

# BMJ Open

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (<http://bmjopen.bmj.com>).

If you have any questions on BMJ Open's open peer review process please email [info.bmjopen@bmj.com](mailto:info.bmjopen@bmj.com)

# BMJ Open

## **"I did not check if the teacher gave feedback": A qualitative analysis of Taiwanese post-graduate-year-one trainees' e-portfolio feedback-seeking behaviours**

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-024425
Article Type:	Research
Date Submitted by the Author:	26-May-2018
Complete List of Authors:	Fu, Ren-Huei; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Ching, Chiao-Chin; Chang Gung Memorial Hospital Linkou Branch, Neonatology Hsu, Peng-Wei; Chang Gung Memorial Hospital Linkou Branch, Neuro-surgery Cho, Yu-Hsueh ; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Quattri, Francesca; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Monrouxe, Lynn V; Chang Gung Memorial Hospital Taoyuan Branch, Chang Gung Medical Education Research Centre (CG-MERC)
Keywords:	MEDICAL EDUCATION & TRAINING, Feedback, feedback-seeking behaviours, QUALITATIVE RESEARCH, Taiwan, technology enhanced learning

SCHOLARONE™  
Manuscripts

1  
2  
3 ***“I did not check if the teacher gave feedback”*: A qualitative analysis of**  
4 **Taiwanese post-graduate-year-one trainees’ e-portfolio feedback-seeking**  
5 **behaviours**  
6  
7  
8  
9

10 Fu R.H., Chiang C.C., Hsu P.W., Cho Y.H., Quattri F, Monrouxe L.V.  
11  
12  
13

14  
15 **Author details**

16 REN-HUEI FU is general practitioner at Chung Gung Memorial Hospital, Department of  
17 Neonatology; medical educator at Chung Gung Medical Education Research Centre (CG-  
18 MERC), Linkou, Taiwan.  
19

20  
21 QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang  
22 Gung Memorial Hospital, Linkou, Taiwan.  
23

24 YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang  
25 Gung Memorial Hospital, Linkou, Taiwan.  
26

27 CHIAO-CHIN CHIANG is a Neonatology nursing practitioner of Chang Gung Memorial  
28 Hospital.  
29

30  
31 PENG-WEI HSU is an Assistant Professor of Neuro-surgery and previous physician educator  
32 of CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.  
33

34 MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang  
35 Gung Memorial Hospital, Linkou, Taiwan.  
36  
37  
38

39 **Running head:** PGY1 feedback seeking behaviours, e-portfolio  
40  
41

42 **Word count:** 4,911 (plus Abstract, 1 Table and References)  
43  
44

45 **Contact details for corresponding author:**

46 Prof Lynn Monrouxe

47 Director, Chang Gung Medical Education Research Centre (CG-MERC),

48 Chang Gung Memorial Hospital,

49 Guishan District, Taoyuan City, Taiwan.

50 Telephone: +8860987590697

51 Email: [monrouxe@me.com](mailto:monrouxe@me.com)  
52  
53  
54  
55  
56  
57  
58  
59  
60

### **Contributor and guarantor information**

RHF conceived the study. RHF and LVM designed the work. YHC contributed to the acquisition of the data. All authors contributed to the analysis and interpretation of data. RHF, FQ and LVM drafted the initial manuscript. All authors revised the manuscript critically for important intellectual content. LVM and RHF substantially revised the paper. All authors gave their final comments and approval of the version to be published. LVM is the guarantor, agrees to be accountable for all aspects of the manuscript, has access to the data, made the final decision to submit and will ensure that any questions relating to the accuracy or integrity of any part of the manuscript are appropriately investigated and resolved.

### **Acknowledgements**

The authors wish to express their gratitude to the students who participated in the study, to Ms Eve Huang from the CG-MERC who translated the data from Mandarin to English and to Dr Lesley Pugsley (Cardiff University, UK) for her reviews and comments on earlier versions of 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.

### **Ethical Approval**

The research was approved by the research ethics committee of Chang Gung Memorial Hospital.

### **Funding**

The study was funded by the Ministry of Science and Technology and Chang Gung Memorial Hospital, Taiwan (MOST103-2511-S-182-004, NMRPD1D0201), who were kept informed of progress with the collection, analysis and interpretation of data. The funders had no involvement in the study progress or reporting of results.

### **Transparency declaration**

Lynn V Monrouxe (the manuscript's guarantor) affirms that the manuscript is an honest,

1  
2  
3 accurate, and transparent account of the study being reported; no important aspects of the  
4 study have been omitted; and any discrepancies from the study as planned have been  
5 explained.  
6  
7

### 8 9 **Copyright/licence for publication**

10 The Corresponding Author has the right to grant on behalf of all authors and does grant on  
11 behalf of all authors, a worldwide licence to the Publishers and its licensees in perpetuity, in  
12 all forms, formats and media (whether known now or created in the future), to i) publish,  
13 reproduce, distribute, display and store the Contribution, ii) translate the Contribution into  
14 other languages, create adaptations, reprints, include within collections and create summaries,  
15 extracts and/or, abstracts of the Contribution, iii) create any other derivative work(s) based on  
16 the Contribution, iv) to exploit all subsidiary rights in the Contribution, v) the inclusion of  
17 electronic links from the Contribution to third party material where-ever it may be located;  
18 and, vi) licence any third party to do any or all of the above.  
19  
20  
21  
22  
23  
24  
25  
26

### 27 **Patient consent**

28 Not applicable.  
29  
30  
31

### 32 **Data sharing statement**

33 The raw data for this research comprises audio-recordings of interviews. The principal  
34 investigator (R.H. Fu) has access to this specific data set, including interview transcripts, in  
35 addition to participant contact details and signed consent forms. All authors have access to  
36 anonymised data from this set. All data are securely stored in on password-protected and  
37 encrypted computers. Participants have not given their permission for data sharing outside the  
38 research group. Thus, no additional data is available.  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Abstract

**Objectives:** Despite feedback being an extensively researched and essential component of teaching and learning, there is a paucity of research examining feedback within a medical education e-portfolio setting including feedback-seeking behaviours (FSBs). FSBs can be understood within a cost-value perspective. The objective of this research is to explore the factors that influence post-graduate year-one (PGY1) trainee doctors' FSBs via e-portfolios.

**Setting:** Post-graduate education provision in the largest teaching hospital in Taiwan.

**Participants:** Seventy-one PGY1s (66% male).

**Methods:** A qualitative semi-structured one-to-one interview method was adopted. Interviews were audio-recorded, transcribed verbatim, anonymized and checked for completeness. Data were analysed inductively via thematic Framework Analysis and deductively informed by FSB theory. The process comprised: data familiarization, identification of the themes, charting and data interpretation.

**Results:** Two main themes of FSB-related and e-portfolio-related were identified. We present the theme focussing on FSB here to which  $n=32$  (22 males, 10 females) of the  $n=71$  participants contributed meaningfully. Sub-themes include factors variously affecting PGY1s' positive and negative FSBs via e-portfolios at the individual, process and technological levels. These factors include learner-related (internal values vs. social influence, forced reflection); teacher-related (committed educators vs. superficial feedback); technology-related (face-saving vs. lagging systems; inadequate user-interface); and process-related (delayed feedback, too frequent feedback) factors.

**Conclusions:** Our findings reveal the complexity of PGY1s' FSBs in an e-portfolio context and the interaction of numerous facilitating and inhibiting factors. Further research is required to understand the range of facilitating and inhibiting factors involved in healthcare learners' FSBs across different learning, social, institutional and national cultural settings.

## ARTICLE SUMMARY

**Strengths and limitations of this study**

- To the best of our knowledge, this study is pioneering in that it explores the issues of trainee doctors' feedback seeking behaviours within the context of e-portfolios
- The qualitative interview method adopted, alongside our understanding of current theoretical perspectives of feedback seeking enabled us to unpack the learner, teacher, technological and process-related factors impacting on trainees' willingness to seek out and utilise teachers' feedback within an e-portfolio setting
- Although only n=32 participants meaningfully contributed to our findings. This is a substantial number for a qualitative study of this kind, considering the detailed information that each participant provided.
- The context of feedback seeking behaviours within e-portfolios in a Taiwanese teaching hospital is likely to have emphasized some of our findings, including the face-saving utility

## Introduction

Feedback is an essential component of the teaching and learning process and has been extensively researched in this decade.<sup>1</sup> Giving learners feedback means letting them know, in a timely and on-going way, how they are progressing.<sup>2,3</sup> Indeed, during clinical placements, the provision of feedback is an integral part of the learning process, enriching students' learning experience.<sup>3</sup> Constructive feedback from educators enables learners to gain insight into their actions and consequences, and this allows both learners and teachers to successfully achieve personal and program-related objectives.<sup>4</sup>

Furthermore, research suggests that some forms of feedback (e.g., reinforcement, video/audio feedback, computer-assisted instructional feedback) can be more effective than others, with effective and regular feedback having the potential to reinforce good practice and motivate the learner toward the desired outcome.<sup>5</sup> However, feedback is a two-way process. Although a general complaint heard from students and trainees is often that "*I never receive any feedback*",<sup>6</sup> some clinical teachers believe that students and trainees often lack motivation for seeking feedback.<sup>3,7</sup> To investigate whether it is just a matter of motivation, our study focuses on trainee doctors' feedback-seeking behaviour (FSB) within e-portfolios.

## Feedback-seeking behaviour

Feedback-seeking behaviour (FSB) has been defined as "[a] conscious devotion of effort towards determining the correctness and adequacy of behaviours for attaining values and states".<sup>8</sup> For this to happen, it requires both conscious effort and motivation to change.

A recent scoping review of the literature around feedback for learners in medical education failed to identify any studies on learners' FSB.<sup>1</sup> Indeed, although we identified a small number of papers on FSB within medical education, the vast majority of research was conducted in organisational contexts adopting existing FSB theories without challenging their validity.<sup>9</sup>

FSB seems to occur in two primary ways: requesting feedback from another (typically senior) colleague or observing others' behaviours.<sup>10</sup> Ashford and colleagues proposed that the cost and value of any given action are the primary determinants of FSB.<sup>11</sup> Nevertheless, a number of factors affect cost and value of actions. For example, one key perceived cost is *self-presentation*, including the potential embarrassment of revealing one's lack of knowledge, thereby drawing attention to personal deficiencies. Other costs include *ego costs*



1  
2  
3 (i.e., the risk of being the recipient of negative information), and *effort costs* (i.e., the risk of  
4 wasting energy and time with little return value).  
5

6 Value is the perceived worth of FSB in learning new behaviours/skills to improve  
7 performance.<sup>10</sup> As such, the *expectancy* of this value has been shown to increase the  
8 frequency of FSB.<sup>12</sup> Furthermore, self-preservation is associated with value: through  
9 requesting feedback we can create or enhance a positive image of ourselves.<sup>10</sup> This  
10 theoretical work appears to transfer well into a medical education context. A qualitative study  
11 examining FSB in veterinary students during their clinical years found their FSB to be  
12 affected by perceived ego (e.g., feeling incompetent through negative feedback), image (e.g.,  
13 the presence of peers) and costs and benefits (utility of feedback).<sup>13</sup>  
14  
15  
16  
17  
18

19 Goal orientation theory (personal goal preferences in achievement situations) has also  
20 been used to understand influences on the feedback-seeking process and comprises two main  
21 orientations: *performance* and *learning* goal orientations.<sup>10</sup> *Performance goal orientation*  
22 focuses on demonstrating and validating one's competence by seeking favourable (and  
23 avoiding negative) judgments. Here individuals focus on the cost of feedback-seeking,  
24 leading to low FSB. *Learning goal orientation* emphasizes developing competence:  
25 increasing FSB to benefit their job performance and for self-enhancement.<sup>10</sup> Situational  
26 factors have been shown to have a strong impact on which orientation is used.<sup>10</sup>  
27  
28  
29  
30  
31

32 Research in medical education has considered resident doctors' goal orientation  
33 around feedback-seeking.<sup>14</sup> A positive relationship between the value placed on feedback and  
34 FSB frequency was identified.<sup>14</sup> Additionally, the situational factor of having a supportive  
35 supervisor influenced residents' likelihood to place a high value on feedback and see fewer  
36 costs for FSB.<sup>14</sup> Furthermore, research with residents in Switzerland also supported the  
37 influence of situational factors on FSB: supervisors' promotion of feedback-seeking was the  
38 sole predictor of residents' FSB through inquiry and increased their learning goal  
39 orientation.<sup>15</sup> Finally, this situational factor was associated with lower ego-protection and  
40 impression management concerns.<sup>15</sup>  
41  
42  
43  
44  
45  
46

47 Other research in organizational and educational settings suggests that national culture  
48 can influence FSB.<sup>3,7</sup> Motives underlying FSB include: an *instrumental* motive (high FSB to  
49 facilitate personal goal achievement and develop behaviours); an *image-defense* motive (FSB  
50 is tied up with a wish to maintain a high social image); and an *ego-defense* motive (in an  
51 attempt to maintain one's ego individuals avoid seeking feedback or do so strategically).<sup>7</sup>  
52 Individuals from Western and Eastern (particularly Chinese) cultures are thought to react  
53 differently to such influences. Indeed, research with Chinese management students suggests  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 that FSB is strongly related to the issue of face (i.e. the fear of losing face before others),  
4 resulting in FSB being low when others are present.<sup>3</sup>  
5  
6

### 7 8 **Feedback via e-portfolios in medical education**

9 Portfolios assess what a learner does when functioning independently in the clinical  
10 workplace and are designed to stimulate learning from experience.<sup>16,17</sup> Nowadays, portfolios  
11 are mostly digital (e-portfolios), with content that can be prescribed or left to the learners'  
12 discretion. Despite variations, their role is to record work undertaken, feedback received,  
13 progress made and plans for improvement.<sup>18</sup>  
14  
15

16  
17 Although staff and trainees do not always share a common understanding of the role  
18 of feedback in supporting learning,<sup>19</sup> evidence suggests that well-implemented portfolios are  
19 effective and practical, increase personal responsibility for learning and support professional  
20 development.<sup>20</sup> Furthermore, e-portfolios seem to encourage reflection among users.<sup>20</sup> On the  
21 downside, scepticism about the purpose of the e-portfolio and lack of time in filling are also  
22 reported.<sup>21</sup> However, despite the plethora of research that has been undertaken examining  
23 FSB in an organizational setting,<sup>22</sup> and the potential of e-portfolios for supporting the  
24 feedback loop, to our knowledge there is no research to date that has examined FSB in the  
25 context of e-portfolios.  
26  
27  
28  
29  
30  
31  
32

### 33 **Aim and research question**

34 The aim of our research is to understand postgraduate year one medical trainees' (PGY1s')  
35 FSB in the context of an e-portfolio. PGY1 trainees are in the transitional period between  
36 medical student and clinical physician. Specifically we wish to answer the following research  
37 question (RQ):  
38  
39  
40  
41  
42

43 RQ: What are the factors that influence PGY1s' FSB within an e-portfolio context?  
44  
45

## 46 **Methods**

### 47 **Study context**

48 The study was conducted at the largest teaching hospital in Taiwan. PGY1s are licensed  
49 physicians who receive a training program as they transition from medical students to  
50 specialty residents. The PGY1 training program of general medicine was implemented by the  
51 Taiwanese government for professional training in general practice in 2011. E-portfolios were  
52 introduced in 2013,<sup>22</sup> and gradually substituted paper-based portfolios. The portfolio in this  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 setting is a collection of evidence of the PGY1s' learning experience during their training. It  
4 comprises a default template for several assessment and evaluation criteria including a  
5 quantitative assessment (e.g. Mini-Clinical Evaluation Exercise (Mini-CEX), Direct  
6 Observation of Procedural Skills (DOPS), Case-based Discussion (CbD)) and qualitative,  
7 reflective writing sections (e.g. Medical Ethics and Legislation Report, Medical Care Quality  
8 Report and Personal Development Report). According to Taiwanese regulations for e-  
9 portfolios, trainees are expected to fill the e-portfolios numerous times over the course of  
10 their training (14 objective assessments and 22 reflective writing reports during the PGY1  
11 training). Clinical teachers are required to provide feedback about trainees' reports following  
12 each submission. Thus, PGY1s receive feedback for different assessments and from different  
13 rotations during the same training period.

### 21 **Patient involvement**

22  
23 No patients were involved in the design or instigation of this study.

### 24 **Design**

25  
26 A qualitative study with one-to-one, semi-structured interviews was employed to explore the  
27 perception and experience of PGY1 trainees about their engagement with clinical teachers'  
28 feedback provided in their e-portfolio. Following the piloting of the interview questions (n=5  
29 PGY1) only slight changes were made. Several questions were asked in the interview,  
30 including: There are numerous reports and assessments in the e-portfolio which are followed  
31 by clinical teachers' feedback, did you read them all? If so, why? If not, why not? Do you  
32 think you have received appropriate feedback in your e-portfolio? Is there any difference  
33 between paper-based, e-portfolio and face-to-face feedback? Do you find it helpful to receive  
34 clinical teachers' feedback through the e-portfolio? Does feedback affect you in any aspect of  
35 your clinical practice? Do you change your behaviour or advance your knowledge following  
36 feedback?  
37  
38  
39  
40  
41  
42  
43

### 44 **Participants**

45  
46 Following ethical approval, all 118 (65% male) PGY1 trainees from the 2014 cohort were  
47 approached to participate. Participants were self-selected using purposive sampling. When  
48 the researcher contacted the trainees, a brief introduction including the purposes and  
49 methodology of the research project was given to the trainees. They were told that the  
50 research was investigated by physician educator. However, there were nine physician  
51 educators in our hospital. The trainees were assured that the interview would be anonymized  
52 after transcription. The research team members only analyzed anonymized data. The  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 researcher that performed the interview didn't know any of the trainees before they met. All  
4 participation was voluntary. Participants comprised n=71 PGY1 (60% of cohort; 66% male)  
5 trainees. Informed consent was obtained. The interviews were arranged within the last three  
6 months of their training courses so that all participants were familiar with the e-portfolio  
7 system.  
8  
9

### 10 11 **Procedure**

12 A researcher, who was a previous medical technologist (YHC) external to the hospital with  
13 interview experience, conducted all interviews. Interviews were conducted in a quiet room at  
14 participants' convenience. Interviews were audio-recorded, transcribed verbatim, anonymized  
15 and checked for completeness. Each interview lasted around 20-30 minutes and took place in  
16 a private room at the hospital.  
17  
18

### 19 20 21 **Data analysis**

22 Data were analysed using inductive thematic Framework Analysis,<sup>23</sup> comprising: data  
23 familiarization, identification of the themes, charting and data interpretation. Additionally, as  
24 cost-value and goal orientation theories were known to the researchers, it is acknowledged  
25 that they also influenced data analysis deductively (although data were not specifically  
26 mapped to these theories). Four researchers (RH, YHC, CCC, PWH) read the transcripts,  
27 distributing them among each other so that all transcripts were read by at least two people.  
28 Following this, two researchers (FQ, LVM) joined the team to further develop the thematic  
29 focus of FSB. Data were translated from Mandarin to English by the CG-MERC official  
30 translator (see Acknowledgements). The researchers came together several times to discuss  
31 the coding framework development. Data were coded by one person. As the data were coded,  
32 further developments of the themes were discussed with the wider team and incorporated into  
33 the final analysis.  
34  
35  
36  
37  
38  
39  
40  
41  
42

### 43 44 **Results**

45 Two main themes were identified, of which one is FSB-related and the other one is  
46 specifically related to the e-portfolio in use (i.e. comparison between e-portfolio and paper-  
47 based portfolios). This research reports on the theme of "Inhibiting and facilitating factors  
48 around FSB", which comprises four sub-themes (see Table 1). Thirty-two (22 males and 10  
49 females) of the 71 participants contributed meaningfully to this theme, presented here. The  
50 remaining n=39 participants mainly focussed their talk around the e-portfolio in general (e.g.  
51 their engagement with it and with reflection) and comparisons between online and paper-  
52 based portfolios: and while responding to the direct questions around feedback seeking, they  
53  
54  
55  
56  
57  
58  
59  
60

did so superficially and therefore failed to contribute meaningfully to the issue of feedback-seeking behaviours.

