁶⁻⁸ The Royal College of General Practitioners¹ offers a model of co-mentoring where 'two or possibly three individual practitioners provided one another with peer support, facilitation and encouragement'.

Kolb⁹ describes a learning cycle whereby learning needs are identified through structured reflection on experiences. These needs are then met by specified educational activities. The cycle is completed by applying the new learning to professional practice and in the process identifying further learning needs arising from the subsequent new experience. It should be possible to identify changes in professional practice by working constructively within this cycle. If such change is possible then it is far more likely to occur in a context where the theory and principles of adult learning are applied. The current PGEA system does not, in general, meet these requirements. The potential of portfolio-based learning to achieve this is much greater, and it was with this in mind that this study was undertaken.

A portfolio may be described as a collection of evidence maintained and presented for a specific purpose. Whilst it is a term familiar to architects and graphic artists, its use is relatively new in other areas of education and training. Within the health professions, however, and in particular nursing,¹⁰ its use is growing as a means of helping practitioners to plan and implement their continuing professional development through keeping records of learning activities and developing critical and reflective practice.

From October 1994 to September 1995, portfolio-based learning was offered to General Practitioners (GPs) in Sheffield by the local continuing medical education (CME) tutors as a means of obtaining half the yearly requirement for the postgraduate educational allowance (PGEA). The project sought to evaluate the role of portfolios in CME and the effectiveness and efficiency of such a model for the continuing professional development of GPs.

As part of the study a comparison with 'traditional' PGEA was also made.

Method

The design chosen for the study was a cross-over comparison between 'traditional' CME activities and

portfolio-based learning previously described.⁵ In summary, 32 volunteer GPs were divided into two cohorts: each cohort spent six months following the 'traditional' route to PGEA accreditation and six months following the portfolio-based learning route supported by 3 CME tutors.

Participants were thus able to obtain 15 h accreditation for the PGEA with their portfolio and 15 h through 'traditional' PGEA activities. In each cohort, the portfolio group met three times in groups of $\approx 6-8$ with a CME tutor who facilitated a process of co-mentoring.

In principle, co-mentoring was defined as a process by which learners were encouraged to:

- be proactive in their own learning and development;
- identify their own educational needs;
- develop strategies to meet educational needs with appropriate learning activities and styles;
- structure reflection on their experience and practice;
- use critical incidents (significant events) to modify or reformulate the original objectives of the learning plan;
- complete a learning cycle by applying new learning to practice.

In this study, the key features of such a process of co-mentoring were that the CME tutor had a dual role as a facilitator/coordinator and as a group participant who was required to produce his/her own portfolio.

The CME tutor made his/her role explicit in terms of the assessment of portfolios. Within this scheme, this role was restricted to preparing a factual summary of the content of the portfolios of members of other co-mentoring groups and making recommendations to the postgraduate director of general practice education for the number of hours of PGEA accreditation, based on the evidence presented. The postgraduate director was responsible for accrediting the submitted portfolios for the PGEA.

Qualitative and quantitative evaluation data were collected in four ways: by self-completed questionnaire, semi-structured interview, participant observation and evaluation of the completed portfolios by the CME tutors.

All participants in the study completed a semi-structured questionnaire at the beginning and end of each 6-month period. The two version questionnaire consisted of a series of open and closed questions to collect qualitative and quantitative data. The first version, administered at the start of each 6-month period, sought information on:

- the hopes, anxieties and expectations of participants in relation to their model of gaining PGEA;
- the areas of learning objectives for the forthcoming 6 months.

In the second version, administered at the end of each six month period, data were collected on:

- the extent to which initial hopes, anxieties and expectations were realized or confounded;
- number and type of learning objectives actually achieved;
- time spent in achieving learning objectives;
- numbers of critical incidents which influenced learning objectives;
- the involvement of others in meeting learning objectives.

Quantitative data were also collected by semi-structured interviews by the authors using the questionnaire framework outlined above. Three randomly selected participants from each cohort were interviewed at the midpoint of each six month period. This usually took place in the participant's practice premises.

Qualitative data were also collected by participant observation by the authors during the co-mentoring sessions. These data were collated by the medical educationalist member of the evaluation team (MC) following systematic debriefing sessions with the CME tutors.

Finally, evaluation data were derived from the review of the completed portfolios for accreditation by the CME tutors. 'Deep' learning objectives were defined as those demonstrating higher level skills and synthesis of knowledge by the use of such words as 'evaluate' or 'prepare'.

Data analysis

Qualitative data were analysed using a grounded theory approach.¹¹

- Data from the questionnaires, semi-structured interviews and the debriefing sessions with the CME tutors were transcribed, photocopied and anonymized.
- Major themes arising from the data were identified independently by two of the authors (NM and MC).
- Attempts were made by the authors to falsify these themes by systematic examination of the data for contradictions to these themes.
- Finally, the data were reviewed to identify supportive evidence for the final emergent themes, the criteria for acceptance being those of 'trustworthiness'.¹² 'Trustworthiness' was ensured not only by this methodology but also by the triangulation

of the questionnaire, interview and participant observation data. In addition individual biases in the interpretation of the data were minimized by the mixed disciplinary of the project team – the medical educationalist was not a co-mentor to the groups of GPs nor employed by the project and acted as an 'independent' advisor to the project and evaluator of the data.

Quantitative data from the portfolio evaluation were analysed using a standard Casio statistical package (Casio fx-39 scientific calculator) to determine the means and standard deviations of the numbers of educational objectives realized, methods of study used, the numbers of critical incidents which modified the original learning plans and the hours spent achieving learning objectives.

In evaluating the scheme, the following operational definitions were used:

- **Effectiveness** – the ability of the educational process to facilitate the achievement of specified learning objectives by GPs in practice.
- **Efficiency** – the 'amount of educational gain' obtained within the resources of the Sheffield Project as compared with the traditional pattern of PGEA.

The 'amount of educational gain' was operationalized in terms of the number and type of educational objectives achieved and the number of hours required to achieve those objectives.

Assessment of portfolios

The final submission of the portfolio for accreditation required participants to produce evidence of:

- a learning plan with specific learning objectives; appropriate methods for meeting these learning objectives; application of new learning to professional practice;
- a list of 'critical incidents'; identification of new learning objectives initiated by critical incidents; appropriate modification of original learning plan to meet new objectives; application of this learning to professional practice (for example, the production of a practice protocol or a case report of the use of a new clinical skill);
- a claim for PGEA under the standard three headings of health promotion, disease management and service provision; number of PGEA hours claimed; type(s) of educational activity undertaken (including any courses attended).

In addition, all participants were asked to submit a self-appraisal of their learning during the year, to encourage continuing reflective learning. This comprised

an assessment of features that helped learning, features that hindered learning and a learning plan for the forthcoming educational year.

The criteria used by the CME tutors for recommending accreditation have been fully described elsewhere.⁵ In brief, these were:

- completion of a learning cycle;
- meeting the learning objectives of the original plan and/or those arising from critical incidents;
- demonstration of an understanding of the educational process.

In addition, the portfolios were assessed for **sufficiency** (i.e. was enough evidence presented in the portfolio to justify the PGEA claim) and **validity** (i.e. was the evidence presented appropriate for the educational objectives claimed).

In order to ensure the validity of the assessment process, each CME tutor evaluated the portfolios of members of the co-mentoring groups which he/she had not facilitated. In addition, the CME tutors assessed and provided feedback on each others' portfolios.

Finally, the CME tutors certified the number of hours claimed by the GPs and wrote a confidential summary report on each portfolio, which was sent to the learner and the Postgraduate Director of General Practice Education for final accreditation.

Results

1. Hopes and anxieties of participants

The major themes arising from the initial questionnaires are shown below. Quotations given have been extracted from the questionnaires and interviews on the basis that they most clearly characterize the responses of the participants.

Hopes for the scheme

Identify and plan own learning needs

'To be able to meet with others to discuss and find educational needs I might not have identified alone.'