**Table 1: Learner, teacher, technology and process-related factors for trainees' feedback-seeking behaviours**

	<b>Inhibiting factors</b>	<b>Facilitating factors</b>
1: Learner-focussed	Poor learning-needs assessment ( <i>what to have feedback on</i> ) Emotional reactions ( <i>about teachers</i> )	Value placed on feedback ( <i>feedback as a gift to be saved</i> ) Value placed on teachers ( <i>learning from seniors</i> )
2: Teacher-focussed	Delayed feedback ( <i>irrelevant</i> ) Generic feedback ( <i>irrelevant</i> )	Relevant feedback ( <i>high utility; facilitates self-regulation</i> ) Dedication to teaching ( <i>high utility; trainee respect</i> )
3: Technology-focussed	Poor user-interface ( <i>time-wasting; irrelevant material upload</i> ) Lack of reminders ( <i>forgetting to check</i> )	Online versus face-to-face ( <i>face-saving utility</i> )
4: Process-focussed	Timing ( <i>repetition</i> ) Frequency ( <i>workload</i> )	None mentioned

### **Inhibiting and facilitating factors around trainees' feedback seeking behaviours (FSB)**

Participants discussed their engagement with feedback in terms of if and when they sought it within the e-portfolio. They discussed the various factors that influenced their engagement that we report as sub-themes: (1) learner-focussed factors; (2) teacher-focussed factors; (3) technology-focussed factors; and (4) process-focussed factors.

#### **Sub-theme 1: learner-focussed factors**

This sub-theme focuses on the inhibiting and facilitating learner-related factors to participants' FSB. In terms of inhibiting factors, some participants pointed out that the lack of guidance and clear directions on how to complete the e-portfolio and what to write in it, resulted in them making inauthentic submissions. They expressed problems in terms of their own learning-needs assessment that eventually impacted on the perceived utility of the feedback for personal development:

*The parts on guidance and discussion are not enough [...] the thing is, if you organize the things on your own, the breadth and the depth of the feedback will be limited. Sometimes you need to have discussions with your peers and educators*

1  
2  
3 *[...] So I think, if it's a small group discussion, probably the teacher could do a*  
4 *more detailed guidance...probably the students would get more. (PGY#5)*  
5  
6

7  
8 The issue of superficial feedback, or generic feedback, was further discussed and linked to  
9 participants' relative engagement with the patient cases they encounter. Thus, feedback was  
10 directly related to their own input whereby brief case reports received brief feedback. Some  
11 participants related this to their engagement with the clinical setting, whereas others related it  
12 to the relative importance individual PGYs placed on the e-portfolio process itself:  
13

14  
15 *It goes back to the point. Not every division has many cases to write. If there were a*  
16 *case really worth of discussion, then the teacher's feedback would also be richer.*  
17  
18 (PGY#17)  
19

20  
21  
22 *Of course, it is related to whether you write your e-portfolio seriously. If the*  
23 *teacher found it seriously written, then he would spend some time to provide*  
24 *feedback. (PGY#16)*  
25  
26

27  
28  
29 Finally, emotional aspects of receiving feedback were also highlighted as a factor that  
30 inhibited participants from seeking out or reading their feedback. This emotional aspect also  
31 included how participants might perceive the feedback providers according to the type of  
32 feedback received:  
33

34  
35 *I almost never see it [the feedback from the supervisor]! Because I think that after*  
36 *seeing it, you would develop a stereotype about the teacher [...] then suppose he*  
37 *gives you a high score, you would feel this teacher is good. And if he gives you a*  
38 *low score, you would consider the teacher is not kind. (PGY#7)*  
39  
40

41  
42  
43 *Yes, it is embarrassed for us to say the clinical teacher's feedback is too short. That*  
44 *doesn't feel good. Therefore, I would rather not to look at it. (PGY#2)*  
45  
46

47  
48 Other participants (the minority) simply lacked internal motivation to seek feedback online.  
49 Reasons for this included going along with perceived social norms:

50  
51 *I have never seen the teacher's feedback (PGY#3)*  
52

53 *I think no one would check the feedback in the e-portfolios. (PGY#13)*  
54  
55

56 However, despite there being numerous inhibiting factors for participants' FSB, there were  
57  
58



1  
2  
3 also learner-focussed factors that were cited as facilitating feedback seeking. The value that  
4 participants placed on feedback was a key motivating factor for seeking feedback out. Thus,  
5 feedback was seen by some as being a *gift for learning*, something to be actively sought out  
6 and kept. Some participants talked about feedback within e-portfolios as being the most  
7 important part of the process, facilitating practice improvement:  
8  
9

10  
11 *If teachers give feedback based on our reports, I will have a different way of thinking*  
12 *about my future practice. Then, in some aspects, I would improve my clinical*  
13 *practice. I think 'this is good' [...] of course the teacher's feedback should be saved.*  
14 *If we spend time writing up, we need to learn something out of it[...] I think teacher's*  
15 *feedback should be kept. (PGY#16)*  
16  
17  
18

19  
20  
21 *I would read the teacher's comments in the last part. I think that part is the most*  
22 *important. (PGY#18)*  
23  
24

25 The high value placed on feedback includes valuing their clinical teachers' experience, even if  
26 they felt there was a generational gap around how things are done now versus how they used  
27 to be done. Essentially it is around an openness to listen and learn from seniors:  
28  
29

30  
31 *The teacher's feedback to me is [...] also [...] you could see how the experienced*  
32 *teacher handled this part. Maybe our thinking is different from the way the teachers*  
33 *deal with things. At that time, it's not necessary about who is right or wrong but*  
34 *about how you can...you can integrate the practical experiences from different*  
35 *aspects and make further progress. (PGY#19)*  
36  
37  
38  
39

#### 40 **Sub-theme 2: Teacher-focussed factors**

41 The issue of teachers' remembering comprised the main teacher-focussed inhibiting factor for  
42 FBS. Thus, some participants reported that they were unable to link feedback to their specific  
43 experiences if it was delayed. Indeed, they believed that when feedback was delayed, even  
44 their educators would have forgotten the event, resulting in the feedback being construed as  
45 overly generic and 'nonsense':  
46  
47  
48

49  
50 *If the feedback was delayed, it became not so specific to my case report. I can't*  
51 *remember what happened to the case after I reported it. I don't think my clinical*  
52 *teacher remembered it either. Therefore, the report and feedback became nonsense.*  
53 *(PGY#20)*  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 The issue of forgetting on the part of the teacher also interacted with forgetting on the part of  
4 the trainee:  
5

6 *Sometimes my teacher forgets to give feedback, or is delayed in uploading feedback.*

7 *I guess he is too busy in clinical loading. Several days later, I might also forget to*

8 *check the feedback. (PGY#2)*  
9  
10  
11

12 Not only did participants refer to the issue of their teacher remembering specific events, but  
13 they also questioned whether their clinical teachers could even remember specific students.  
14 When feedback is delayed from the face-to-face event, and delivered online at a later point, it  
15 is imperative that the teacher can match a face to a name as well as recall the event. Due to the  
16 number of PGYs who rotate through each department, and the generic nature of feedback  
17 received, some participants doubted the authenticity of what they read:  
18  
19  
20  
21

22 *I have seen some. But the feedback I have seen is very generic, because I think that*  
23 *the teacher may not remember [...] that many students. When he sees your name,*  
24 *he might not know [...] he may not be able to link it [to the person]. (PGY#14)*  
25  
26  
27

28 *I am not sure if the teacher will read it carefully, because he also needs to lead many*  
29 *students, and he has patients, the work at the clinic, and some research and*  
30 *administration work [...] I think it is difficult to ask every physician to read them [e-*  
31 *portfolios] carefully. (PGY#6)*  
32  
33  
34  
35  
36

37 On the flipside, some participants reported that they not only received generic, nonsensical  
38 feedback, but they also received quality feedback. Quality includes teachers feeding back on  
39 specific cases reported (relevant feedback) which were used by participants both  
40 prospectively (reading feedback and changing practice) and retrospectively (reading feedback  
41 after encountering problems to seek solutions). Further, ego factors and value intertwined. For  
42 example, reading feedback promoted new thought and action, leading to a positive self-image:  
43  
44  
45

46 *Of course, actually it is not only limited in this part. When I have some clinical*  
47 *problems, I would check it up [the feedback] and do changes afterwards [...] during*  
48 *the process of checking, you would find out some- some new things. (PGY#5)*  
49  
50  
51  
52

53 *Some clinical teachers would give me feedback specific to the cases that I reported,*  
54 *such as the care quality report, or the ethical report. This kind of feedback always*  
55 *gives me new thoughts on how to manage the cases. In some way, I think it will*  
56  
57  
58  
59  
60



1  
2  
3 *change my way of doing practice in the future. I like to read this kind of feedback.*

4 (PGY#16)  
5  
6  
7

8 Some participants also highlighted teachers' dedication to educating them. Educators taking  
9 feedback seriously, giving time to the trainees to improve, which further motivates trainees'  
10 positive FSB:  
11

12 *Then, my mentor happened to be [names doctor], on this aspect [feedback] he works*  
13 *really hard [...] most of the teachers, when they are doing the e-portfolio, they just*  
14 *deal with it by writing two or three words. But [names doctor] takes it seriously. He*  
15 *gives feedback seriously [...] It's helpful. It's helpful. (PGY#8)*  
16  
17  
18  
19

### 20 **Sub-theme 3: Technology-focussed factors**

21 The existing technological infrastructure in use at the hospital, the e-portfolio's default  
22 template and functions, alongside the requirements for completion (i.e. all objective  
23 assessments and writing reports were compulsory) often discouraged trainees in finishing the  
24 task, or in them doing it properly. For example, the lack of technology infrastructure led  
25 participants to complete their submissions at home after work, causing time delays and  
26 difficulty in writing. Technology-focused factors affect the general engagement of PGY  
27 trainees with e-portfolio. They also affect the feedback system and seeking of feedback. These  
28 factors dovetail with earlier issues (inadequate submissions leading to inadequate feedback)  
29 resulting in a lack of engagement with the feedback process:  
30  
31  
32  
33  
34  
35  
36

37 *Firstly, the computers in the hospital are not always enough, and the interface is*  
38 *not intuitive to use. Because after you go home [...] it's lagging and then [...]*  
39 (PGY#14)  
40  
41  
42

43 Some participants also uttered their dissatisfaction with the lack of a reminder function to  
44 alert teachers and trainees to give and receive feedback. This interacted with the issue of  
45 teachers' heavy clinical workload:  
46  
47

48 *I think a reminder mechanism could be set [for teachers], otherwise, [it will be]*  
49 *like last time [when] they did not review the e-portfolios for over six months. This is*  
50 *horrible. (PGY#2)*  
51  
52  
53

54 *At the time, I did not check if the teacher gave feedback, because some doctors were*  
55 *busy, and they wouldn't give feedback that quickly. I am thinking [...] when they*  
56  
57  
58  
59  
60

1  
2  
3 *give it, maybe we could receive an email or something?* (PGY#6)  
4  
5

6 *Or maybe, after the teacher gives feedback, something could pop out when you log*  
7 *into the e-portfolio the next time to remind us that the teacher given some feedback,*  
8 *so we could go there and read it. Otherwise, we won't remember to click [...] We*  
9 *won't. We only click the place where we need to write.* (PGY#15)  
10  
11  
12  
13

14 However, not everyone felt that the infrastructure was the issue: quite simply, if you want to  
15 learn, you will and if you don't want to learn, you won't – linking with the issue of learner-  
16 focussed factors:  
17

18 *So I said, it is a problem about people, because those who want to learn will learn*  
19 *for sure [...] they will learn anyway [...] for the people who don't want to learn*  
20 *[...] they will not learn. It's a problem about people, nothing to do with the system!*  
21  
22 (PGY#13)  
23  
24  
25  
26

27 However, the fact that feedback takes place in an online space, rather than physically face-to-  
28 face, was considered to be a technology-focussed facilitating factor for FSB. Indeed,  
29 participants talked about feedback being mainly around their deficits, rather than for praise.  
30 Receiving negative information about one's practice is never easy, and even more so within an  
31 Eastern face-saving culture. Thus, the online nature of e-portfolios facilitates the necessary  
32 face-saving requirements, whilst enabling participants to learn from mistakes:  
33  
34  
35

36 *Except when I have something that I really [...] for example, I don't want to [...] I*  
37 *felt embarrassed to discuss it [for feedback] with the teacher in person, so I would*  
38 *put it there in words.* (PGY#13)  
39  
40  
41  
42

43 *I think it is not bad to have feedback in e-portfolio. After all, we are all working at*  
44 *the same place. It would be embarrassing to tell us directly what was wrong.*  
45 *Because I maybe follow orders from other staff, one could lose his face to hear*  
46 *negative feedback. However, we need to know what was wrong. To write it in e-*  
47 *portfolio is a good idea to avoid losing face.* (PGY#20)  
48  
49  
50  
51  
52

#### 53 **Sub-theme 4: Process-focussed factors**

54 The process of the e-portfolio itself, including the timing and frequency of feedback,  
55 appeared to affect participants' FSB negatively (we have no data regarding positive aspects  
56  
57  
58  
59  
60

1  
2  
3 for this sub-theme). Trainees highlighted how they are expected to reflect on the cases they  
4 experience, obtaining written feedback from their teacher/mentor via the e-portfolio.  
5  
6 However, in objective assessments, the clinical teacher often provides immediate feedback  
7 directly following the presentation of a clinical case typically by arranging discussions and  
8 teaching at the patients' bedside. The repetition of this feedback exercise was a key factor in  
9 participants' decreased e-portfolios FSB:  
10  
11

12 *Yes! [the] clinical teacher has given me a paper form feedback after our CbD*  
13 *[case-based discussion], the feedback in the e-portfolio appears to be redundant. I*  
14 *didn't look at that. [...] Yeah- yeah- yeah- yeah! [...] because when you have*  
15 *individual meetings with your teacher, you have already submitted a form.*  
16  
17  
18  
19 (PGY#1)  
20  
21

22 Indeed, some participants talked about how such doubling up of feedback resulted in  
23 superficial engagement on both sides:  
24

25 *Well after the writing, you just review the situation! He (the teacher) just re-reads*  
26 *[it...] and [talks about] any problems in-between [written feedback]. (PGY#15)*  
27  
28  
29

30 The frequency with which participants are required to fill in their e-portfolios appears to  
31 impact negatively on trainees' FSB. Many participants asserted that feedback lacks utility  
32 when it is provided too often:  
33  
34

35 *I think the frequency could be every 6 months or every year [...] you only have that*  
36 *picture for your personal plan, and writing it every month won't change something.*  
37 *Actually, I think it is a bit too frequent. (PGY#3)*  
38  
39  
40  
41

42 Further, this frequency increased their already high clinical workload resulting in both an  
43 impediment to using the e-portfolio in the first place (for both participants and their teachers),  
44 as well as the additional work resulting from the e-portfolio feedback (i.e. being required to  
45 act on it).  
46  
47

48 *This [acting on it] might not be possible, because we are very busy. If I have 20*  
49 *patients for that day, then I won't do any writing. I don't even have time to finish my*  
50 *stuff. (PGY#9)*  
51  
52  
53

54 *Monthly reports are better. We can write a more detailed reflection. Clinical teachers*  
55 *can then receive meaningful reports and give proper feedback. The workload will not*  
56  
57  
58

1  
2  
3 *be too heavy [...] when I think about the loading, I don't want to see the feedback.*

4 (PGY#12)  
5  
6  
7

## 8 **Discussion**

9 Our findings highlight the complexity of aspects affecting FSBs that include individual,  
10 social, technological and organizational factors working as catalysts or inhibitors in  
11 congruence with cost-value perceptions of individuals.<sup>24</sup> That FSB is influenced by the  
12 perceived utility of that feedback, albeit for a variety of different reasons, resonates with  
13 other research that highlights how learners' FSB motivations focuses on performance  
14 improvement:<sup>11,24</sup> if the learner anticipates that the feedback will be worthless, FSB will be  
15 low. So when learners believe that the submissions on which the feedback is based lacks  
16 authenticity, arrives too late, or is highly generic, FSB motivation reduces. But when  
17 feedback is considered relevant and delivered by dedicated educators, high FSB motivation is  
18 sustained. This finding links with research that points to learners' relationships with their  
19 seniors (including expertise and trustworthiness) as being a key aspect underlying FSB and  
20 subsequent feedback efficacy.<sup>24-26</sup> Other learner-centred findings such as perceived social  
21 norms (i.e. no one else seeks feedback) and the strategic use of feedback (i.e. prospectively  
22 and retrospectively) appear to be quite novel in the FSB literature. This might be due to the  
23 context in which we have examined FSB: although feedback utility has been explored, it has  
24 not considered the inadequacy of the work on which the feedback is focused.  
25  
26

27 In our study, poor user interface, slow connectivity and a lack of reminders  
28 interrelated with participants' low FSB. Higher FSB is associated with the online nature of the  
29 e-portfolio and how it facilitates learners' face-saving. This is particularly important within  
30 the setting of our study – Taiwan – where face-saving is of utmost importance culturally. This  
31 finding resonates with other research undertaken in an Eastern culture with management  
32 students<sup>3</sup>, with face-saving being considered a value within a cost-value model of FSB.<sup>24</sup>  
33 However, it should be noted that this face-saving benefit is not specific to Eastern cultures  
34 and manifests itself globally, albeit to a different extent.  
35  
36

37 Finally, we turn to organisational-related factors for FSB. When feedback is too late,  
38 particularly if it perceived as already having been received in a face-to-face setting in the  
39 interim, FSB is low. Furthermore, high frequency of feedback interacts with learners' high  
40 workload leading to a reduction in FSB. Although timing and frequency of feedback has  
41 been examined in the medical education literature, previous studies concentrated on feedback  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 efficacy, rather than its impact on FSB.<sup>27</sup> As such, this is a unique finding that can inform  
4 curricula development above and beyond the e-portfolio setting within which a study sits.  
5

6 As with all studies, our research has limitations. Firstly, the data has been collected at  
7 a single institution in a single country so caution must be taken for the transferability of our  
8 findings. For example, as we have highlighted, the face-saving effect might be exaggerated  
9 within a Taiwanese culture. Secondly, we have used a qualitative individual interview  
10 method. Such face-to-face data collection might motivate participants to present themselves  
11 positively. We are therefore careful not to quantify our data, and make no claims regarding  
12 the relative importance of factors and the magnitude of their influence. However, our study  
13 has strengths. The setting in which it was conducted is the largest teaching hospital in  
14 Taiwan, we have a relatively large participant group and have used theory to facilitate the  
15 transferability of findings within a medical education context.  
16  
17  
18  
19  
20  
21

22 Our study has implications for educational practice. Providing learners with  
23 information on how to address their learning needs, thus facilitating the relevance of their  
24 reflective writing, could result in higher levels of FSB. Faculty development focusing on the  
25 provision of relevant, focused and high-quality feedback, is recommended. We also advise e-  
26 portfolio developers to work with students and educators when developing their user systems.  
27 Finally, the implementation of an e-portfolio should be considered in the wider context of  
28 both learners' and teachers' existing workload and opportunities for face-to-face feedback to  
29 ensure that the timing and frequency of feedback does not impede learners' FSB or create  
30 additional work for busy teachers and their trainees.  
31  
32  
33  
34  
35  
36

37 Our research also highlights the need for further work in terms of researching learners'  
38 FSB within healthcare settings. In an era in which feedback studies are prevalent, too much  
39 attention has been placed on the efficacy and the delivery of the feedback itself, rather than  
40 learners' FSB, which is assumed to occur. However, this is not always the case. Without fully  
41 understanding the relative factors that facilitate and impede learners' FSB across a range of  
42 learning situations, the goals of feedback in healthcare education cannot be fully achieved.  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## References

1. Bing-You R, Hayes V, Varaklis K, Trowbridge R, Kemp H, Mckelvy D. Feedback for Learners in Medical Education: What Is Known? A Scoping Review. *Academic Medicine*, 2017; 92 (9): 1346-1354.
2. Rizan C, Elsey C, Lemon T, Grant A, Monrouxe LV. Feedback in action within bedside teaching encounters: a video ethnographic study. *Med Educ*, 2014; 48: 902-20.
3. Hwang A, Ang S, Francesco AM. The silent Chinese: The influence of face and Kiasuism on student feedback-seeking behaviors. *Journal of Management Education*, 2002; 26: 70-98.
4. Veloski J, Boex JR, Grasberger MJ, Evans A, Wolfson DB. Systematic review of the literature on assessment, feedback and physicians' clinical performance: BMEM guide no. 7. *Medical Teacher*, 2006; 28: 117-128.
5. Hattie J, Timperley H. The power of feedback. *Review of Educational Research*, 2007; 77: 81-112.
6. Isaacson JH, Posk LK, Litaker DG, Halperin AK. Resident perception of the evaluation process. *Journl of General Internal Medicine*, 1995; 10: S89.
7. Macdonald H, Sulsky LM, Spence JR, Brown DJ. Cultural differences in the motivation to seek performance feedback: A comparative policy-capturing study. *Human Performance*, 2013; 26: 211-235.
8. Ashford SJ. Feedback-Seeking in Individual Adaptation: A Resource Perspective. *Academy of Management*, 1986; 29: 465-487.
9. Crommelinck M, Anseel F. Understanding and encouraging feedback-seeking behaviour: a literature review. *Med Educ*, 2013; 47: 232-41.
10. Vandewalle DA. A goal orientation model of feedback-seeking behavior. *Human Resource Management Review*, 2003; 13: 581-604.
11. Ashford SJ, Cummings LL. Feedback as an individual resource: Personal strategies of creating information. *Organizational Behavior and Human Performance*, 1983; 32: 370-398.
12. Vandewalle D, Ganesan S, Challagalla GN, Brown SP. An integrated model of feedback-seeking behavior: disposition, context, and cognition. *J Appl Psychol*, 2000; 85: 996-1003.
13. Bok HG, Teunissen PW, Spruijt A, Fokkema JP, Van P, Jaarsma DA, Van der Vleuten CP. Clarifying students' feedback-seeking behaviour in clinical clerkships. *Med Educ*,



- 2013; 47: 282-91.
14. Teunissen PW, Stapel DA, Van der Vleuten C, Scherpbier A, Boor K, Scheele F. Who wants feedback? An investigation of the variables influencing residents' feedback-seeking behavior in relation to night shifts. *Acad Med*, 2009; 84: 910-7.
  15. Bose MM, Gijsselaers WH. Why supervisors should promote feedback-seeking behaviour in medical residency. *Med Teach*, 2013; 35: e1573-83.
  16. Miller GE. The assessment of clinical skills/competence/performance. *Academic Medicine*, 1990; 65: S63-S67.
  17. Tartwijk JV, Driessen EW. Portfolios for assessment and learning: AMEE Guide no. 45. *Medical Teacher*, 2009; 31: 790-801.
  18. Driessen EW, Muijtjens AMM, Van Tarwijk J, Van der Vleuten CPM. Web- or paper-based portfolios: Is there a difference? *Medical Education*, 2007; 41: 1067-1073.
  19. Gibson DR. Promoting effective teaching and learning: Hospital consultants identify their needs. *Medical Education*, 2000; 34: 126-130.
  20. Tochel C, Haig A, Hesketh A, Cadzow A, Beggs K, Colhart I, Peacock H. The effectiveness of portfolios for post-graduate assessment and education: BEMB Guide no. 12. *Medical Teacher*, 2009; 31: 299-318.
  21. Mok J. "As a student, I do think that the learning effectiveness of electronic portfolios depends, to quite a large extent, on the attitude of students!". *ELT Journal of e-learning*, 2012; 10: 407-416.
  22. Chau J, Cheng G. Toward understanding the potential of e-portfolios for independent learning: A qualitative study. *Australasian Journal of Education Teaching*, 2010; 26: 932-950.
  23. Ritchie J, Spencer L. Qualitative Data Analysis for Applied Policy Research. Analyzing Qualitative Data. In: Bryman A & Burgess RG. (eds.). 1994. London: Routledge.
  24. Anseel F, Beatty AS, Shen W, Lievens F, Sackett PR. How Are We Doing After 30 Years? A Meta-Analytic Review of the Antecedents and Outcomes of Feedback-Seeking Behavior. *Journal of Management*, 2015; 41: 318-348.
  25. Levy PE, Cober RT, Miller T. The Effect of Transformational and Transactional Leadership Perceptions on Feedback-Seeking Intentions. *Journal of Applied Social Psychology*, 2002; 32: 1703-1720.
  26. Van De Ridder JMM, Berk FCJ, Stokking KM, Ten Cate OTJ. Feedback providers' credibility impacts students' satisfaction with feedback and delayed performance. *Medical Teacher*, 2015; 37: 767-774.

- 1  
2  
3 27. Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H,  
4 Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki MD. Content and  
5 timing of feedback and reflection: a multi-center qualitative study of experienced  
6 bedside teachers. *BMC Medical Education*, 2014; 14: 212.  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For peer review only



### Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Response / Reported on Page #
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	<b>See 'data collection' in Methods (page 9)</b>
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	<b>See title page (page 1)</b>
3. Occupation	What was their occupation at the time of the study?	<p><b>See title page (page 1)</b></p> <p>REN-HUEI FU is general practitioner at Chung Gang Memorial Hospital, Department of Neonatology; medical educator at Chung Gang Medical Education Research Centre (CG-MERC), Linkou, Taiwan.</p> <p>CHIAO-CHIN CHIANG is a Neonatology nursing practitioner of Chang Gung Memorial Hospital.</p> <p>PENG-WEI HSU is an Assistant Professor of Neuro-surgery and previous physician educator of CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.</p> <p>YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.</p> <p>QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.</p> <p>MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.</p>
4. Gender	Was the researcher male or female?	<p><b>KHF, PWH: Male</b></p> <p><b>LVM, FQ, YHC, CCC: Female</b></p>
5. Experience and training	What experience or training did the researcher have?	<p><b>LVM</b> has vast experience of conducting qualitative research and analysis (over 15 years each).</p> <p><b>FQ</b> has previous experience in qualitative research and analysis.</p> <p><b>KHF</b> has previous experience in research but not qualitative</p> <p><b>CCC</b> had</p> <p><b>YHC</b> had</p> <p><b>LVM</b> supported the team throughout the analysis, coding and writing process.</p>
<i>Relationship with participants</i>		The interviewer, <b>YHC</b> , and <b>LVM</b> and <b>FQ</b> had no prior relationship with the students

		KHF (who was not present during interviews) had a role in developing the e-portfolio
6. Relationship established	Was a relationship established prior to study commencement?	<i>See 'Design' in Methods (page 9)</i>
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	<i>See Data Collection section in Methods (page 10)</i>
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	<i>Described on page 9</i>
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	<i>See 'Design' in Methods (page 9).</i> We used a qualitative interview design, we explain our analytical process.
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	<i>See 'recruitment' in Methods (page 9).</i> Participants were self-selected using purposive sampling. All participation was voluntary.
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	<i>See 'data collection' in Methods (page 9).</i>
12. Sample size	How many participants were in the study?	<i>See 'Participants' in Methods (page 9)</i> "Participants comprised n=71 PGY1 (60% of cohort; 66% male)"
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Participation was voluntary and participants were not considered to take part until they participated in the interviews. No participants withdrew from the study after participating in interviews.
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	<i>See 'Data collection' in Methods (page 9)</i> "Interviews were conducted in a quiet room at participants' convenience." –
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	<b>No</b>
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	<i>See 'Participants' (page 9)</i> The gender has been reported.
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	<i>See 'Data collection' in Methods (page 9)</i>
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	<b>No</b>
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	<i>See 'Data collection' in Methods (page 9)</i>

20. Field notes	Were field notes made during and/or after the interview or focus group?	<b>None made.</b>
21. Duration	What was the duration of the interviews or focus group?	<b>Individual semi-structural interview, 20-30 min each, "procedure" page 11</b>
22. Data saturation	Was data saturation discussed?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. Medical Education. 51(1)40-50.)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. Medical Education. 51(1)40-50.)
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	<b>See 'Data analysis' in Methods (page 10)</b>
25. Description of the coding tree	Did authors provide a description of the coding tree?	<b>See Results Section, Table 1 (page 10)</b>
26. Derivation of themes	Were themes identified in advance or derived from the data?	<b>See 'Data analysis' in Methods (page 9)</b> Themes were inductively and deductively developed.
27. Software	What software, if applicable, was used to manage the data?	<b>See 'Data analysis' in Methods (page 9)</b>
28. Participant checking	Did participants provide feedback on the findings?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. Medical Education. 51(1)40-50.)
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	<b>Yes.</b>
30. Data and findings consistent	Was there consistency between the data presented and the findings?	We have ensured consistency between the data presented and the findings of the study through thoroughly reviewing the manuscript.
31. Clarity of major themes	Were major themes clearly presented in the findings?	<b>See 'Results' (page 10-17)</b> The results section is organized around the major themes of the study, which are described under specific headings.

32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	<b>See 'Results' (page 10-17)</b> The results section includes discussion of major themes, and nuances within these were covered.
-----------------------------	--	--

For peer review only

# BMJ Open

## **“I did not check if the teacher gave feedback”: A qualitative analysis of Taiwanese postgraduate trainees’ talk around e-portfolio feedback-seeking behaviours**

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-024425.R1
Article Type:	Research
Date Submitted by the Author:	04-Sep-2018
Complete List of Authors:	Fu, Ren-Huei; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Cho, Yu-Hsueh; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Quattri, Francesca; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Monrouxe, Lynn V; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC)
<b>Primary Subject Heading</b>:	Medical education and training
Secondary Subject Heading:	Qualitative research
Keywords:	MEDICAL EDUCATION & TRAINING, Feedback, feedback-seeking behaviours, QUALITATIVE RESEARCH, Taiwan, technology enhanced learning

SCHOLARONE™  
Manuscripts

1  
2  
3 ***“I did not check if the teacher gave feedback”*: A qualitative analysis of**  
4 **Taiwanese postgraduate trainees’ talk around e-portfolio feedback-seeking**  
5 **behaviours**  
6  
7

8  
9  
10 Fu R.H., Cho Y.H., Quattri F, Monrouxe L.V.  
11  
12

13  
14  
15 **Author details**

16 REN-HUEI FU is general practitioner at Chung Gung Memorial Hospital, Department of  
17 Neonatology; medical educator at Chung Gung Medical Education Research Centre (CG-  
18 MERC), Linkou, Taiwan.  
19

20  
21 QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang  
22 Gung Memorial Hospital, Linkou, Taiwan.  
23

24 YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang  
25 Gung Memorial Hospital, Linkou, Taiwan.  
26

27 MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang  
28 Gung Memorial Hospital, Linkou, Taiwan.  
29  
30

31  
32 **Running head:** PGY1 feedback seeking behaviours, e-portfolio  
33  
34

35  
36 **Word count:** 4,911 (plus Abstract, 1 Table and References)  
37  
38

39 **Contact details for corresponding author:**

40 Prof Lynn Monrouxe

41 Director, Chang Gung Medical Education Research Centre (CG-MERC),

42 Chang Gung Memorial Hospital,

43 Guishan District, Taoyuan City, Taiwan.  
44

45 Telephone: +8860987590697  
46

47 Email: [monrouxe@me.com](mailto:monrouxe@me.com)  
48  
49

50  
51  
52  
53 **Contributor and guarantor information**

54 RHF conceived the study. RHF and LVM designed the work. YHC contributed to the  
55  
56  
57  
58  
59  
60

1  
2  
3 acquisition of the data. All authors contributed to the analysis and interpretation of data. RHF,  
4 FQ and LVM drafted the initial manuscript. All authors revised the manuscript critically for  
5 important intellectual content. LVM and RHF substantially revised the paper. All authors  
6 gave their final comments and approval of the version to be published. LVM is the guarantor,  
7 agrees to be accountable for all aspects of the manuscript, has access to the data, made the  
8 final decision to submit and will ensure that any questions relating to the accuracy or integrity  
9 of any part of the manuscript are appropriately investigated and resolved.  
10  
11  
12  
13  
14

### 15 **Acknowledgements**

16 The authors wish to express their gratitude to the students who participated in the study, to  
17 Ms Eve Huang from the CG-MERC who translated the data from Mandarin to English and to  
18 Dr Lesley Pugsley (Cardiff University, UK) for her reviews and comments on earlier versions  
19 of this manuscript.  
20  
21  
22  
23  
24

### 25 **Declaration of interest**

26 The authors report no conflicts of interest. The authors alone are responsible for the content  
27 and writing of this article.  
28  
29  
30  
31

### 32 **Ethical Approval**

33 The research was approved by the research ethics committee of Chang Gung Memorial  
34 Hospital.  
35  
36  
37

### 38 **Funding**

39 The study was funded by the Ministry of Science and Technology and Chang Gung Memorial  
40 Hospital, Taiwan (MOST103-2511-S-182-004, NMRPD1D0201), who were kept informed of  
41 progress with the collection, analysis and interpretation of data. The funders had no  
42 involvement in the study progress or reporting of results.  
43  
44  
45  
46  
47

### 48 **Transparency declaration**

49 Lynn V Monrouxe (the manuscript's guarantor) affirms that the manuscript is an honest,  
50 accurate, and transparent account of the study being reported; no important aspects of the  
51 study have been omitted; and any discrepancies from the study as planned have been  
52 explained.  
53  
54  
55  
56  
57  
58  
59  
60

**Copyright/licence for publication**

The Corresponding Author has the right to grant on behalf of all authors and does grant on behalf of all authors, a worldwide licence to the Publishers and its licensees in perpetuity, in all forms, formats and media (whether known now or created in the future), to i) publish, reproduce, distribute, display and store the Contribution, ii) translate the Contribution into other languages, create adaptations, reprints, include within collections and create summaries, extracts and/or, abstracts of the Contribution, iii) create any other derivative work(s) based on the Contribution, iv) to exploit all subsidiary rights in the Contribution, v) the inclusion of electronic links from the Contribution to third party material where-ever it may be located; and, vi) licence any third party to do any or all of the above.

**Patient consent**

Not applicable.

**Data sharing statement**

The raw data for this research comprises audio-recordings of interviews. The principal investigator (R.H. Fu) has access to this specific data set, including interview transcripts, in addition to participant contact details and signed consent forms. All authors have access to anonymised data from this set. All data are securely stored in on password-protected and encrypted computers. Participants have not given their permission for data sharing outside the research group. Thus, no additional data is available.



## Abstract

**Objectives:** Despite feedback being an extensively researched and essential component of teaching and learning, there is a paucity of research examining feedback within a medical education e-portfolio setting including feedback-seeking behaviours (FSBs). FSBs can be understood within a cost-value perspective. The objective of this research is to explore the factors that influence post-graduate year-one (PGY1) trainee doctors' FSBs via e-portfolios.

**Setting:** Post-graduate education provision in the largest teaching hospital in Taiwan.

**Participants:** Seventy-one PGY1s (66% male).

**Methods:** A qualitative semi-structured one-to-one interview method was adopted. Interviews were audio-recorded, transcribed verbatim, anonymized and checked for completeness. Data were analysed inductively via thematic Framework Analysis and deductively informed by FSB theory. The process comprised: data familiarization, identification of the themes, charting and data interpretation.

**Results:** Two main themes of FSB-related and e-portfolio-related were identified. We present the theme focussing on FSB here to which n=32 (22 males, 10 females) of the n=71 participants contributed meaningfully. Sub-themes include factors variously affecting PGY1s' positive and negative FSBs via e-portfolios at the individual, process and technological levels. These factors include learner-related (internal values vs. social influence, forced reflection); teacher-related (committed educators vs. superficial feedback); technology-related (face-saving vs. lagging systems; inadequate user-interface); and process-related (delayed feedback, too frequent feedback) factors.

**Conclusions:** Our findings reveal the complexity of PGY1s' FSBs in an e-portfolio context and the interaction of numerous facilitating and inhibiting factors. Further research is required to understand the range of facilitating and inhibiting factors involved in healthcare learners' FSBs across different learning, social, institutional and national cultural settings.

## ARTICLE SUMMARY

### **Strengths and limitations of this study**

- Our qualitative approach has facilitated the exploration of feedback-seeking as an unexpected phenomenon within our study (i.e. as highlighted by participants during the interviews rather than being the main focus of the original study)
- The multi-cultural, multi-disciplinary make-up of the research team – including expertise in psychology, linguistics, medical education and medicine – facilitated a deeper understanding of both the process and the content of the data
- The use of current theoretical perspectives of feedback seeking enabled us to unpack the learner, teacher, technological and process-related factors impacting on trainees' willingness to seek out and utilise teachers' feedback within an e-portfolio setting that can be transferable outside the study context
- Although only n=32 participants meaningfully contributed to our findings. This is a substantial number for a qualitative study of this kind, considering the detailed information that each participant provided.
- The context of feedback seeking behaviours within e-portfolios in a Taiwanese teaching hospital is likely to have emphasized some of our findings, including the face-saving utility

## Introduction

Feedback is an essential component of the teaching and learning process and has been extensively researched in this decade.<sup>1</sup> Giving learners feedback means letting them know, in a timely and on-going way, how they are progressing.<sup>2,3</sup> Indeed, during clinical placements, the provision of feedback is an integral part of the learning process, enriching students' learning experience.<sup>3</sup> Constructive feedback from educators enables learners to gain insight into their actions and consequences, and this allows both learners and teachers to successfully achieve personal and program-related objectives.<sup>4</sup>

Furthermore, research suggests that some forms of feedback (e.g., reinforcement, video/audio feedback, computer-assisted instructional feedback) can be more effective than others, with effective and regular feedback having the potential to reinforce good practice and motivate the learner toward the desired outcome.<sup>5</sup> However, feedback is a two-way process. Although a general complaint heard from students and trainees is often that "*I never receive any feedback*",<sup>6</sup> some clinical teachers believe that students and trainees often lack motivation for seeking feedback.<sup>3,7</sup> To investigate whether it is just a matter of motivation, our study focuses on trainee doctors' feedback-seeking behaviour (FSB) within e-portfolios.