'Fulfil some long established aims for learning that I haven't got round to so far.'

New ways of learning/recognizing learning (especially for PGEA)

'That credit will be given for general follow up of needful areas already done, e.g. reading, discussions with partners.'

Relating learning to practice

'That my education will be directed at subjects which are relevant to me in my work, rather than what other people are trying to push into me.'

'May help to encourage discussion within the practice.'

Encouragement/stimulation

'A "carrot and stick" to encourage and provide deadlines for personal study.'

'To construct a portfolio that will not only promote useful reference material, but will stimulate me to explore further learning opportunities as they arise.'

Self-knowledge

'To gain confidence in ability to learn.'

Relevance/focus for learning

'To make my future learning more critically based on professional areas of educational need.'

'Do less "useless" reading etc.'

Continuation/development of portfolio-based learning model

'That it stimulates and supports a regional/national move to a better system of PGME.'

Anxieties about the scheme

Time commitment

'It will involve more than 15 hours.'

'Take too long to organize.'

Self doubt

'That I will not exercise the discipline required to do the study required at home.'

'Am I capable of directing myself in this way, especially with other time constraints?'

Quantity of work

'Maybe even more work – will come on top of other activities, e.g. training courses, workshops, reading.'

Bureaucracy/documentation

'More paperwork'

Doubts about the future of the scheme

'That the whole thing will fizzle out'

Group won't work

'Won't enjoy the mentoring/group process of "baring my soul" to other GPs'

Efficiency

'It might require more input to achieve to my own satisfaction than it can yield in terms of PGEA'

Organization of pilot

'That the evaluation of cross-over to traditional course will be a distraction'

Evaluation of the post-portfolio questionnaires showed that the themes identified as **hopes** were largely fulfilled and the anxieties were generally confounded. Indeed the 'hopes realized' outnumbered the 'hopes' expressed at the beginning of the process, and included value judgements of the improvement of portfolio-based learning over 'traditional' means of gaining PGEA. A particular feature was the **flexibility** of the portfolio-based learning process.

Of the anticipated **anxieties**, those relating to the time needed, the paperwork and personal time, management, insecurity and self-discipline were realized. However, the list of 'anxieties realized' was considerably shorter than the original list of anxieties, which may be taken as an indication of the perceived success of the scheme.

The hopes and anxieties of those in the 'traditional PGEA' cohort indicated a very pragmatic approach to the process. The major expectation of the respondents was merely to attend the hours necessary to gain the PGEA. Anxieties centred on the fear that the means of achieving this end would be out of the control and direction of the GP and the process would be boring and irrelevant.

The themes indicated above also emerged from the interview data. However, the interviews afforded an insight into the personal and professional development of the interviewees that was less obvious in the completed questionnaires. There was evidence that those who were participating in the portfolio-based learning process carried its principles back into their practices. This is typified by the following extract from an interview:

It was the first proper meeting we have had for a while, two or three years probably – a proper clinical meeting where you really set it up and you are actually looking at something specific, and I am hoping it will set me up for doing similar things. So that was really a product of the portfolio learning. It is something that I would've thought I ought to do but that if I hadn't had the portfolio I probably wouldn't have got round to it in the same way.

Another striking feature of the interview data was the way in which it showed the growing confidence of participants to take control of their own learning, and to believe their own judgement in terms of what mattered. This is clearly demonstrated by the following response to a question about the amount of time spent in PGEA activities put to a respondent before beginning work in the second portfolio cohort.

I guess it works out that I am probably on course for 30 hours by April. I think I've done 28 hours since last April and probably most of that is since October because I

tend to quieten down over the summer. And then I suppose I've done, it's difficult isn't it, various bits of reading on my own, sort of non-PGEA, if you see what I mean, and I also finished writing up my MPhil so I mean I actually did do a great big chunk of sort of intellectual stretching in September.

At this point, the 'intellectual stretching' is effectively written off as peripheral to and unrelated to the PGEA. There is no apparent connection between research and academic work and the hours-based professional 'education' in which the interviewee was engaged.