## Feedback-seeking behaviour

Feedback-seeking behaviour (FSB) has been defined as "[a] conscious devotion of effort towards determining the correctness and adequacy of behaviours for attaining values and states".<sup>8</sup> For this to happen, it requires both conscious effort and motivation to change.

A recent scoping review of the literature around feedback for learners in medical education failed to identify any studies on learners' FSB.<sup>1</sup> Indeed, although we identified a small number of papers on FSB within medical education, the vast majority of research was conducted in organisational contexts adopting existing FSB theories without challenging their validity.<sup>9</sup>

FSB seems to occur in two primary ways: requesting feedback from another (typically senior) colleague or observing others' behaviours.<sup>10</sup> In the case of an e-portfolio, however, the 'request' comes in the form of returning to the online forum and reading the feedback provided. Ashford and colleagues proposed that the cost and value of any given action are the primary determinants of FSB.<sup>11</sup> Nevertheless, a number of factors affect cost and value of actions. For example, one key perceived cost is *self-presentation*, including the potential embarrassment of revealing one's lack of knowledge, thereby drawing attention to personal

1  
2  
3 deficiencies. Other costs include *ego costs* (i.e., the risk of being the recipient of negative  
4 information), and *effort costs* (i.e., the risk of wasting energy and time with little return  
5 value).  
6

7  
8 Value is the perceived worth of FSB in learning new behaviours/skills to improve  
9 performance.<sup>10</sup> As such, the *expectancy* of this value has been shown to increase the  
10 frequency of FSB.<sup>12</sup> Furthermore, self-preservation is associated with value: through  
11 requesting feedback we can create or enhance a positive image of ourselves.<sup>10</sup> This  
12 theoretical work appears to transfer well into a medical education context. A qualitative study  
13 examining FSB in veterinary students during their clinical years found their FSB to be  
14 affected by perceived ego (e.g., feeling incompetent through negative feedback), image (e.g.,  
15 the presence of peers) and costs and benefits (utility of feedback).<sup>13</sup>  
16  
17  
18  
19

20  
21 Goal orientation theory (personal goal preferences in achievement situations) has also  
22 been used to understand influences on the feedback-seeking process and comprises two main  
23 orientations: *performance* and *learning* goal orientations.<sup>10</sup> *Performance goal orientation*  
24 focuses on demonstrating and validating one's competence by seeking favourable (and  
25 avoiding negative) judgments. Here individuals focus on the cost of feedback-seeking,  
26 leading to low FSB. *Learning goal orientation* emphasizes developing competence:  
27 increasing FSB to benefit their job performance and for self-enhancement.<sup>10</sup> Situational  
28 factors have been shown to have a strong impact on which orientation is used.<sup>10</sup>  
29  
30  
31  
32

33  
34 Research in medical education has considered resident doctors' goal orientation  
35 around feedback-seeking.<sup>14</sup> A positive relationship between the value placed on feedback and  
36 FSB frequency was identified.<sup>14</sup> Additionally, the situational factor of having a supportive  
37 supervisor influenced residents' likelihood to place a high value on feedback and see fewer  
38 costs for FSB.<sup>14</sup> Furthermore, research with residents in Switzerland also supported the  
39 influence of situational factors on FSB: supervisors' promotion of feedback-seeking was the  
40 sole predictor of residents' FSB through inquiry and increased their learning goal  
41 orientation.<sup>15</sup> Finally, this situational factor was associated with lower ego-protection and  
42 impression management concerns.<sup>15</sup>  
43  
44  
45  
46  
47

48  
49 Other research in organizational and educational settings suggests that national culture  
50 can influence FSB.<sup>3,7</sup> Motives underlying FSB include: an *instrumental* motive (high FSB to  
51 facilitate personal goal achievement and develop behaviours); an *image-defense* motive (FSB  
52 is tied up with a wish to maintain a high social image); and an *ego-defense* motive (in an  
53 attempt to maintain one's ego individuals avoid seeking feedback or do so strategically)<sup>7</sup>.  
54  
55  
56 Individuals from Western and Eastern (particularly Chinese) cultures are thought to react  
57  
58  
59  
60

1  
2  
3 differently to such influences. Indeed, research with Chinese management students suggests  
4 that FSB is strongly related to the issue of face (i.e. the fear of losing face before others),  
5 resulting in FSB being low when others are present.<sup>3</sup>  
6  
7

### 8 9 **Feedback via e-portfolios in medical education**

10 Portfolios assess what a learner does when functioning independently in the clinical  
11 workplace and are designed to stimulate learning from experience.<sup>16,17</sup> In the postgraduate  
12 arena, portfolios can be used for a number of different, yet interrelated, purposes including: as  
13 a tool for training in which a collection of skills and competencies, alongside reflective  
14 comments on development, are held; as a reflective tool of personal development for  
15 promotion selection; and as a person development tool containing reflective valuations  
16 progress over time.<sup>18</sup> Portfolios in postgraduate education tend to be mandatory. To serve the  
17 purpose of education, it is suggested that portfolios should contain evidence of how learners  
18 fulfil tasks and how their competence is progressing. Nowadays, portfolios are mostly digital  
19 (e-portfolios), with content that can be prescribed or left to the learners' discretion. Despite  
20 variations, their role is to record work undertaken, feedback received, progress made and  
21 plans for improvement.<sup>19</sup> In medical education, the content of trainees' e-portfolios may  
22 include quantitative assessments (such as the Mini-Clinical Evaluation Exercise, Direct  
23 Observation of Procedural Skills, Case based Discussion, and 360 degree evaluation),  
24 reflective writing (such as medical ethics and legislation report, health care quality report,  
25 and personal development report), and Evidence-Based Medicine report. Clinical teachers are  
26 required to assess the trainee and provide appropriate feedback on their assessment and  
27 reports in their e-portfolios. The utilization of e-portfolios has the potential to change the  
28 nature of learning environments and the ways in which trainee learning is promoted through  
29 different modes of learning.<sup>20</sup> As such, the work collected in the e-portfolio provides material  
30 for the trainee to review their learning and can be used as a basis for future assessment.  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44

45 Feedback is a key element of any e-portfolio: feedback information is needed so the  
46 learner can reflect and formulate their future plans and develop learning objectives in order to  
47 improve their performance and competencies.<sup>17</sup> Furthermore, in the age of competency-based  
48 education, continuous, detailed and targeted feedback is essential.<sup>21</sup> Although staff and  
49 trainees do not always share a common understanding of the role of feedback in supporting  
50 learning,<sup>20</sup> evidence suggests that well-implemented portfolios are effective and practical,  
51 increase personal responsibility for learning and support professional development and so  
52 engaging in feedback via e-portfolios is of utmost importance.<sup>22</sup> On a positive note, feedback  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 via e-portfolios has been shown to encourage reflection among users.<sup>22</sup> On the downside,  
4 scepticism about the purpose of the e-portfolio and lack of time for completion are also  
5 reported.<sup>23</sup> However, despite the plethora of research that has been undertaken examining  
6 FSB in an organizational setting,<sup>24</sup> and the potential of e-portfolios for supporting the  
7 feedback loop, to our knowledge there is no research to date that has examined FSB in the  
8 context of e-portfolios. This is an obvious omission given the often-compulsory nature of e-  
9 portfolios in the post-graduate setting and the importance of feedback for the development of  
10 professionalism and competencies in the clinical setting. Indeed, given the key role of  
11 feedback in the learning process, understanding why learners sometimes fail to take the first  
12 step and seek out their feedback is an important, yet under-studied issue in the e-portfolio  
13 context.<sup>25</sup>

### 22 **Aim and research question**

23 The aim of our research is to understand postgraduate year one medical trainees' (PGY1s')  
24 feedback seeking behaviours in the context of an e-portfolio, which, for the purposes of this  
25 study, we define as 'motivations and behaviours towards looking for, reading, or mentally  
26 engaging with feedback delivered via an online portfolio'. Specifically we wish to answer  
27 the following research question (RQ):

33 RQ: What are the factors that influence postgraduate year one medical trainees'  
34 feedback seeking behaviours within an e-portfolio context?

## 38 **Methods**

### 40 **Study context**

41 The study was conducted at the largest teaching hospital in Taiwan. PGY1 trainees are in the  
42 transitional period between medical student and clinical physician. They are licensed  
43 physicians who receive a training program as they transition from medical students to  
44 specialty residents. The PGY1 training program of general medicine was implemented by the  
45 Taiwanese government for professional training in general practice in 2011. E-portfolios were  
46 introduced in 2013, and gradually substituted paper-based portfolios. The portfolio in this  
47 setting is a collection of evidence of the PGY1s' learning experience during their training. It  
48 comprises a default template for several assessment and evaluation criteria including a  
49 quantitative assessment (e.g. Mini-Clinical Evaluation Exercise (Mini-CEX), Direct  
50 Observation of Procedural Skills (DOPS), Case-based Discussion (CbD)) and qualitative,  
51  
52  
53  
54  
55  
56  
57  
58  
59

1  
2  
3 reflective writing sections (e.g. Medical Ethics and Legislation Report, Medical Care Quality  
4 Report and Personal Development Report). According to Taiwanese regulations for e-  
5 portfolios, trainees are expected to fill the e-portfolios numerous times over the course of  
6 their training (14 objective assessments and 22 reflective writing reports during the PGY1  
7 training). In terms of the objective assessment (e.g. Mini-CEX, DOPS, and CbD), clinical  
8 teachers are required to evaluate the performance of the PGY1 trainee and provide them with  
9 a score and feedback immediately following their bedside teaching. Clinical teachers are  
10 required to upload feedback to the trainees' e-portfolio afterwards. For the reflective writing  
11 reports, clinical teachers provide feedback about trainees' reports following each submission.  
12 Thus, PGY1s receive feedback for different assessments and from different rotations during  
13 the same training period.

### 21 **Patient involvement**

22  
23 No patients were involved in the design or instigation of this study.

### 24 **Design**

25  
26 A qualitative study with one-to-one, semi-structured interviews was employed to explore the  
27 perception and experience of PGY1 trainees about their engagement with clinical teachers'  
28 feedback provided in their e-portfolio. Following the piloting of the interview questions (n=5  
29 PGY1) only slight changes were made. Several questions were asked in the interview,  
30 including: There are numerous reports and assessments in the e-portfolio which are followed  
31 by clinical teachers' feedback, did you read them all? If so, why? If not, why not? Do you  
32 think you have received appropriate feedback in your e-portfolio? Is there any difference  
33 between paper-based, e-portfolio and face-to-face feedback? Do you find it helpful to receive  
34 clinical teachers' feedback through the e-portfolio? Does feedback affect you in any aspect of  
35 your clinical practice? Do you change your behaviour or advance your knowledge following  
36 feedback?  
37  
38  
39  
40  
41  
42  
43

### 44 **Participants**

45  
46 Following ethical approval, all 118 (65% male) PGY1 trainees from the 2014 cohort were  
47 approached to participate. Participants were self-selected using convenience sampling. When  
48 the researcher contacted the trainees, a brief introduction including the purposes and  
49 methodology of the research project was given to the trainees. They were told that the  
50 research was being led by a physician educator: there were nine physician educators in the  
51 hospital at the time. The trainees were assured that the interview would be anonymized after  
52 transcription. The research team members only analyzed anonymized data. The researcher  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 that performed the interview did not know any of the trainees before they met. All  
4 participation was voluntary. Informed consent was obtained. Participants comprised n=71  
5 PGY1 (60% of cohort; 66% male) trainees. A larger participation group than originally  
6 intended was recruited due to the fact that a number of participants' interviews were brief as  
7 they had not accessed the feedback section of their e-portfolio (the first question of the  
8 interview). Given that our original focus was to examine engagement with feedback and  
9 differences between paper and electronic feedback we continued to accept participants into  
10 the study until we felt that sufficient data had been obtained to address these issues.<sup>26</sup> The  
11 interviews were arranged within the last three months of their training courses so that all  
12 participants were familiar with the e-portfolio system.

### 19 **Procedure**

20 A researcher, who was a previous medical technologist (YHC) external to the hospital with  
21 interview experience, conducted all interviews. Interviews were conducted in a quiet room at  
22 participants' convenience. Interviews were audio-recorded, transcribed verbatim, anonymized  
23 and checked for completeness. Each interview lasted around 20-30 minutes and took place in  
24 a private room at the hospital.

### 29 **Team reflexivity**

30 The research team comprised a multilingual (Mandarin, Italian and English), multi-  
31 professional (clinicians a linguist, and a psychologist) and multicultural (Taiwanese, Italian  
32 and English) group. Although the non-Taiwanese members of the research team had some  
33 proficiency in Mandarin, some of the data needed to be translated into English so that LVM  
34 could fully participate in the data analysis process. Discussions around the data were held in  
35 both Mandarin and English, and translational and cultural issues were addressed. Discussion  
36 around team members' approaches to the data, and their relative closeness to the focus of the  
37 research (e-portfolio, postgraduate participants) were held as data were analysed.

### 43 **Data analysis**

44 Data were analysed using inductive thematic Framework Analysis,<sup>27</sup> comprising: data  
45 familiarization, identification of the themes, charting and data interpretation. Additionally, as  
46 cost-value and goal orientation theories were known to the researchers, it is acknowledged  
47 that they also influenced data analysis deductively (although data were not specifically  
48 mapped to these theories). Four researchers (RH, YHC, CCC, PWH) read the transcripts,  
49 distributing them among each other so that all transcripts were read by at least two people.  
50 Following this, two researchers (FQ, LVM) joined the team to further develop the thematic  
51 focus of FSB. Data were translated from Mandarin to English by the CG-MERC official  
52  
53  
54  
55  
56  
57  
58  
59



translator (see Acknowledgements). The researchers came together several times to discuss the coding framework development. The framework was written as a document to facilitate coding consistency and analytical development. Data were coded by one person. As the data were coded, further developments of the themes were discussed with the wider team and incorporated into the final analysis in the framework document.

## Results

Two main themes were identified, of which one is FSB-related and the other one is specifically related to the e-portfolio in use (i.e. comparison between e-portfolio and paper-based portfolios). This research reports on the theme of “Inhibiting and facilitating factors around FSB”, which comprises four sub-themes (see Table 1). Thirty-two (22 males and 10 females) of the 71 participants contributed meaningfully to this theme, presented here. The remaining n=39 participants mainly focussed their talk around the e-portfolio in general (e.g. their engagement with it and with reflection) and comparisons between online and paper-based portfolios: and while responding to the direct questions around feedback seeking, they did so superficially and therefore fail to contribute meaningfully to the issue of feedback-seeking behaviours.

**Table 1: Learner, teacher, technology and process-related factors for trainees’ feedback-seeking behaviours**

	<b>Inhibiting factors</b>	<b>Facilitating factors</b>
1: Learner-focussed	Poor learning-needs assessment ( <i>what to have feedback on</i> ) Emotional reactions ( <i>about teachers</i> )	Value placed on feedback ( <i>feedback as a gift to be saved</i> ) Value placed on teachers ( <i>learning from seniors</i> )
2: Teacher-focussed	Delayed feedback ( <i>irrelevant</i> ) Generic feedback ( <i>irrelevant</i> )	Relevant feedback ( <i>high utility; facilitates self-regulation</i> ) Dedication to teaching ( <i>high utility; trainee respect</i> )
3: Technology-focussed	Poor user-interface ( <i>time-wasting; irrelevant material upload</i> ) Lack of reminders ( <i>forgetting to check</i> )	Online versus face-to-face ( <i>face-saving utility</i> )
4: Process-focussed	Timing ( <i>repetition</i> ) Frequency ( <i>workload</i> )	None mentioned

### **Inhibiting and facilitating factors around trainees’ feedback seeking behaviours (FSB)**

Participants discussed their engagement with feedback in terms of if and when they sought it within the e-portfolio. They discussed the various factors that influenced their engagement

1  
2  
3 that we report as sub-themes: (1) learner-focussed factors; (2) teacher-focussed factors; (3)  
4 technology-focussed factors; and (4) process-focussed factors.  
5  
6

### 7 8 **Sub-theme 1: learner-focussed factors**

9 This sub-theme focuses on the inhibiting and facilitating learner-related factors to  
10 participants' FSB. In terms of inhibiting factors, some participants pointed out that the lack of  
11 guidance and clear directions on how to complete the e-portfolio and what to write in it,  
12 resulted in them making inauthentic submissions. They expressed problems in terms of their  
13 own learning-needs assessment that eventually impacted on the perceived utility of the  
14 feedback for personal development, further inhibiting feedback seeking. The following  
15 participant highlighted this issue, calling for more initial guidance during their face-to-face  
16 meetings about how to complete the e-portfolio to make the subsequent feedback more  
17 relevant (so facilitating feedback seeking motivation):  
18  
19  
20  
21  
22  
23

24 *The parts on guidance and discussion are not enough [...] the thing is, if you*  
25 *organize the things on your own, the breadth and the depth of the feedback will be*  
26 *limited. Sometimes you need to have discussions with your peers and educators*  
27 *[...] So I think, if it's a small group discussion, probably the teacher could do a*  
28 *more detailed guidance...probably the students would get more. (PGY#5)*  
29  
30  
31  
32

33 The issue of superficial feedback, or generic feedback, was further discussed and linked to  
34 participants' relative engagement with feedback seeking around the patient cases they  
35 encountered. Thus, feedback was directly related to their own input whereby brief case reports  
36 received brief feedback. Some participants related this to their engagement with the clinical  
37 setting, whereas others related it to the relative importance individual PGYs placed on the e-  
38 portfolio process itself: a lack of engagement with the e-portfolio resulted in feedback that  
39 was of little importance and therefore ignored whereas high levels of engagement motivated  
40 feedback seeking:  
41  
42  
43  
44  
45

46 *It goes back to the point. Not every division has many cases to write. If there were a*  
47 *case really worth of discussion, then the teacher's feedback would also be richer.*  
48 *(PGY#17)*  
49  
50  
51

52  
53 *Of course, it [feedback seeking] is related to whether you write your e-portfolio*  
54 *seriously. If the teacher found it seriously written, then he would spend some time to*  
55 *provide feedback. (PGY#16)*  
56  
57  
58  
59  
60

1  
2  
3  
4 Finally, emotional aspects of receiving feedback were also highlighted as a factor that  
5 inhibited participants from seeking out or reading their feedback. This emotional aspect also  
6 included how participants might perceive the feedback providers according to the type of  
7 feedback received:  
8  
9

10 *I almost never see it [the feedback from the supervisor]! Because I think that after*  
11 *seeing it, you would develop a stereotype about the teacher [...] then suppose he*  
12 *gives you a high score, you would feel this teacher is good. And if he gives you a*  
13 *low score, you would consider the teacher is not kind. (PGY#7)*  
14  
15

16  
17  
18  
19 *Yes, it is embarrassed for us to say the clinical teacher's feedback is too short. That*  
20 *doesn't feel good. Therefore, I would rather not to look at it. (PGY#2)*  
21  
22

23  
24 Other participants (the minority) simply lacked internal motivation to seek feedback online.  
25 Reasons for this included going along with perceived social norms [i.e. others do not do it so  
26 they also do not]:  
27

28  
29 *I have never seen the teacher's feedback (PGY#3)*  
30

31 *I think no one would check the feedback in the e-portfolios. (PGY#13)*  
32  
33

34 However, despite there being numerous inhibiting factors for participants' FSB, there were  
35 also learner-focussed factors that were cited as facilitating feedback seeking. The value that  
36 participants placed on feedback was a key motivating factor for seeking feedback out. Thus,  
37 feedback was seen by some as being a *gift for learning*, something to be actively sought out  
38 and kept. Some participants talked about feedback within e-portfolios as being the most  
39 important part of the process, facilitating practice improvement and therefore something to be  
40 sought out and even kept:  
41  
42  
43

44  
45 *If teachers give feedback based on our reports, I will have a different way of thinking*  
46 *about my future practice. Then, in some aspects, I would improve my clinical*  
47 *practice. I think 'this is good' [...] of course the teacher's feedback should be saved.*  
48 *If we spend time writing up, we need to learn something out of it[...] I think teacher's*  
49 *feedback should be kept. (PGY#16)*  
50  
51  
52

53  
54  
55 *I would read the teacher's comments in the last part. I think that part is the most*  
56 *important. (PGY#18)*  
57  
58

1  
2  
3  
4 The high value placed on feedback includes valuing their clinical teachers' experience, even if  
5 they felt there was a generational gap around how things are done now versus how they used  
6 to be done. Essentially it is around an openness to listen and learn from seniors, and when that  
7 openness is present, feedback is sought and valued:  
8  
9

10 *The teacher's feedback to me is [...] also [...] you could see how the experienced*  
11 *teacher handled this part. Maybe our thinking is different from the way the teachers*  
12 *deal with things. At that time, it's not necessary about who is right or wrong but*  
13 *about how you can...you can integrate the practical experiences from different*  
14 *aspects and make further progress. (PGY#19)*  
15  
16  
17  
18  
19

### 20 **Sub-theme 2: Teacher-focussed factors**

21 The issue of teachers' remembering comprised the main teacher-focussed inhibiting factor for  
22 FBS. Thus, some participants reported that they were unable to link feedback to their specific  
23 experiences if it was delayed resulting in them disengaging with feedback seeking after an  
24 initial period of engagement. Indeed, they believed that when feedback was delayed, even  
25 their educators would have forgotten the event, resulting in the feedback being construed as  
26 overly generic and 'nonsense', further inhibiting their feedback seeking motivation:  
27  
28  
29

30 *If the feedback was delayed, it became not so specific to my case report. I can't*  
31 *remember what happened to the case after I reported it. I don't think my clinical*  
32 *teacher remembered it either. Therefore, the report and feedback became nonsense.*  
33 *(PGY#20)*  
34  
35  
36  
37  
38  
39

40 The issue of forgetting on the part of the teacher also interacted with forgetting on the part of  
41 the trainee:  
42

43 *Sometimes my teacher forgets to give feedback, or is delayed in uploading feedback.*  
44 *I guess he is too busy in clinical loading. Several days later, I might also forget to*  
45 *check the feedback. (PGY#2)*  
46  
47  
48

49 *I haven't seen it yet. I tried clicking before, but ... er, it seems that most of them [the*  
50 *teachers] haven't given [the feedback], so I didn't check particularly afterwards.*  
51 *(PGY#21)*  
52  
53  
54  
55

56 Not only did participants refer to the issue of their teacher remembering specific events, but  
57  
58  
59  
60

1  
2  
3 they also questioned whether their clinical teachers could even remember specific students.  
4 When feedback is delayed from the face-to-face event, and delivered online at a later point, it  
5 is imperative that the teacher can match a face to a name as well as recall the event. Due to the  
6 number of PGYs who rotate through each department, and the generic nature of feedback  
7 received, some participants doubted the authenticity of what they read. Inauthentic feedback  
8 inhibits later feedback seeking motivation:  
9  
10

11  
12 *I have seen some. But the feedback I have seen is very generic, because I think that*  
13 *the teacher may not remember [...] that many students. When he sees your name,*  
14 *he might not know [...] he may not be able to link it [to the person]. (PGY#14)*  
15  
16

17  
18  
19 *I am not sure if the teacher will read it carefully, because he also needs to lead many*  
20 *students, and he has patients, the work at the clinic, and some research and*  
21 *administration work [...] I think it is difficult to ask every physician to read them [e-*  
22 *portfolios] carefully. (PGY#6)*  
23  
24  
25

26  
27 On the flipside, some participants reported that they not only received generic, nonsensical  
28 feedback, but they also received quality feedback. Quality includes teachers feeding back on  
29 specific cases reported (relevant feedback) which were used by participants both  
30 prospectively (reading feedback and changing practice) and retrospectively (reading feedback  
31 after encountering problems to seek solutions). Further, ego factors and value intertwined. For  
32 example, reading feedback promoted new thought and action, leading to a positive self-image  
33 and therefore high levels of FSB engagement:  
34  
35  
36  
37

38 *Of course, actually it is not only limited in this part. When I have some clinical*  
39 *problems, I would check it up [the feedback] and do changes afterwards [...] during*  
40 *the process of checking, you would find out some- some new things. (PGY#5)*  
41  
42  
43

44  
45 *Some clinical teachers would give me feedback specific to the cases that I reported,*  
46 *such as the care quality report, or the ethical report. This kind of feedback always*  
47 *gives me new thoughts on how to manage the cases. In some way, I think it will*  
48 *change my way of doing practice in the future. I like to read this kind of feedback.*  
49  
50  
51 (PGY#16)  
52  
53

54  
55 Some participants also highlighted teachers' dedication to educating them. Educators taking  
56 feedback seriously, giving time to the trainees to improve, which further motivates trainees'  
57  
58

1  
2  
3 positive FSB:

4 *Then, my mentor happened to be [names doctor], on this aspect [feedback] he works*  
5 *really hard [...] most of the teachers, when they are doing the e-portfolio, they just*  
6 *deal with it by writing two or three words. But [names doctor] takes it seriously. He*  
7 *gives feedback seriously [...] It's helpful. It's helpful...maybe sometimes I would take*  
8 *a look when I feel interested. (PGY#8)*  
9  
10  
11  
12  
13

### 14 **Sub-theme 3: Technology-focussed factors**

15 The existing technological infrastructure in use at the hospital, the e-portfolio's default  
16 template and functions, alongside the requirements for completion (i.e. all objective  
17 assessments and writing reports were compulsory) often discouraged trainees in finishing the  
18 task, or in them doing it properly. For example, the lack of technology infrastructure led  
19 participants to complete their submissions at home after work, causing time delays and  
20 difficulty in writing. Technology-focused factors affect the general engagement of PGY  
21 trainees with e-portfolio. They also affect the feedback system and seeking of feedback. These  
22 factors dovetail with earlier issues (inadequate submissions leading to inadequate feedback)  
23 resulting in a lack of engagement with the feedback process:  
24  
25  
26  
27  
28  
29

30 *Because if it's paper, you can bring it with you anywhere. And you can immediately*  
31 *see the feedback the teacher gave to you. If it's e-portfolio, if you are in the*  
32 *hospital, basically you don't have time to use the computer...firstly, the computers*  
33 *in the hospital are not always enough, and the interface is not intuitive to use.*  
34  
35 *Because after you go home [...] it's lagging and then [you don't check] (PGY#14)*  
36  
37  
38  
39

40 Some participants also uttered their dissatisfaction with the lack of a reminder function to  
41 alert teachers and trainees to give and receive feedback. This interacted with the issue of  
42 teachers' heavy clinical workload. As such, after checking for feedback a number of times,  
43 participants reported giving up or forgetting to check:  
44  
45

46 *I think a reminder mechanism could be set [for teachers], otherwise, [it will be]*  
47 *like last time [when] they did not review the e-portfolios for over six months. This is*  
48 *horrible. (PGY#2)*  
49  
50  
51  
52

53 *At the time, I did not check if the teacher gave feedback, because some doctors were*  
54 *busy, and they wouldn't give feedback that quickly. I am thinking [...] when they*  
55 *give it, maybe we could receive an email or something? (PGY#6)*  
56  
57  
58  
59  
60



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52

*Or maybe, after the teacher gives feedback, something could pop out when you log into the e-portfolio the next time to remind us that the teacher given some feedback, so we could go there and read it. Otherwise, we won't remember to click [...] We won't. We only click the place where we need to write. (PGY#15)*

However, not everyone felt that the infrastructure was the issue: quite simply, if you want to learn, you will and if you don't want to learn, you won't – linking with the issue of learner-focussed factors:

*So I said, it is a problem about people, because those who want to learn will learn for sure [...] they will learn anyway [...] for the people who don't want to learn [...] they will not learn. It's a problem about people, nothing to do with the system! (PGY#13)*

However, the fact that feedback takes place in an online space, rather than physically face-to-face, was considered to be a technology-focussed facilitating factor for FSB. Indeed, participants talked about feedback being mainly around their deficits, rather than for praise which inhibited their desire to seek it out. Receiving negative information about one's practice is never easy, and even more so within an Eastern face-saving culture. Thus, the online nature of e-portfolios facilitates the necessary face-saving requirements around seeking out feedback, whilst enabling participants to learn from mistakes:

*Except when I have something that I really [...] for example, I don't want to [...] I felt embarrassed to discuss it [for feedback] with the teacher in person, so I would put it there in words. (PGY#13)*

*I think it is not bad to have feedback in e-portfolio. After all, we are all working at the same place. It would be embarrassing to tell us directly what was wrong. Because I maybe follow orders from other staff, one could lose his face to hear negative feedback. However, we need to know what was wrong. To write it in e-portfolio is a good idea to avoid losing face. (PGY#20)*

#### **Sub-theme 4: Process-focussed factors**

The process of the e-portfolio itself, including the timing and frequency of feedback, appeared to affect participants' FSB negatively (we have no data regarding positive aspects

1  
2  
3 for this sub-theme). Trainees highlighted how they are expected to reflect on the cases they  
4 experience, obtaining written feedback from their teacher/mentor via the e-portfolio.  
5  
6 However, in objective assessments, the clinical teacher often provides immediate feedback  
7 directly following the presentation of a clinical case typically by arranging discussions and  
8 teaching at the patients' bedside. The repetition of this feedback exercise was a key factor in  
9  
10 participants' decreased e-portfolios FSB:  
11

12 *Yes! [the] clinical teacher has given me a paper form feedback after our CbD*  
13 *[case-based discussion], the feedback in the e-portfolio appears to be redundant. I*  
14 *didn't look at that. [...] Yeah- yeah- yeah- yeah! [...] because when you have*  
15 *individual meetings with your teacher, you have already submitted a form.*  
16  
17 (PGY#1)

18  
19  
20 *I haven't seen it yet. Seriously. Because in the clinical setting, he would directly*  
21 *give me the feedback (PGY#13)*  
22  
23

24  
25 Indeed, some participants talked about how such doubling up of feedback resulted in  
26 superficial engagement on both sides:  
27

28 *Well after the writing, you just review the situation! He (the teacher) just re-reads*  
29 *[it...] and [talks about] any problems in-between [written feedback]. (PGY#15)*  
30  
31

32  
33 The frequency with which participants are required to fill in their e-portfolios appears to  
34 impact negatively on trainees' FSB. Many participants asserted that feedback lacks utility  
35 when it is provided too often:  
36

37 *I think the frequency could be every 6 months or every year [...] you only have that*  
38 *picture for your personal plan, and writing it every month won't change something.*  
39  
40 *Actually, I think it is a bit too frequent. (PGY#3)*  
41  
42  
43

44  
45 Further, this frequency increased their already high clinical workload resulting in both an  
46 impediment to using the e-portfolio in the first place (for both participants and their teachers),  
47 as well as the additional work resulting from the e-portfolio feedback (i.e. being required to  
48 act on it) This translated into a reluctance for some to seek out their feedback as engaging  
49 with it impacts on their workload.  
50

51  
52  
53 *This [acting on it] might not be possible, because we are very busy. If I have 20*  
54 *patients for that day, then I won't do any writing. I don't even have time to finish my*  
55 *stuff. (PGY#9)*  
56  
57



1  
2  
3  
4 *Monthly reports are better. We can write a more detailed reflection. Clinical teachers*  
5 *can then receive meaningful reports and give proper feedback. The workload will not*  
6 *be too heavy [...] when I think about the loading, I don't want to see the feedback.*  
7  
8

9 (PGY#12)  
10  
11

## 12 **Discussion**

13  
14 Our findings highlight the complexity of aspects affecting FSBs that include individual,  
15 social, technological and organizational factors working as catalysts or inhibitors in  
16 congruence with cost-value perceptions of individuals.<sup>28</sup> That FSB is influenced by the  
17 perceived utility of that feedback, albeit for a variety of different reasons, resonates with  
18 other research that highlights how learners' FSB motivations focuses on performance  
19 improvement:<sup>11,28</sup> if the learner anticipates that the feedback will be worthless, FSB will be  
20 low. So when learners believe that the submissions on which the feedback is based lacks  
21 authenticity, arrives too late, or is highly generic, FSB motivation reduces. But when  
22 feedback is considered relevant and delivered by dedicated educators, high FSB motivation is  
23 sustained. This finding links with research that points to learners' relationships with their  
24 seniors (including expertise and trustworthiness) as being a key aspect underlying FSB and  
25 subsequent feedback efficacy.<sup>28-30</sup> Other learner-centred findings such as perceived social  
26 norms (i.e. no one else seeks feedback) and the strategic use of feedback (i.e. prospectively  
27 and retrospectively) appear to be quite novel in the FSB literature, although a consideration  
28 of the organisational culture and its impact on feedback giving and expectations has been  
29 acknowledged.<sup>25</sup> This might be due to the context in which we have examined FSB: although  
30 feedback utility has been explored, it has not considered the inadequacy of the work on which  
31 the feedback is focused.  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42

43 In our study, poor user interface, slow connectivity and a lack of reminders  
44 interrelated with participants' low FSB. Higher FSB is associated with the online nature of the  
45 e-portfolio and how it facilitates learners' face-saving. This is particularly important within  
46 the setting of our study – Taiwan – where face-saving is of utmost importance culturally. This  
47 finding resonates with other research undertaken in an Eastern culture with management  
48 students<sup>3</sup>, with face-saving being considered a value within a cost-value model of FSB.<sup>24</sup>  
49 However, it should be noted that this face-saving benefit is not specific to Eastern cultures  
50 and manifests itself globally, albeit to a different extent. For example, Ginsburg et al.,<sup>31</sup>  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 analysed face-saving strategies in written feedback for low- and high- rated Canadian PGY1  
4 doctors. They found that feedback providers used more terms addressing PGY1s' positive  
5 face in the high-rated group (e.g. 'absolutely outstanding', 'a pleasure to work with') and  
6 more hedges when providing feedback for the low-rated group ('could have', 'a little more',  
7 'fairly'). Furthermore, feedback providers also used hedges to 'shield' themselves  
8 ('probably', 'perhaps') thereby protecting their own face, particularly in the context of  
9 providing feedback to the low-rated group.  
10  
11  
12  
13

14 Finally, we turn to organisational-related factors for FSB. When feedback is too late,  
15 particularly if it perceived as already having been received in a face-to-face setting in the  
16 interim, FSB is low. Furthermore, high frequency of feedback interacts with learners' high  
17 workload leading to a reduction in FSB. Although timing and frequency of feedback has  
18 been examined in the medical education literature, previous studies concentrated on feedback  
19 efficacy, rather than its impact on FSB.<sup>32</sup> As such, this is a unique finding that can inform  
20 curricula development above and beyond the e-portfolio setting within which a study sits.  
21  
22  
23  
24

25 As with all studies, our research has limitations. Firstly, the data has been collected at  
26 a single institution in a single country so caution must be taken for the transferability of our  
27 findings. For example, as we have highlighted, the face-saving effect might be exaggerated  
28 within a Taiwanese culture. Secondly, we have used a qualitative individual interview  
29 method. Such face-to-face data collection might motivate participants to present themselves  
30 positively. We are therefore careful not to quantify our data, and make no claims regarding  
31 the relative importance of factors and the magnitude of their influence. However, our study  
32 has strengths. The setting in which it was conducted is the largest teaching hospital in  
33 Taiwan, we have a relatively large participant group and have used theory to facilitate the  
34 transferability of findings within a medical education context.  
35  
36  
37  
38  
39  
40  
41

42 Our study has implications for educational practice. Providing learners with  
43 information on how to address their learning needs, thus facilitating the relevance of their  
44 reflective writing, could result in higher levels of FSB. Faculty development focusing on the  
45 provision of relevant, focused and high-quality feedback, is recommended. We also advise e-  
46 portfolio developers to work with students and educators when developing their user systems.  
47 Finally, the implementation of an e-portfolio should be considered in the wider context of  
48 both learners' and teachers' existing workload and opportunities for face-to-face feedback to  
49 ensure that the timing and frequency of feedback does not impede learners' FSB or create  
50 additional work for busy teachers and their trainees.  
51  
52  
53  
54  
55

56 Our research also highlights the need for further work in terms of researching learners'  
57  
58  
59

1  
2  
3 FSB within healthcare settings. In an era in which feedback studies are prevalent, too much  
4 attention has been placed on the efficacy and the delivery of the feedback itself, rather than  
5 learners FSB, which is assumed to occur. However, this is not always the case. Without fully  
6 understanding the relative factors that facilitate and impede learners' FSB across a range of  
7 learning situations, the goals of feedback in healthcare education cannot be fully achieved.  
8  
9  
10

## 11 12 13 **References**

- 14 1. Bing-You R, Hayes V, Varaklis K, Trowbridge R, Kemp H, Mckelvy D. Feedback for  
15 Learners in Medical Education: What Is Known? A Scoping Review. *Academic*  
16 *Medicine*, 2017; 92 (9): 1346-1354.
- 17 2. Rizan C, Elsey C, Lemon T, Grant A, Monrouxe LV. Feedback in action within bedside  
18 teaching encounters: a video ethnographic study. *Med Educ*, 2014; 48: 902-20.
- 19 3. Hwang A, Ang S, Francesco AM. The silent Chinese: The influence of face and  
20 Kiasuism on student feedback-seeking behaviors. *Journal of Management Education*,  
21 2002; 26: 70-98.
- 22 4. Veloski J, Boex JR, Grasberger MJ, Evans A, Wolfson DB. Systematic review of the  
23 literature on assessment, feedback and physicians' clinical performance: BMEM guide  
24 no. 7. *Medical Teacher*, 2006; 28: 117-128.
- 25 5. Hattie J, Timperley H. The power of feedback. *Review of Educational Research*, 2007;  
26 77: 81-112.
- 27 6. Isaacson JH, Posk LK, Litaker DG, Halperin AK. Resident perception of the evaluation  
28 process. *Journl of General Internal Medicine*, 1995; 10: S89.
- 29 7. Macdonald H, Sulsky LM, Spence JR, Brown DJ. Cultural differences in the motivation  
30 to seek performance feedback: A comparative policy-capturing study. *Human*  
31 *Performance*, 2013; 26: 211-235.
- 32 8. Ashford SJ. Feedback-Seeking in Individual Adaptation: A Resource Perspective.  
33 *Academy of Management*, 1986; 29: 465-487.
- 34 9. Crommelinck M, Anseel F. Understanding and encouraging feedback-seeking  
35 behaviour: a literature review. *Med Educ*, 2013; 47: 232-41.
- 36 10. Vandewalle DA. A goal orientation model of feedback-seeking behavior. *Human*  
37 *Resource Management Review*, 2003; 13: 581-604.
- 38 11. Ashford SJ, Cummings LL. Feedback as an individual resource: Personal strategies of  
39 creating information. *Organizational Behavior and Human Performance*, 1983; 32: 370-  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 398.
- 4 12. Vandewalle D, Ganesan S, Challagalla GN, Brown SP. An integrated model of  
5 feedback-seeking behavior: disposition, context, and cognition. *J Appl Psychol*, 2000;  
6 85: 996-1003.  
7  
8
- 9 13. Bok HG, Teunissen PW, Spruijt A, Fokkema JP, Van P, Jaarsma DA, Van der Vleuten  
10 CP. Clarifying students' feedback-seeking behaviour in clinical clerkships. *Med Educ*,  
11 2013; 47: 282-91.  
12  
13
- 14 14. Teunissen PW, Stapel DA, Van der Vleuten C, Scherpbier A, Boor K, Scheele F. Who  
15 wants feedback? An investigation of the variables influencing residents' feedback-  
16 seeking behavior in relation to night shifts. *Academic Medicine*, 2009; 84: 910-7.  
17  
18
- 19 15. Bose MM, Gijsselaers WH. Why supervisors should promote feedback-seeking  
20 behaviour in medical residency. *Medical Teacher*, 2013; 35: e1573-83.  
21  
22
- 23 16. Miller GE. The assessment of clinical skills/competence/performance. *Academic*  
24 *Medicine*, 1990; 65: S63-S67.  
25  
26
- 27 17. Tartwijk JV, Driessen EW. Portfolios for assessment and learning: AMEE Guide no. 45.  
28 *Medical Teacher*, 2009; 31: 790-801.  
29  
30
- 31 18. Heeneman S, Driessen EW. The use of a portfolio in postgraduate medical education –  
32 reflect, assess and account, one for each or all in one? *GMS Journal for Medical*  
33 *Education*. 2017;34(5):Doc57.  
34  
35
- 36 19. Driessen EW, Muijtjens AMM, Van Tarwijk J, Van der Vleuten CPM. Web- or paper-  
37 based portfolios: Is there a difference? *Medical Education*, 2007; 41: 1067-1073.  
38  
39
- 40 20. Gibson DR. Promoting effective teaching and learning: Hospital consultants identify  
41 their needs. *Medical Education*, 2000; 34: 126-130.  
42  
43
- 44 21. Holmboe ES, Sherbino J, Long DM, Swing SR, Frank JR. The role of assessment in  
45 competency-based medical education. *Medical Teacher*. 2010;32(8):676–682  
46  
47
- 48 22. Tochel C, Haig A, Hesketh A, Cadzow A, Beggs K, Colhart I, Peacock H. The  
49 effectiveness of portfolios for post-graduate assessment and education: BEMB Guide  
50 no. 12. *Medical Teacher*, 2009; 31: 299-318.  
51  
52
- 53 23. Mok J. "As a student, I do think that the learning effectiveness of electronic portfolios  
54 depends, to quite a large extent, on the attitude of students!". *ELT Journal of e-learning*,  
55 2012; 10: 407-416.  
56  
57
- 58 24. Chau J, Cheng G. Toward understanding the potential of e-portfolios for independent  
59 learning: A qualitative study. *Australasian Journal of Education Teaching*, 2010; 26:  
60 932-950.