However, the same participant, when interviewed during the portfolio-based learning process, presented a much less quantitative reply to the question about the time spent in educational activity:

... we were saying [in the co-mentoring group] after you sat down and wrote down all the educational activities that you did it would be massively more than 15 hours in 6 months even without trying. If you counted when you read the BMJ on the loo or when you phoned a consultant to get some more information about somebody or the lab to see how you should go about getting something done, it's all learning isn't it. ... The other thing about the time is it's very time consuming thinking about the portfolio and how to write it up. We were all getting our knickers in a twist ... around how we did it and what was allowable and there was a lot of paperwork to do. I think it's also a reflection of the fact that what it's asking me to do is reflect on the learning process. That is going to take longer, but to me that's the most valuable thing to come out of it and really sort of that's what I wanted – kind of insights into how I could learn most effectively and the kind of rhythm and system I need to set up and keep going and also about the level of which I need to learn things ...

The response continued beyond this point, but it is obvious, even from this extract how much more engaged in the process of learning this interviewee is now as compared to the time of the first interview.

2. Content of portfolios

All participants submitted a portfolio (though not all within the timescale of the pilot project), and all were awarded the available maximum of 15 hours PGEA. The combination of self and external assessment, supported by the formative peer-feedback through the mentor groups, made this a robust model for continuing professional development, many aspects of which are being developed by other professional bodies and associations.

Participants were asked to indicate with their final submission for PGEA how their claimed time had been

divided up between the three standard areas of Disease Management, Service Management and Health Promotion. The great majority (62%) indicated that their primary focus had been in service management, followed by disease management (28%). None of the participants had claimed the majority of their hours in the area of health promotion.

The breadth of topics covered by the portfolios was extremely wide. For example, some evidence of learning about all the following topics was included in one portfolio:

- assessment and management of patients with MI;
- management of acute stroke;
- assessment of patients with PH;
- arterial fibrillation – indications for anticoagulation;
- revision of management of hypertension – particularly in the elderly;
- modern management of heart failure;
- psychological assessment of patients with cancer;
- counselling terminally ill patients;
- examining methods of planning future learning.

Other participants demonstrated a considerable depth of learning (rather than breadth) illustrated by one portfolio which provided evidence of the development of advanced counselling skills.

Comparison of the portfolios with the submissions for 'traditional' PGEA accreditation showed a much smaller spread of learning activities (e.g. more lecture-based) and fewer subjects of study. One 15 h PGEA claim from the non-portfolio group for example comprised three courses on the following subjects:

- HIV;
- Women in medicine;
- Dyspepsia management.

3. Methods of learning

Participants in the portfolio-based learning cohorts reported a wide range of methods of learning, both in relation to follow up work on their critical incidents, and in meeting their overall educational plan. These methods included some attendance at organized events, such as lectures and workshops, but by far the most frequent methods of study reported were reading and private study, closely followed by discussion with colleagues.

As well as being engaged with a wide range of topics, learners were also using a wide range of learning activities. The numbers of references to methods of study for each of the portfolio learning groups were 63 and 52, whilst for each of the traditional PGEA groups, the number was only 28. This indicates that the portfolio

route develops and allows individual decisions to be made about the most appropriate method of meeting identified learning needs, as distinct from accessing provision whose timing, educational process and content have been decided by someone else.

Whilst undertaking the traditional route to PGEA, the methods of learning which participants recorded most frequently were attendance at lectures, followed by workshops and seminars. The second cohort, using the traditional PGEA after their use of portfolio-based learning, indicated a higher use of discussion with colleagues than the first cohort. It may be possible to attribute this to a greater sense of confidence in the validity of self-directed and peer-supported learning as a result of the experience of portfolio-based learning ('carry over' effect).

4. The co-mentoring groups

The summary of themes arising from the questionnaires indicated an initial lack of clarity about what the purpose of the mentor was to be. Participants expressed a wide range of expectations of their group. These included such aspects as 'getting on as a group', and stressed the need for ground rules of confidentiality, honesty and commitment. However, by far the most frequent perception related to the group as a source of support/guidance and encouragement, and the need to work together in sharing information and ideas, providing a focus of responsibility amongst group members that would place "gentle pressure" on each to complete their learning portfolio.