- 1
- 2
- 3 25. Ramani, S., Post, SE., Könings, K., Mann, K., Katz, JT., & van der Vleuten, C. (2016):
- 4 "It's Just Not the Culture": A Qualitative Study Exploring Residents' Perceptions of the
- 5 Impact of Institutional Culture on Feedback, Teaching and Learning in Medicine, 2017
- 6 Apr-Jun;29(2):153-161.
- 7
- 8
- 9 26. Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B.,
- 10 Burroughs, H., Jinks, C. Saturation in qualitative research: exploring its
- 11 conceptualization and operationalization. *Quality & Quantity*, 2018 52: 1893
- 12
- 13 27. Ritchie J, Spencer L. Qualitative Data Analysis for Applied Policy Research. Analyzing
- 14 Qualitative Data. *In: Bryman A & Burgess RG. (eds.). 1994. London: Routledge.*
- 15
- 16 28. Anseel F, Beatty AS, Shen W, Lievens F, Sackett PR. How Are We Doing After 30
- 17 Years? A Meta-Analytic Review of the Antecedents and Outcomes of Feedback-Seeking
- 18 Behavior. *Journal of Management*, 2015; 41: 318-348.
- 19
- 20 29. Levy PE, Cober RT, Miller T. The Effect of Transformational and Transactional
- 21 Leadership Perceptions on Feedback-Seeking Intentions. *Journal of Applied Social*
- 22 *Psychology*, 2002; 32: 1703-1720.
- 23
- 24 30. Van De Ridder JMM, Berk FCJ, Stokking KM, Ten Cate OTJ. Feedback providers'
- 25 credibility impacts students' satisfaction with feedback and delayed performance.
- 26 *Medical Teacher*, 2015; 37: 767-774.
- 27
- 28 31. Ginsburg, S., van der Vleuten, C., Eva, K.W., Lingard, L. *Adv in Health Sci Educ* (2016)
- 29 21: 175
- 30
- 31 32. Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H,
- 32 Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki MD. Content and
- 33 timing of feedback and reflection: a multi-center qualitative study of experienced
- 34 bedside teachers. *BMC Medical Education*, 2014; 14: 212.
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50
- 51
- 52
- 53
- 54
- 55
- 56
- 57
- 58
- 59
- 60

### Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Response / Reported on Page #
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	<b>See 'data collection' in Methods (page 9)</b>
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	<b>See title page (page 1)</b>
3. Occupation	What was their occupation at the time of the study?	<b>See title page (page 1)</b> REN-HUEI FU is general practitioner at Chung Gang Memorial Hospital, Department of Neonatology; medical educator at Chung Gang Medical Education Research Centre (CG-MERC), Linkou, Taiwan. YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan. QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan. MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.
4. Gender	Was the researcher male or female?	<b>KHF: Male</b> <b>LVM, FQ, YHC: Female</b>
5. Experience and training	What experience or training did the researcher have?	<b>LVM</b> has vast experience of conducting qualitative research and analysis (over 15 years each). <b>FQ</b> has previous experience in qualitative research and analysis. <b>KHF</b> has previous experience in research but not qualitative <b>YHC</b> had training in interviewing <b>LVM</b> supported the team throughout the analysis, coding and writing process.
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	<b>See 'Design' in Methods (page 9)</b>
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	<b>See Data Collection section in Methods (page 10)</b>



8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	<b>Described on page 9</b>
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	<b>See 'Design' in Methods (page 9).</b> We used a qualitative interview design, we explain our analytical process.
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	<b>See 'recruitment' in Methods (page 9).</b> Participants were self-selected using purposive sampling. All participation was voluntary.
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	<b>See 'data collection' in Methods (page 9).</b>
12. Sample size	How many participants were in the study?	<b>See 'Participants' in Methods (page 9)</b> "Participants comprised n=71 PGY1 (60% of cohort; 66% male)"
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Participation was voluntary and participants were not considered to take part until they participated in the interviews. No participants withdrew from the study after participating in interviews.
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	<b>See 'Data collection' in Methods (page 9)</b> "Interviews were conducted in a quiet room at participants' convenience." –
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	<b>No</b>
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	<b>See 'Participants' (page 9)</b> The gender has been reported.
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	<b>See 'Data collection' in Methods (page 9)</b>
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	<b>No</b>
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	<b>See 'Data collection' in Methods (page 9)</b>
20. Field notes	Were field notes made during and/or after the interview or focus group?	<b>None made.</b>
21. Duration	What was the duration of the interviews or focus group?	<b>Individual semi-structural interview, 20-30 min each, "procedure" page 11</b>
22. Data saturation	Was data saturation discussed?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B,

		Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	<b>See 'Data analysis' in Methods (page 10)</b>
25. Description of the coding tree	Did authors provide a description of the coding tree?	<b>See Results Section, Table 1 (page 10)</b>
26. Derivation of themes	Were themes identified in advance or derived from the data?	<b>See 'Data analysis' in Methods (page 9)</b> Themes were inductively and deductively developed.
27. Software	What software, if applicable, was used to manage the data?	<b>See 'Data analysis' in Methods (page 9)</b>
28. Participant checking	Did participants provide feedback on the findings?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	<b>Yes.</b>
30. Data and findings consistent	Was there consistency between the data presented and the findings?	We have ensured consistency between the data presented and the findings of the study through thoroughly reviewing the manuscript.
31. Clarity of major themes	Were major themes clearly presented in the findings?	<b>See 'Results' (page 10-17)</b> The results section is organized around the major themes of the study, which are described under specific headings.
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	<b>See 'Results' (page 10-17)</b> The results section includes discussion of major themes, and nuances within these were covered.



# BMJ Open

## **“I did not check if the teacher gave feedback”: A qualitative analysis of Taiwanese post-graduate year-one trainees’ talk around e-portfolio feedback-seeking behaviours**

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-024425.R2
Article Type:	Research
Date Submitted by the Author:	20-Nov-2018
Complete List of Authors:	Fu, Ren-Huei; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Cho, Yu-Hsueh; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Quattri, Francesca; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC) Monrouxe, Lynn V; Chang Gung Memorial Hospital Linkou Branch, Chang Gung Medical Education Research Centre (CG-MERC)
<b>Primary Subject Heading</b>:	Medical education and training
Secondary Subject Heading:	Qualitative research
Keywords:	MEDICAL EDUCATION & TRAINING, Feedback, feedback-seeking behaviours, QUALITATIVE RESEARCH, Taiwan, technology enhanced learning

SCHOLARONE™  
Manuscripts

1  
2  
3 ***“I did not check if the teacher gave feedback”*: A qualitative analysis of**  
4 **Taiwanese post-graduate year-one trainees’ talk around e-portfolio**  
5 **feedback-seeking behaviours**  
6  
7  
8  
9

10  
11 Fu R.H., Cho Y.H., Quattri F, Monrouxe L.V.  
12  
13

14  
15  
16 **Author details**

17 REN-HUEI FU is general practitioner at Chung Gung Memorial Hospital, Department of  
18 Neonatology; medical educator at Chung Gung Medical Education Research Centre (CG-  
19 MERC), Linkou, Taiwan.  
20

21 QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang  
22 Gung Memorial Hospital, Linkou, Taiwan.  
23

24 YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang  
25 Gung Memorial Hospital, Linkou, Taiwan.  
26

27 MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang  
28 Gung Memorial Hospital, Linkou, Taiwan.  
29

30  
31  
32  
33  
34 **Running head:** PGY1 feedback seeking behaviours, e-portfolio  
35

36  
37  
38 **Word count:** 4,911 (plus Abstract, 1 Table and References)  
39  
40

41  
42 **Contact details for corresponding author:**

43 Prof Lynn Monrouxe

44 Director, Chang Gung Medical Education Research Centre (CG-MERC),

45 Chang Gung Memorial Hospital,

46 Guishan District, Taoyuan City, Taiwan.  
47

48 Telephone: +8860987590697  
49

50 Email: [monrouxe@me.com](mailto:monrouxe@me.com)  
51  
52  
53  
54  
55  
56

57 **Contributor and guarantor information**

58 RHF conceived the study. RHF and LVM designed the work. YHC contributed to the  
59  
60

1  
2  
3 acquisition of the data. All authors contributed to the analysis and interpretation of data.  
4 RHF, FQ and LVM drafted the initial manuscript. All authors revised the manuscript  
5 critically for important intellectual content. LVM and RHF substantially revised the paper.  
6 All authors gave their final comments and approval of the version to be published. LVM is  
7 the guarantor, agrees to be accountable for all aspects of the manuscript, has access to the  
8 data, made the final decision to submit and will ensure that any questions relating to the  
9 accuracy or integrity of any part of the manuscript are appropriately investigated and  
10 resolved.  
11  
12  
13  
14  
15  
16  
17  
18

### 19 **Acknowledgements**

20 The authors wish to express their gratitude to the students who participated in the study, to  
21 Ms Eve Huang from the CG-MERC who translated the data from Mandarin to English and to  
22 Dr Lesley Pugsley (Cardiff University, UK) for her reviews and comments on earlier versions  
23 of this manuscript.  
24  
25  
26  
27  
28

### 29 **Declaration of interest**

30 The authors report no conflicts of interest. The authors alone are responsible for the content  
31 and writing of this article.  
32  
33  
34  
35

### 36 **Ethical Approval**

37 The research was approved by the research ethics committee of Chang Gung Memorial  
38 Hospital.  
39  
40  
41  
42

### 43 **Funding**

44 The study was funded by the Ministry of Science and Technology and Chang Gung Memorial  
45 Hospital, Taiwan (MOST103-2511-S-182-004, NMRPD1D0201), who were kept informed  
46 of progress with the collection, analysis and interpretation of data. The funders had no  
47 involvement in the study progress or reporting of results.  
48  
49  
50  
51  
52

### 53 **Transparency declaration**

54 Lynn V Monrouxe (the manuscript's guarantor) affirms that the manuscript is an honest,  
55 accurate, and transparent account of the study being reported; no important aspects of the  
56 study have been omitted; and any discrepancies from the study as planned have been  
57 explained.  
58  
59  
60

### **Copyright/licence for publication**

The Corresponding Author has the right to grant on behalf of all authors and does grant on behalf of all authors, a worldwide licence to the Publishers and its licensees in perpetuity, in all forms, formats and media (whether known now or created in the future), to i) publish, reproduce, distribute, display and store the Contribution, ii) translate the Contribution into other languages, create adaptations, reprints, include within collections and create summaries, extracts and/or, abstracts of the Contribution, iii) create any other derivative work(s) based on the Contribution, iv) to exploit all subsidiary rights in the Contribution, v) the inclusion of electronic links from the Contribution to third party material where-ever it may be located; and, vi) licence any third party to do any or all of the above.

### **Patient consent**

Not applicable.

### **Data sharing statement**

The raw data for this research comprises audio-recordings of interviews. The principal investigator (R.H. Fu) has access to this specific data set, including interview transcripts, in addition to participant contact details and signed consent forms. All authors have access to anonymised data from this set. All data are securely stored in on password-protected and encrypted computers. Participants have not given their permission for data sharing outside the research group. Thus, no additional data is available.

## Abstract

**Objectives:** Despite feedback being an extensively researched and essential component of teaching and learning, there is a paucity of research examining feedback within a medical education e-portfolio setting including feedback-seeking behaviours (FSBs). FSBs can be understood within a cost-value perspective. The objective of this research is to explore the factors that influence post-graduate year-one (PGY1) trainee doctors' FSBs via e-portfolios.

**Setting:** Post-graduate education provision in the largest teaching hospital in Taiwan.

**Participants:** Seventy-one PGY1s (66% male).

**Methods:** A qualitative semi-structured one-to-one interview method was adopted. Interviews were audio-recorded, transcribed verbatim, anonymized and checked for completeness. Data were analysed inductively via thematic Framework Analysis and deductively informed by FSB theory. The process comprised: data familiarization, identification of the themes, charting and data interpretation.

**Results:** Two main themes of FSB-related and e-portfolio-related were identified. We present the theme focussing on FSB here to which n=32 (22 males, 10 females) of the n=71 participants contributed meaningfully. Sub-themes include factors variously affecting PGY1s' positive and negative FSBs via e-portfolios at the individual, process and technological levels. These factors include learner-related (internal values vs. social influence, forced reflection); teacher-related (committed educators vs. superficial feedback); technology-related (face-saving vs. lagging systems; inadequate user-interface); and process-related (delayed feedback, too frequent feedback) factors.

**Conclusions:** Our findings reveal the complexity of PGY1s' FSBs in an e-portfolio context and the interaction of numerous facilitating and inhibiting factors. Further research is required to understand the range of facilitating and inhibiting factors involved in healthcare learners' FSBs across different learning, social, institutional and national cultural settings.

## ARTICLE SUMMARY

### **Strengths and limitations of this study**

- Our qualitative approach has facilitated the exploration of feedback-seeking as an unexpected phenomenon within our study (i.e. as highlighted by participants during the interviews rather than being the main focus of the original study)
- The multi-cultural, multi-disciplinary make-up of the research team – including expertise in psychology, linguistics, medical education and medicine – facilitated a deeper understanding of both the process and the content of the data
- The use of current theoretical perspectives of feedback seeking enabled us to unpack the learner, teacher, technological and process-related factors impacting on trainees' willingness to seek out and utilise teachers' feedback within an e-portfolio setting that can be transferable outside the study context
- Although only n=32 participants meaningfully contributed to our findings. This is a substantial number for a qualitative study of this kind, considering the detailed information that each participant provided.
- The context of feedback seeking behaviours within e-portfolios in a Taiwanese teaching hospital is likely to have emphasized some of our findings, including the face-saving utility

## Introduction

Feedback is an essential component of the teaching and learning process and has been extensively researched in this decade.<sup>1</sup> Giving learners feedback means letting them know, in a timely and on-going way, how they are progressing.<sup>2,3</sup> Indeed, during clinical placements, the provision of feedback is an integral part of the learning process, enriching students' learning experience.<sup>3</sup> Constructive feedback from educators enables learners to gain insight into their actions and consequences, and this allows both learners and teachers to successfully achieve personal and program-related objectives.<sup>4</sup>

Furthermore, research suggests that some forms of feedback (e.g., reinforcement, video/audio feedback, computer-assisted instructional feedback) can be more effective than others, with effective and regular feedback having the potential to reinforce good practice and motivate the learner toward the desired outcome.<sup>5</sup> However, feedback is a two-way process. Although a general complaint heard from students and trainees is often that "*I never receive any feedback*",<sup>6</sup> some clinical teachers believe that students and trainees often lack motivation for seeking feedback.<sup>3,7</sup> To investigate whether it is just a matter of motivation, our study focuses on trainee doctors' feedback-seeking behaviour (FSB) within e-portfolios.

## Feedback-seeking behaviour

Feedback-seeking behaviour (FSB) has been defined as "[a] conscious devotion of effort towards determining the correctness and adequacy of behaviours for attaining values and states".<sup>8</sup> For this to happen, it requires both conscious effort and motivation to change.