Information gathered at the end of the process indicates that the group met the needs of participants not only in acting as a supportive stimulus to learning, but also in providing a new forum for joint learning and professional development which might not have otherwise existed.

It was perhaps surprising that the role of the mentor/facilitator did not give rise to comment from participants. The position of the facilitator within the group had been anticipated as a potential area of difficulty by the CME tutors themselves during initial discussions about the pilot, given their dual roles as both group participants, and as those who would ultimately have to make recommendations of the portfolios of others for the award of the PGEA. None of the participants, however, raised any points of either concern or approval on this aspect, so we must assume that this was not an issue for them.

During their period engaged in the traditional route to PGEA, participants indicated that others were involved very little in the planning or attainment of

achieving their PGEA, with the exception of some peripheral influence from practice partners or Medical Audit Advisory Group (MAAG) advisers.

5. Effectiveness

The concerns of participants about the amount of time and paperwork involved in the process were largely borne out in practice, indicating a need for a 'slimmer' process of recording and documenting learning processes and outcomes if the scheme is to continue. The mean number of learning objectives by the GPs was 4.2 ± 1 (standard deviation (SD)) although the range was from 1 to 9 objectives. Of particular interest is that the number of these objectives which implied 'deep' learning objectives was 2.8 ± 1 (SD) with a range of 6–1. Such 'deep' learning objectives included words such as 'evaluate' and 'prepare' (... a practice protocol) suggesting that most of the educational processes which the GPs undertook were of a different quality to those associated with traditional PGEA activity.

However, it was agreed by all participants that portfolio-based learning not only made it possible to achieve individual pre-specified learning objectives but also afforded great flexibility in both the learning methods and the timing of individuals' engagement in educational activities. This was seen as beneficial, and appears to have encouraged a diversification of learning methods and topics investigated. The confidence that such diversity can be valid in the context of PGEA will grow as the scheme continues, and should encourage a greater depth and 'ownership' of learning that is appropriate to the learning styles and needs of individual learners.

The use of critical incidents as a focus for identifying learning needs proved as useful as the original educational plan in giving direction to participants. Finally, the mean number of 'critical incidents' which GPs reported as being significant in terms of modifying their original learning objectives was 7 ± 4 (SD) with a range of 18–1. This also suggests that a learning cycle was being completed as part of the educational processes of preparing the portfolio. The fact that participants were able to demonstrate an application in practice of learning derived as a result of these incidents, is a clear indication of the value of basing continuing professional education within the real experience of practitioners.

Whilst engaged in the traditional route to PGEA, there was no evidence that participants were able to apply their learning to practice. Indeed, no GP claimed that attendance of organized events was the result of identifying a particular learning need. It was therefore difficult to gauge the effectiveness of such activities in

terms of application to day to day practice and meeting individual learning needs.

6. Efficiency

At the beginning of the project, there were many doubts amongst the participants about the efficiency in terms of the time that would be necessary to undertake portfolio-based learning and indeed the evaluation did indicate that there was a wide variety of time taken to achieve the desired outcomes. This may be due in part to the extent to which participants engaged with particular topics, and, additionally, to the complexity of those topics.

Despite the variation in actual hours taken, the mean number of hours for all participants was 24.5 ± 12 (SD) with a range of 6–10½ hours. This is significantly more than the 15 hours PGEA which could be gained using the portfolio-based learning process. Given the perceived relevance of the activities being undertaken to the practice of the individuals concerned, it could be argued that the actual time taken becomes of less importance than the effectiveness and applicability of the learning taking place.

The amount of paperwork involved in the submission for PGEA was, however, considered by all participants to be the least attractive part of the portfolio-based learning process. As time taken for preparing the submission was counted into the total number of hours recorded, there is obvious benefit in reducing this aspect of the scheme in future.