A recent scoping review of the literature around feedback for learners in medical education failed to identify any studies on learners' FSB.<sup>1</sup> Indeed, although we identified a small number of papers on FSB within medical education, the vast majority of research was conducted in organisational contexts adopting existing FSB theories without challenging their validity.<sup>9</sup>

FSB seems to occur in two primary ways: requesting feedback from another (typically senior) colleague or observing others' behaviours.<sup>10</sup> In the case of an e-portfolio, however, the 'request' comes in the form of returning to the online forum and reading the feedback provided. Ashford and colleagues proposed that the cost and value of any given action are the primary determinants of FSB.<sup>11</sup> Nevertheless, a number of factors affect cost and value of actions. For example, one key perceived cost is *self-presentation*, including the potential embarrassment of revealing one's lack of knowledge, thereby drawing attention to personal

1  
2  
3 deficiencies. Other costs include *ego costs* (i.e., the risk of being the recipient of negative  
4 information), and *effort costs* (i.e., the risk of wasting energy and time with little return  
5 value).  
6  
7

8 Value is the perceived worth of FSB in learning new behaviours/skills to improve  
9 performance.<sup>10</sup> As such, the *expectancy* of this value has been shown to increase the  
10 frequency of FSB.<sup>12</sup> Furthermore, self-preservation is associated with value: through  
11 requesting feedback we can create or enhance a positive image of ourselves.<sup>10</sup> This  
12 theoretical work appears to transfer well into a medical education context. A qualitative study  
13 examining FSB in veterinary students during their clinical years found their FSB to be  
14 affected by perceived ego (e.g., feeling incompetent through negative feedback), image (e.g.,  
15 the presence of peers) and costs and benefits (utility of feedback).<sup>13</sup>  
16  
17  
18  
19  
20  
21

22 Goal orientation theory (personal goal preferences in achievement situations) has also  
23 been used to understand influences on the feedback-seeking process and comprises two main  
24 orientations: *performance* and *learning* goal orientations.<sup>10</sup> *Performance goal orientation*  
25 focuses on demonstrating and validating one's competence by seeking favourable (and  
26 avoiding negative) judgments. Here individuals focus on the cost of feedback-seeking,  
27 leading to low FSB. *Learning goal orientation* emphasizes developing competence:  
28 increasing FSB to benefit their job performance and for self-enhancement.<sup>10</sup> Situational  
29 factors have been shown to have a strong impact on which orientation is used.<sup>10</sup>  
30  
31  
32  
33  
34  
35

36 Research in medical education has considered resident doctors' goal orientation  
37 around feedback-seeking.<sup>14</sup> A positive relationship between the value placed on feedback and  
38 FSB frequency was identified.<sup>14</sup> Additionally, the situational factor of having a supportive  
39 supervisor influenced residents' likelihood to place a high value on feedback and see fewer  
40 costs for FSB.<sup>14</sup> Furthermore, research with residents in Switzerland also supported the  
41 influence of situational factors on FSB: supervisors' promotion of feedback-seeking was the  
42 sole predictor of residents' FSB through inquiry and increased their learning goal  
43 orientation.<sup>15</sup> Finally, this situational factor was associated with lower ego-protection and  
44 impression management concerns.<sup>15</sup>  
45  
46  
47  
48  
49  
50

51 Other research in organizational and educational settings suggests that national culture  
52 can influence FSB.<sup>3,7</sup> Motives underlying FSB include: an *instrumental* motive (high FSB to  
53 facilitate personal goal achievement and develop behaviours); an *image-defense* motive (FSB  
54 is tied up with a wish to maintain a high social image); and an *ego-defense* motive (in an  
55 attempt to maintain one's ego individuals avoid seeking feedback or do so strategically)<sup>7</sup>.  
56 Individuals from Western and Eastern (particularly Chinese) cultures are thought to react  
57  
58  
59  
60



1  
2  
3 differently to such influences. Indeed, research with Chinese management students suggests  
4 that FSB is strongly related to the issue of face (i.e. the fear of losing face before others),  
5 resulting in FSB being low when others are present.<sup>3</sup>  
6  
7  
8  
9

### 10 **Feedback via e-portfolios in medical education**

11 Portfolios assess what a learner does when functioning independently in the clinical  
12 workplace and are designed to stimulate learning from experience.<sup>16,17</sup> In the postgraduate  
13 arena, portfolios can be used for a number of different, yet interrelated, purposes including:  
14 as a tool for training in which a collection of skills and competencies, alongside reflective  
15 comments on development, are held; as a reflective tool of personal development for  
16 promotion selection; and as a person development tool containing reflective valuations  
17 progress over time.<sup>18</sup> Portfolios in postgraduate education tend to be mandatory. To serve the  
18 purpose of education, it is suggested that portfolios should contain evidence of how learners  
19 fulfil tasks and how their competence is progressing. Nowadays, portfolios are mostly digital  
20 (e-portfolios), with content that can be prescribed or left to the learners' discretion. Despite  
21 variations, their role is to record work undertaken, feedback received, progress made and  
22 plans for improvement.<sup>19</sup> In medical education, the content of trainees' e-portfolios may  
23 include quantitative assessments (such as the Mini-Clinical Evaluation Exercise, Direct  
24 Observation of Procedural Skills, Case based Discussion, and 360 degree evaluation),  
25 reflective writing (such as medical ethics and legislation report, health care quality report,  
26 and personal development report), and Evidence-Based Medicine report. Clinical teachers are  
27 required to assess the trainee and provide appropriate feedback on their assessment and  
28 reports in their e-portfolios. The utilization of e-portfolios has the potential to change the  
29 nature of learning environments and the ways in which trainee learning is promoted through  
30 different modes of learning.<sup>20</sup> As such, the work collected in the e-portfolio provides material  
31 for the trainee to review their learning and can be used as a basis for future assessment.  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47

48 Feedback is a key element of any e-portfolio: feedback information is needed so the  
49 learner can reflect and formulate their future plans and develop learning objectives in order to  
50 improve their performance and competencies.<sup>17</sup> Furthermore, in the age of competency-based  
51 education, continuous, detailed and targeted feedback is essential.<sup>21</sup> Although staff and  
52 trainees do not always share a common understanding of the role of feedback in supporting  
53 learning,<sup>20</sup> evidence suggests that well-implemented portfolios are effective and practical,  
54 increase personal responsibility for learning and support professional development and so  
55 engaging in feedback via e-portfolios is of utmost importance.<sup>22</sup> On a positive note, feedback  
56  
57  
58  
59  
60

1  
2  
3 via e-portfolios has been shown to encourage reflection among users.<sup>22</sup> On the downside,  
4 scepticism about the purpose of the e-portfolio and lack of time for completion are also  
5 reported.<sup>23</sup> However, despite the plethora of research that has been undertaken examining  
6 FSB in an organizational setting,<sup>24</sup> and the potential of e-portfolios for supporting the  
7 feedback loop, to our knowledge there is no research to date that has examined FSB in the  
8 context of e-portfolios. This is an obvious omission given the often-compulsory nature of e-  
9 portfolios in the post-graduate setting and the importance of feedback for the development of  
10 professionalism and competencies in the clinical setting. Indeed, given the key role of  
11 feedback in the learning process, understanding why learners sometimes fail to take the first  
12 step and seek out their feedback is an important, yet under-studied issue in the e-portfolio  
13 context.<sup>25</sup>

### 23 **Aim and research question**

24 The aim of our research is to understand postgraduate year one medical trainees' (PGY1s')  
25 feedback seeking behaviours in the context of an e-portfolio, which, for the purposes of this  
26 study, we define as 'motivations and behaviours towards looking for, reading, or mentally  
27 engaging with feedback delivered via an online portfolio'. Specifically we wish to answer  
28 the following research question (RQ):

35 RQ: What are the factors that influence postgraduate year one medical trainees'  
36 feedback seeking behaviours within an e-portfolio context?

## 41 **Methods**

### 42 **Study context**

43 The study was conducted at the largest teaching hospital in Taiwan. PGY1 trainees are in the  
44 transitional period between medical student and clinical physician. They are licensed  
45 physicians who receive a training program as they transition from medical students to  
46 specialty residents. The PGY1 training program of general medicine was implemented by the  
47 Taiwanese government for professional training in general practice in 2011. E-portfolios  
48 were introduced in 2013, and gradually substituted paper-based portfolios. The portfolio in  
49 this setting is a collection of evidence of the PGY1s' learning experience during their  
50 training. It comprises a default template for several assessment and evaluation criteria  
51 including a quantitative assessment (e.g. Mini-Clinical Evaluation Exercise (Mini-CEX),  
52 Direct Observation of Procedural Skills (DOPS), Case-based Discussion (CbD)) and  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 qualitative, reflective writing sections (e.g. Medical Ethics and Legislation Report, Medical  
4 Care Quality Report and Personal Development Report). According to Taiwanese regulations  
5 for e-portfolios, trainees are expected to fill the e-portfolios numerous times over the course  
6 of their training (14 workplace-based assessments and 22 reflective writing reports during the  
7 PGY1 training). In terms of the workplace-based assessment (e.g. Mini-CEX, DOPS, and  
8 Cbd), clinical teachers are required to evaluate the performance of the PGY1 trainee and  
9 provide them with a score and feedback immediately following their bedside teaching.  
10 Clinical teachers are required to upload feedback to the trainees' e-portfolio afterwards. For  
11 the reflective writing reports, clinical teachers provide feedback about trainees' reports  
12 following each submission. Thus, PGY1s receive feedback for different assessments and  
13 from different rotations during the same training period.

### 22 **Patient involvement**

23  
24 No patients were involved in the design or instigation of this study.

### 25 **Design**

26  
27 A qualitative study with one-to-one, semi-structured interviews was employed to explore the  
28 perception and experience of PGY1 trainees about their engagement with clinical teachers'  
29 feedback provided in their e-portfolio. Following the piloting of the interview questions (n=5  
30 PGY1) only slight changes were made. Several questions were asked in the interview,  
31 including: There are numerous reports and assessments in the e-portfolio which are followed  
32 by clinical teachers' feedback, did you read them all? If so, why? If not, why not? Do you  
33 think you have received appropriate feedback in your e-portfolio? Is there any difference  
34 between paper-based, e-portfolio and face-to-face feedback? Do you find it helpful to receive  
35 clinical teachers' feedback through the e-portfolio? Does feedback affect you in any aspect of  
36 your clinical practice? Do you change your behaviour or advance your knowledge following  
37 feedback?

### 38 **Participants**

39  
40 Following ethical approval, all 118 (65% male) PGY1 trainees from the 2014 cohort were  
41 approached to participate. Participants were self-selected using convenience sampling. When  
42 the researcher contacted the trainees, a brief introduction including the purposes and  
43 methodology of the research project was given to the trainees. They were told that the  
44 research was being led by a physician educator: there were nine physician educators in the  
45 hospital at the time. The trainees were assured that the interview would be anonymized after  
46 transcription. The research team members only analyzed anonymized data. The researcher  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 that performed the interview did not know any of the trainees before they met. All  
4 participation was voluntary. Informed consent was obtained. Participants comprised n=71  
5 PGY1 (60% of cohort; 66% male) trainees. A larger participation group than originally  
6 intended was recruited due to the fact that a number of participants' interviews were brief as  
7 they had not accessed the feedback section of their e-portfolio (the first question of the  
8 interview). Given that our original focus was to examine engagement with feedback and  
9 differences between paper and electronic feedback we continued to accept participants into  
10 the study until we felt that sufficient data had been obtained to address these issues.<sup>26</sup> The  
11 interviews were arranged within the last three months of their training courses so that all  
12 participants were familiar with the e-portfolio system.

### 20 **Procedure**

21  
22 A researcher, who was a previous medical technologist (YHC) external to the hospital with  
23 interview experience, conducted all interviews. Interviews were conducted in a quiet room at  
24 participants' convenience. Interviews were audio-recorded, transcribed verbatim, anonymized  
25 and checked for completeness. Each interview lasted around 20-30 minutes and took place in  
26 a private room at the hospital.

### 30 **Team reflexivity**

31  
32 The research team comprised a multilingual (Mandarin, Italian and English), multi-  
33 professional (clinicians, a linguist, and a psychologist) and multicultural (Taiwanese, Italian  
34 and English) group. Although the non-Taiwanese members of the research team had some  
35 proficiency in Mandarin, some of the data needed to be translated into English so that LVM  
36 could fully participate in the data analysis process. Discussions around the data were held in  
37 both Mandarin and English, and translational and cultural issues were addressed. Discussion  
38 around team members' approaches to the data, and their relative closeness to the focus of the  
39 research (e-portfolio, postgraduate participants) were held as data were analysed.

### 45 **Data analysis**

46  
47 Data were analysed using inductive thematic Framework Analysis,<sup>27</sup> comprising: data  
48 familiarization, identification of the themes, charting and data interpretation. Additionally, as  
49 cost-value and goal orientation theories were known to the researchers, it is acknowledged  
50 that they also influenced data analysis deductively (although data were not specifically  
51 mapped to these theories). Four researchers (RH, YHC, CCC, PWH) read the transcripts,  
52 distributing them among each other so that all transcripts were read by at least two people.  
53 Following this, two researchers (FQ, LVM) joined the team to further develop the thematic  
54 focus of FSB. Data were translated from Mandarin to English by the CG-MERC official  
55  
56  
57  
58  
59  
60

translator (see Acknowledgements). The researchers came together several times to discuss the coding framework development. The framework was written as a document to facilitate coding consistency and analytical development. Data were coded by one person. As the data were coded, further developments of the themes were discussed with the wider team and incorporated into the final analysis in the framework document.

## Results

Two main themes were identified, of which one is FSB-related and the other one is specifically related to the e-portfolio in use (i.e. comparison between e-portfolio and paper-based portfolios). This research reports on the theme of “Inhibiting and facilitating factors around FSB”, which comprises four sub-themes (see Table 1). Thirty-two (22 males and 10 females) of the 71 participants contributed meaningfully to this theme, presented here. The remaining n=39 participants mainly focussed their talk around the e-portfolio in general (e.g. their engagement with it and with reflection) and comparisons between online and paper-based portfolios: and while responding to the direct questions around feedback seeking, they did so superficially and therefore fail to contribute meaningfully to the issue of feedback-seeking behaviours.

**Table 1: Learner, teacher, technology and process-related factors for trainees’ feedback-seeking behaviours**

	<b>Inhibiting factors</b>	<b>Facilitating factors</b>
1: Learner-focussed	Poor learning-needs assessment ( <i>what to have feedback on</i> ) Emotional reactions ( <i>about teachers</i> )	Value placed on feedback ( <i>feedback as a gift to be saved</i> ) Value placed on teachers ( <i>learning from seniors</i> )
2: Teacher-focussed	Delayed feedback ( <i>irrelevant</i> ) Generic feedback ( <i>irrelevant</i> )	Relevant feedback ( <i>high utility; facilitates self-regulation</i> ) Dedication to teaching ( <i>high utility; trainee respect</i> )
3: Technology-focussed	Poor user-interface ( <i>time-wasting; irrelevant material upload</i> ) Lack of reminders ( <i>forgetting to check</i> )	Online versus face-to-face ( <i>face-saving utility</i> )
4: Process-focussed	Timing ( <i>repetition</i> ) Frequency ( <i>workload</i> )	None mentioned

### **Inhibiting and facilitating factors around trainees’ feedback seeking behaviours (FSB)**

Participants discussed their engagement with feedback in terms of if and when they sought it within the e-portfolio. They discussed the various factors that influenced their engagement

1  
2  
3 that we report as sub-themes: (1) learner-focussed factors; (2) teacher-focussed factors; (3)  
4 technology-focussed factors; and (4) process-focussed factors.  
5  
6  
7

### 8 **Sub-theme 1: learner-focussed factors**

9  
10 This sub-theme focuses on the inhibiting and facilitating learner-related factors to  
11 participants' FSB. In terms of inhibiting factors, some participants pointed out that the lack of  
12 guidance and clear directions on how to complete the e-portfolio and what to write in it,  
13 resulted in them making inauthentic submissions. They expressed problems in terms of their  
14 own learning-needs assessment that eventually impacted on the perceived utility of the  
15 feedback for personal development, further inhibiting feedback seeking. The following  
16 participant highlighted this issue, calling for more initial guidance during their face-to-face  
17 meetings about how to complete the e-portfolio to make the subsequent feedback more  
18 relevant (so facilitating feedback seeking motivation):  
19  
20  
21  
22  
23  
24

25 *The parts on guidance and discussion are not enough [...] the thing is, if you*  
26 *organize the things on your own, the breadth and the depth of the feedback will be*  
27 *limited. Sometimes you need to have discussions with your peers and educators*  
28 *[...] So I think, if it's a small group discussion, probably the teacher could do a*  
29 *more detailed guidance...probably the students would get more. (PGY#5)*  
30  
31  
32  
33  
34  
35

36 The issue of superficial feedback, or generic feedback, was further discussed and linked to  
37 participants' relative engagement with feedback seeking around the patient cases they  
38 encountered. Thus, feedback was directly related to their own input whereby brief case reports  
39 received brief feedback. Some participants related this to their engagement with the clinical  
40 setting, whereas others related it to the relative importance individual PGYs placed on the e-  
41 portfolio process itself: a lack of engagement with the e-portfolio resulted in feedback that  
42 was of little importance and therefore ignored whereas high levels of engagement motivated  
43 feedback seeking:  
44  
45  
46  
47  
48  
49

50 *It goes back to the point. Not every division has many cases to write. If there were a*  
51 *case really worth of discussion, then the teacher's feedback would also be richer.*  
52 *(PGY#17)*  
53  
54  
55

56 *Of course, it [feedback seeking] is related to whether you write your e-portfolio*  
57 *seriously. If the teacher found it seriously written, then he would spend some time*  
58 *to provide feedback. (PGY#16)*  
59  
60

1  
2  
3  
4  
5 Finally, emotional aspects of receiving feedback were also highlighted as a factor that  
6 inhibited participants from seeking out or reading their feedback. This emotional aspect also  
7 included how participants might perceive the feedback providers according to the type of  
8 feedback received:  
9

10  
11 *I almost never see it [the feedback from the supervisor]! Because I think that after*  
12 *seeing it, you would develop a stereotype about the teacher [...] then suppose he*  
13 *gives you a high score, you would feel this teacher is good. And if he gives you a*  
14 *low score, you would consider the teacher is not kind. (PGY#7)*  
15  
16  
17  
18

19  
20 *Yes, it is embarrassed for us to say the clinical teacher's feedback is too short. That*  
21 *doesn't feel good. Therefore, I would rather not to look at it. (PGY#2)*  
22  
23  
24

25 Other participants (the minority) simply lacked internal motivation to seek feedback online.  
26 Reasons for this included going along with perceived social norms [i.e. others do not do it so  
27 they also do not]:  
28

29  
30 *I have never seen the teacher's feedback (PGY#3)*  
31

32 *I think no one would check the feedback in the e-portfolios. (PGY#13)*  
33  
34  
35

36 However, despite there being numerous inhibiting factors for participants' FSB, there were  
37 also learner-focussed factors that were cited as facilitating feedback seeking. The value that  
38 participants placed on feedback was a key motivating factor for seeking feedback out. Thus,  
39 feedback was seen by some as being a *gift for learning*, something to be actively sought out  
40 and kept. Some participants talked about feedback within e-portfolios as being the most  
41 important part of the process, facilitating practice improvement and therefore something to be  
42 sought out and even kept:  
43  
44  
45  
46  
47

48 *If teachers give feedback based on our reports, I will have a different way of thinking*  
49 *about my future practice. Then, in some aspects, I would improve my clinical*  
50 *practice. I think 'this is good' [...] of course the teacher's feedback should be saved.*  
51 *If we spend time writing up, we need to learn something out of it[...] I think teacher's*  
52 *feedback should be kept. (PGY#16)*  
53  
54  
55  
56  
57

58 *I would read the teacher's comments in the last part. I think that part is the most*  
59 *important. (PGY#18)*  
60



1  
2  
3  
4  
5 The high value placed on feedback includes valuing their clinical teachers' experience, even if  
6 they felt there was a generational gap around how things are done now versus how they used  
7 to be done. Essentially it is around an openness to listen and learn from seniors, and when that  
8 openness is present, feedback is sought and valued:  
9

10  
11 *The teacher's feedback to me is [...] also [...] you could see how the experienced*  
12 *teacher handled this part. Maybe our thinking is different from the way the teachers*  
13 *deal with things. At that time, it's not necessary about who is right or wrong but*  
14 *about how you can...you can integrate the practical experiences from different*  
15 *aspects and make further progress. (PGY#19)*  
16  
17  
18  
19  
20  
21

## 22 **Sub-theme 2: Teacher-focussed factors**

23  
24 The issue of teachers' remembering comprised the main teacher-focussed inhibiting factor for  
25 FBS. Thus, some participants reported that they were unable to link feedback to their specific  
26 experiences if it was delayed resulting in them disengaging with feedback seeking after an  
27 initial period of engagement. Indeed, they believed that when feedback was delayed, even  
28 their educators would have forgotten the event, resulting in the feedback being construed as  
29 overly generic and 'nonsense', further inhibiting their feedback seeking motivation:  
30  
31  
32