As traditional PGEA is calculated in terms of hours spent in educational activity, this may appear to reflect accurately the actual number of hours spent. However, if the wider issues of the timing of the events, travel, any preparation and follow-up work, and the relevance to practice are taken into account the efficiency of the traditional route to PGEA may be called into doubt.

7. Discussion

As indicated above, the initial evaluation of the project was designed to explore the efficiency and effectiveness of a portfolio-based approach to continuing professional development. However, it became clear that these terms were in some respects rather blunt instruments when it came to establishing the finer detail of the actual learning processes in which participants were engaged. It may therefore be more appropriate to explore the findings of the project from an educational standpoint, under the themes of the 'practicalities' of implementing such a scheme, and the 'real learning'

that can be identified as a result of engagement in the process.

Practicalities

The project was underpinned by current theories of adult learning and models of supporting continuing professional development that are consistent with these theories. The use of mentor groups was extrapolated from the more traditional use of individual mentors in the workplace with the added dimension of facilitated group meetings. It was introduced in order to recognize the existing expertise of the participants in their own profession, and to offer a means of support, given the novel nature of the portfolio-based learning process, within the resource constraints of the project.

A model of assessment was used that was broadly framed by the requirements of PGEA, and was based on a mixture of self-assessment by the participants themselves and a more formal assessment by the CME tutors for the purposes of gaining PGEA.

The evaluation has indicated that the time taken to achieve the desired outcomes varied greatly among the participants, but was generally greater than the number of hours available for PGEA. As indicated above, this may be due to the engagement of participants with particular topics, and the complexity of those topics. It may also reflect the fact that time spent at mentor group meetings and in preparing the evidence of learning and submission document were included in the total hours recorded. Given three group meetings of 2 hours each, this alone represents a substantial amount of the 15 hours available. In addition, many participants indicated that the portfolio-based learning allowed them to gain points for activities they would have undertaken anyway. The comparison between the portfolio-based route and traditional PGEA is therefore somewhat distorted, being based on criteria that were not consistent between the two arms of the study. A further study that took into account all the time implications of traditional PGEA, plus all the other time spent in learning activity does not 'qualify' would give a more accurate picture of the true 'efficiency' of each type of learning.

The amount of paperwork involved in the submission was considered excessive and burdensome, and regarded by the participants as the least attractive part of the portfolio-based learning process. This was partly due to the fact that this was a pilot study which required considerable amounts of information for the purposes of an evaluation of the future viability of the scheme. There is, however, an obvious need to reduce this. Participants found engaging in the portfolio building process and setting of educational objectives difficult at

first, with insecurity heightened by the fear of having to share 'gaps' or lack of understanding with other colleagues and seek support from others. However, once the principles were understood and the requirements clearly explained, the process became easier and less threatening. It may be appropriate to assume therefore that as more GPs become involved in the scheme and pass on experience and knowledge to others, doubts about sharing perceived inadequacies will reduce, and the process of documentation will become part of the normal means of engaging in continuing professional development.

The role of the mentor group in supporting individual learners was seen as effective in terms of giving participants a forum to discuss and revise their learning plans. It was also seen as an appropriate use of time in consolidating progress and validating the processes being undertaken for individual learners. In the future, other models for the timing and operation of the mentor group could be explored to widen the flexibility in the use of group-based learning.

The role of the mentor could also benefit from further examination. Whether the role is that of group facilitator, individual educational support worker, or conduit between the learning process and the award of the PGEA remains to be clarified. Within the pilot group this did not appear to be problematic, but in terms of the rigour of the assessment of claims for PGEA in future, decisions may need to be taken about where the priorities lie within this continuum of possible models.

This initiative was a pilot study and not formally costed. However, it was run within the financial and other resource constraints of a pre-existing CME programme. It is likely that other CME programmes would also be able to implement such a co-mentoring model for portfolio based learning without a large increase in financial resources.⁵

Real learning

Beyond issues relating to the practicalities of implementing the scheme, lies a more exciting area of the educational benefits that arose from engagement in the portfolio learning project.

It was clear that the principle of portfolio-based learning was accepted and considered an improvement over traditional PGEA by the participants in this study. In particular its flexibility appears to have been most welcome, and exploited as fully as could have been hoped for. As such, there is great scope for portfolio-based learning to be further developed and made available to more GPs.

However, before accepting the findings of this project as justification for wholesale implementation of such a scheme, it is perhaps appropriate to sound a word of warning. All participants in this pilot were self-selected, drawn from the younger end of the profession, keen to participate and fully aware that this was a pilot that could influence the way in which PGEA operates in the future. Despite these factors, which, it might be assumed, would lead to maximum commitment, there was still evidence that some participants found portfolio-based learning difficult. The difficulties arose from the need to 'find' time from within a busy schedule to undertake the relevant learning or follow up critical incidents. With traditional PGEA, time booked for a course or meeting is planned time away from the practice, and so these conflicting pressures are less immediate. It would seem therefore that portfolio-based learning will not be immediately appropriate for all GPs, as some will not be able to find the 'protected time' required to undertake this type of learning and ensure the rigour of the process through accurate recording of activity. Those who found the whole process least problematic appear to be those who were able to engage fully in all stages of Kolb's cycle, without becoming fixed at one point. In time, and given the recent changes in undergraduate and postgraduate training, all medical students should be more accustomed to problem-based learning, so the current tendency for doctors to be tutor-dependent learners, for whom traditional PGEA might be seen as attractive, should become less important.

However, further research is required – given the design of our study, it is not possible to identify which part of the complex educational process to which participants were exposed is primarily responsible for the attitudinal shifts which we observed. The processes of co-mentoring, preparation of a portfolio as well as critical incident audit all played a part in the changes in the participants. There is clearly a need to develop objective outcome measures for each part of the process and criteria other than self report for evidence of the application of learning to practice.

8. Conclusions

In summary, the comparison of the portfolio-based route with traditional PGEA activities has indicated that:

- portfolio-based learning enables GPs to be proactive in their learning. The traditional model of gaining PGEA is reactive in that course providers determine the learning objectives, and the time, place and pace of learning;

- portfolio-based learning enables the devising of individual learning plans. Traditional PGEA generally provides little opportunity for planning to meet individual educational need;
- portfolio-based learning represents a model of good educational practice for adult learners, by combining the theory and principles of active learning with other individual and interactive educational processes. In contrast, traditional PGEA encourages passive learning through the use of more didactic processes;
- building a portfolio can facilitate the completion of learning cycles, and provide evidence of the application of learning to professional practice. There was no evidence within this project that this is the case with traditional PGEA activities;
- the planning involved in portfolio preparation enables GPs to identify future learning needs and devise further educational plans. This was not the case with traditional routes to PGEA;
- the use of mentor groups to support the learning process, although perceived by some as initially threatening, is helpful, and would be further enhanced by clear statements of the remit of the group and agreement on the optimum number of meetings. GPs involved in traditional PGEA have no built-in mechanisms to support their learning;
- portfolio-based learning promotes an increase in self-knowledge and confidence in relation to individual learning preferences and needs. Traditional PGEA provides no means for measuring these aspects of professional development.

This study has demonstrated that a scheme of continuing professional development can be developed that meets the needs of participants in terms of relevance to their professional practice; that gives learners control over how, what and when they learn; that encourages active and peer-supported learning; that builds personal and professional confidence; that can be reliably assessed within the context of an individually created learning plan; and that is considered valid and valuable by the participants.

Since this project was completed, portfolio-based learning has been accepted by the Postgraduate Director of General Practice Education as an alternative to the traditional means for gaining PGEA. Many of those GPs in the original pilot groups have opted to continue with portfolio-based learning rather than return to the previous model. In addition, further GPs have chosen to engage in this approach to PGEA. New recruits are being supported in their co-mentoring groups by participants in the original project, who have engaged in training events relating to the principles of

co-mentoring and group facilitation. The process is therefore being extended through a 'cascade' of expertise, and will continue to be monitored, evaluated and developed by the CME tutors.

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