33  
34 *If the feedback was delayed, it became not so specific to my case report. I can't*  
35 *remember what happened to the case after I reported it. I don't think my clinical*  
36 *teacher remembered it either. Therefore, the report and feedback became nonsense.*  
37  
38  
39 (PGY#20)  
40  
41  
42

43 The issue of forgetting on the part of the teacher also interacted with forgetting on the part of  
44 the trainee:  
45

46 *Sometimes my teacher forgets to give feedback, or is delayed in uploading feedback.*  
47 *I guess he is too busy in clinical loading. Several days later, I might also forget to*  
48 *check the feedback. (PGY#2)*  
49  
50  
51

52  
53 *I haven't seen it yet. I tried clicking before, but ... er, it seems that most of them [the*  
54 *teachers] haven't given [the feedback], so I didn't check particularly afterwards.*  
55  
56 (PGY#21)  
57  
58  
59  
60

Not only did participants refer to the issue of their teacher remembering specific events, but

1  
2  
3 they also questioned whether their clinical teachers could even remember specific students.  
4  
5 When feedback is delayed from the face-to-face event, and delivered online at a later point, it  
6  
7 is imperative that the teacher can match a face to a name as well as recall the event. Due to the  
8  
9 number of PGYs who rotate through each department, and the generic nature of feedback  
10  
11 received, some participants doubted the authenticity of what they read. Inauthentic feedback  
12  
13 inhibits later feedback seeking motivation:

14  
15 *I have seen some. But the feedback I have seen is very generic, because I think that*  
16  
17 *the teacher may not remember [...] that many students. When he sees your name,*  
18  
19 *he might not know [...] he may not be able to link it [to the person]. (PGY#14)*

20  
21 *I am not sure if the teacher will read it carefully, because he also needs to lead many*  
22  
23 *students, and he has patients, the work at the clinic, and some research and*  
24  
25 *administration work [...] I think it is difficult to ask every physician to read them [e-*  
26  
27 *portfolios] carefully. (PGY#6)*

28  
29 On the flipside, some participants reported that they not only received generic, nonsensical  
30  
31 feedback, but they also received quality feedback. Quality includes teachers feeding back on  
32  
33 specific cases reported (relevant feedback) which were used by participants both  
34  
35 prospectively (reading feedback and changing practice) and retrospectively (reading feedback  
36  
37 after encountering problems to seek solutions). Further, ego factors and value intertwined. For  
38  
39 example, reading feedback promoted new thought and action, leading to a positive self-image  
40  
41 and therefore high levels of FSB engagement:

42  
43 *Of course, actually it is not only limited in this part. When I have some clinical*  
44  
45 *problems, I would check it up [the feedback] and do changes afterwards [...] during*  
46  
47 *the process of checking, you would find out some- some new things. (PGY#5)*

48  
49 *Some clinical teachers would give me feedback specific to the cases that I reported,*  
50  
51 *such as the care quality report, or the ethical report. This kind of feedback always*  
52  
53 *gives me new thoughts on how to manage the cases. In some way, I think it will*  
54  
55 *change my way of doing practice in the future. I like to read this kind of feedback.*  
56  
57 (PGY#16)

58  
59 Some participants also highlighted teachers' dedication to educating them. Educators taking  
60  
61 feedback seriously, giving time to the trainees to improve, which further motivates trainees'

1  
2  
3 positive FSB:  
4

5 *Then, my mentor happened to be [names doctor], on this aspect [feedback] he works*  
6 *really hard [...] most of the teachers, when they are doing the e-portfolio, they just*  
7 *deal with it by writing two or three words. But [names doctor] takes it seriously. He*  
8 *gives feedback seriously [...] It's helpful. It's helpful...maybe sometimes I would*  
9 *take a look when I feel interested. (PGY#8)*  
10  
11  
12  
13  
14

### 15 **Sub-theme 3: Technology-focussed factors**

16  
17 The existing technological infrastructure in use at the hospital, the e-portfolio's default  
18 template and functions, alongside the requirements for completion (i.e. all workplace-based  
19 assessments and writing reports were compulsory) often discouraged trainees in finishing the  
20 task, or in them doing it properly. For example, the lack of technology infrastructure led  
21 participants to complete their submissions at home after work, causing time delays and  
22 difficulty in writing. Technology-focused factors affect the general engagement of PGY  
23 trainees with e-portfolio. They also affect the feedback system and seeking of feedback. These  
24 factors dovetail with earlier issues (inadequate submissions leading to inadequate feedback)  
25 resulting in a lack of engagement with the feedback process:  
26  
27  
28  
29  
30  
31

32 *Because if it's paper, you can bring it with you anywhere. And you can immediately*  
33 *see the feedback the teacher gave to you. If it's e-portfolio, if you are in the*  
34 *hospital, basically you don't have time to use the computer...firstly, the computers*  
35 *in the hospital are not always enough, and the interface is not intuitive to use.*  
36  
37  
38  
39 *Because after you go home [...] it's lagging and then [you don't check] (PGY#14)*  
40  
41  
42

43 Some participants also uttered their dissatisfaction with the lack of a reminder function to  
44 alert teachers and trainees to give and receive feedback. This interacted with the issue of  
45 teachers' heavy clinical workload. As such, after checking for feedback a number of times,  
46 participants reported giving up or forgetting to check:  
47  
48  
49

50 *I think a reminder mechanism could be set [for teachers], otherwise, [it will be]*  
51 *like last time [when] they did not review the e-portfolios for over six months. This is*  
52 *horrible. (PGY#2)*  
53  
54  
55

56 *At the time, I did not check if the teacher gave feedback, because some doctors*  
57 *were busy, and they wouldn't give feedback that quickly. I am thinking [...] when*  
58 *they give it, maybe we could receive an email or something? (PGY#6)*  
59  
60

1  
2  
3  
4  
5 *Or maybe, after the teacher gives feedback, something could pop out when you log*  
6 *into the e-portfolio the next time to remind us that the teacher given some feedback,*  
7 *so we could go there and read it. Otherwise, we won't remember to click [...] We*  
8 *won't. We only click the place where we need to write. (PGY#15)*  
9  
10  
11  
12

13 However, not everyone felt that the infrastructure was the issue: quite simply, if you want to  
14 learn, you will and if you don't want to learn, you won't – linking with the issue of learner-  
15 focussed factors:  
16  
17

18 *So I said, it is a problem about people, because those who want to learn will learn*  
19 *for sure [...] they will learn anyway [...] for the people who don't want to learn*  
20 *[...] they will not learn. It's a problem about people, nothing to do with the system!*  
21  
22  
23  
24 (PGY#13)  
25  
26

27 However, the fact that feedback takes place in an online space, rather than physically face-to-  
28 face, was considered to be a technology-focussed facilitating factor for FSB. Indeed,  
29 participants talked about feedback being mainly around their deficits, rather than for praise  
30 which inhibited their desire to seek it out. Receiving negative information about one's  
31 practice is never easy, and even more so within an Eastern face-saving culture. Thus, the  
32 online nature of e-portfolios facilitates the necessary face-saving requirements around seeking  
33 out feedback, whilst enabling participants to learn from mistakes:  
34  
35  
36  
37  
38

39 *Except when I have something that I really [...] for example, I don't want to [...] I*  
40 *felt embarrassed to discuss it [for feedback] with the teacher in person, so I would*  
41 *put it there in words. (PGY#13)*  
42  
43  
44  
45

46 *I think it is not bad to have feedback in e-portfolio. After all, we are all working at*  
47 *the same place. It would be embarrassing to tell us directly what was wrong.*  
48 *Because I maybe follow orders from other staff, one could lose his face to hear*  
49 *negative feedback. However, we need to know what was wrong. To write it in e-*  
50 *portfolio is a good idea to avoid losing face. (PGY#20)*  
51  
52  
53  
54  
55

#### 56 **Sub-theme 4: Process-focussed factors**

57 The process of the e-portfolio itself, including the timing and frequency of feedback,  
58 appeared to affect participants' FSB negatively (we have no data regarding positive aspects  
59  
60

1  
2  
3 for this sub-theme). Trainees highlighted how they are expected to reflect on the cases they  
4 experience, obtaining written feedback from their teacher/mentor via the e-portfolio.  
5 However, in workplace-based assessments, the clinical teacher often provides immediate  
6 feedback directly following the presentation of a clinical case typically by arranging  
7 discussions and teaching at the patients' bedside. The repetition of this feedback exercise was  
8 a key factor in participants' decreased e-portfolios FSB:  
9  
10  
11  
12

13 *Yes! [the] clinical teacher has given me a paper form feedback after our CbD*  
14 *[case-based discussion], the feedback in the e-portfolio appears to be redundant. I*  
15 *didn't look at that. [...] Yeah- yeah- yeah- yeah! [...] because when you have*  
16 *individual meetings with your teacher, you have already submitted a form.*  
17  
18  
19  
20 (PGY#1)  
21  
22  
23

24 Indeed, some participants talked about how such doubling up of feedback resulted in  
25 superficial engagement on both sides:  
26

27 *Well after the writing, you just review the situation! He (the teacher) just re-reads*  
28 *[it...] and [talks about] any problems in-between [written feedback]. (PGY#15)*  
29  
30  
31

32 The frequency with which participants are required to fill in their e-portfolios appears to  
33 impact negatively on trainees' FSB. Many participants asserted that feedback lacks utility  
34 when it is provided too often:  
35  
36

37 *I think the frequency could be every 6 months or every year [...] you only have that*  
38 *picture for your personal plan, and writing it every month won't change something.*  
39 *Actually, I think it is a bit too frequent. (PGY#3)*  
40  
41  
42  
43

44 Further, this frequency increased their already high clinical workload resulting in both an  
45 impediment to using the e-portfolio in the first place (for both participants and their teachers),  
46 as well as the additional work resulting from the e-portfolio feedback (i.e. being required to  
47 act on it) This translated into a reluctance for some to seek out their feedback as engaging  
48 with it impacts on their workload.  
49  
50  
51

52  
53 *This [acting on it] might not be possible, because we are very busy. If I have 20*  
54 *patients for that day, then I won't do any writing. I don't even have time to finish my*  
55 *stuff. (PGY#9)*  
56  
57  
58  
59

60 *Monthly reports are better. We can write a more detailed reflection. Clinical*

1  
2  
3 *teachers can then receive meaningful reports and give proper feedback. The*  
4 *workload will not be too heavy [...] when I think about the loading, I don't want to*  
5 *see the feedback. (PGY#12)*  
6  
7  
8  
9

## 10 **Discussion**

11 Our findings highlight the complexity of aspects affecting FSBs that include individual,  
12 social, technological and organizational factors working as catalysts or inhibitors in  
13 congruence with cost-value perceptions of individuals.<sup>28</sup> That FSB is influenced by the  
14 perceived utility of that feedback, albeit for a variety of different reasons, resonates with  
15 other research that highlights how learners' FSB motivations focuses on performance  
16 improvement:<sup>11,28</sup> if the learner anticipates that the feedback will be worthless, FSB will be  
17 low. So when learners believe that the submissions on which the feedback is based lacks  
18 authenticity, arrives too late, or is highly generic, FSB motivation reduces. But when  
19 feedback is considered relevant and delivered by dedicated educators, high FSB motivation is  
20 sustained. This finding links with research that points to learners' relationships with their  
21 seniors (including expertise and trustworthiness) as being a key aspect underlying FSB and  
22 subsequent feedback efficacy.<sup>28-30</sup> Other learner-centred findings such as perceived social  
23 norms (i.e. no one else seeks feedback) and the strategic use of feedback (i.e. prospectively  
24 and retrospectively) appear to be quite novel in the FSB literature, although a consideration  
25 of the organisational culture and its impact on feedback giving and expectations has been  
26 acknowledged.<sup>25</sup> This might be due to the context in which we have examined FSB: although  
27 feedback utility has been explored, it has not considered the inadequacy of the work on which  
28 the feedback is focused.

29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43 In our study, poor user interface, slow connectivity and a lack of reminders  
44 interrelated with participants' low FSB. Higher FSB is associated with the online nature of the  
45 e-portfolio and how it facilitates learners' face-saving. This is particularly important within  
46 the setting of our study – Taiwan – where face-saving is of utmost importance culturally. This  
47 finding resonates with other research undertaken in an Eastern culture with management  
48 students<sup>3</sup>, with face-saving being considered a value within a cost-value model of FSB.<sup>24</sup>  
49 However, it should be noted that this face-saving benefit is not specific to Eastern cultures  
50 and manifests itself globally, albeit to a different extent. For example, Ginsburg et al.,<sup>31</sup>  
51 analysed face-saving strategies in written feedback for low- and high- rated Canadian PGY1  
52 doctors. They found that feedback providers used more terms addressing PGY1s' positive  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 face in the high-rated group (e.g. 'absolutely outstanding', 'a pleasure to work with') and  
4 more hedges when providing feedback for the low-rated group ('could have', 'a little more',  
5 'fairly'). Furthermore, feedback providers also used hedges to 'shield' themselves  
6 ('probably', 'perhaps') thereby protecting their own face, particularly in the context of  
7 providing feedback to the low-rated group.  
8  
9

10  
11  
12 Finally, we turn to organisational-related factors for FSB. When feedback is too late,  
13 particularly if it perceived as already having been received in a face-to-face setting in the  
14 interim, FSB is low. Furthermore, high frequency of feedback interacts with learners' high  
15 workload leading to a reduction in FSB. Although timing and frequency of feedback has  
16 been examined in the medical education literature, previous studies concentrated on feedback  
17 efficacy, rather than its impact on FSB.<sup>32</sup> As such, this is a unique finding that can inform  
18 curricula development above and beyond the e-portfolio setting within which a study sits.  
19  
20  
21  
22  
23

24 As with all studies, our research has limitations. Firstly, the data has been collected at  
25 a single institution in a single country so caution must be taken for the transferability of our  
26 findings. For example, as we have highlighted, the face-saving effect might be exaggerated  
27 within a Taiwanese culture. Secondly, we have used a qualitative individual interview  
28 method. Such face-to-face data collection might motivate participants to present themselves  
29 positively. We are therefore careful not to quantify our data, and make no claims regarding  
30 the relative importance of factors and the magnitude of their influence. However, our study  
31 has strengths. The setting in which it was conducted is the largest teaching hospital in  
32 Taiwan, we have a relatively large participant group and have used theory to facilitate the  
33 transferability of findings within a medical education context.  
34  
35  
36  
37  
38  
39  
40

41 Our study has implications for educational practice. Providing learners with  
42 information on how to address their learning needs, thus facilitating the relevance of their  
43 reflective writing, could result in higher levels of FSB. Faculty development focusing on the  
44 provision of relevant, focused and high-quality feedback, is recommended. We also advise e-  
45 portfolio developers to work with students and educators when developing their user systems.  
46 Finally, the implementation of an e-portfolio should be considered in the wider context of  
47 both learners' and teachers' existing workload and opportunities for face-to-face feedback to  
48 ensure that the timing and frequency of feedback does not impede learners' FSB or create  
49 additional work for busy teachers and their trainees.  
50  
51  
52  
53  
54  
55  
56

57 Our research also highlights the need for further work in terms of researching learners'  
58 FSB within healthcare settings. In an era in which feedback studies are prevalent, too much  
59 attention has been placed on the efficacy and the delivery of the feedback itself, rather than  
60

1  
2  
3 learners FSB, which is assumed to occur. However, this is not always the case. Without fully  
4 understanding the relative factors that facilitate and impede learners' FSB across a range of  
5 learning situations, the goals of feedback in healthcare education cannot be fully achieved.  
6  
7  
8  
9

## 10 **References**

- 11 1. Bing-You R, Hayes V, Varaklis K, Trowbridge R, Kemp H, Mckelvy D. Feedback for  
12 Learners in Medical Education: What Is Known? A Scoping Review. *Academic*  
13 *Medicine*, 2017; 92 (9): 1346-1354.
- 14 2. Rizan C, Elsey C, Lemon T, Grant A, Monrouxe LV. Feedback in action within bedside  
15 teaching encounters: a video ethnographic study. *Med Educ*, 2014; 48: 902-20.
- 16 3. Hwang A, Ang S, Francesco AM. The silent Chinese: The influence of face and  
17 Kiasuism on student feedback-seeking behaviors. *Journal of Management Education*,  
18 2002; 26: 70-98.
- 19 4. Veloski J, Boex JR, Grasberger MJ, Evans A, Wolfson DB. Systematic review of the  
20 literature on assessment, feedback and physicians' clinical performance: BMEM guide  
21 no. 7. *Medical Teacher*, 2006; 28: 117-128.
- 22 5. Hattie J, Timperley H. The power of feedback. *Review of Educational Research*, 2007;  
23 77: 81-112.
- 24 6. Isaacson JH, Posk LK, Litaker DG, Halperin AK. Resident perception of the evaluation  
25 process. *Journl of General Internal Medicine*, 1995; 10: S89.
- 26 7. Macdonald H, Sulsky LM, Spence JR, Brown DJ. Cultural differences in the motivation  
27 to seek performance feedback: A comparative policy-capturing study. *Human*  
28 *Performance*, 2013; 26: 211-235.
- 29 8. Ashford SJ. Feedback-Seeking in Individual Adaptation: A Resource Perspective.  
30 *Academy of Management*, 1986; 29: 465-487.
- 31 9. Crommelinck M, Anseel F. Understanding and encouraging feedback-seeking  
32 behaviour: a literature review. *Med Educ*, 2013; 47: 232-41.
- 33 10. Vandewalle DA. A goal orientation model of feedback-seeking behavior. *Human*  
34 *Resource Management Review*, 2003; 13: 581-604.
- 35 11. Ashford SJ, Cummings LL. Feedback as an individual resource: Personal strategies of  
36 creating information. *Organizational Behavior and Human Performance*, 1983; 32: 370-  
37 398.
- 38 12. Vandewalle D, Ganesan S, Challagalla GN, Brown SP. An integrated model of  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



- 1  
2  
3 feedback-seeking behavior: disposition, context, and cognition. *J Appl Psychol*, 2000;  
4 85: 996-1003.  
5  
6  
7 13. Bok HG, Teunissen PW, Spruijt A, Fokkema JP, Van P, Jaarsma DA, Van der Vleuten  
8 CP. Clarifying students' feedback-seeking behaviour in clinical clerkships. *Med Educ*,  
9 2013; 47: 282-91.  
10  
11 14. Teunissen PW, Stapel DA, Van der Vleuten C, Scherpbier A, Boor K, Scheele F. Who  
12 wants feedback? An investigation of the variables influencing residents' feedback-  
13 seeking behavior in relation to night shifts. *Academic Medicine*, 2009; 84: 910-7.  
14  
15 15. Bose MM, Gijsselaers WH. Why supervisors should promote feedback-seeking  
16 behaviour in medical residency. *Medical Teacher*, 2013; 35: e1573-83.  
17  
18 16. Miller GE. The assessment of clinical skills/competence/performance. *Academic*  
19 *Medicine*, 1990; 65: S63-S67.  
20  
21 17. Tartwijk JV, Driessen EW. Portfolios for assessment and learning: AMEE Guide no. 45.  
22 *Medical Teacher*, 2009; 31: 790-801.  
23  
24 18. Heeneman S, Driessen EW. The use of a portfolio in postgraduate medical education –  
25 reflect, assess and account, one for each or all in one? *GMS Journal for Medical*  
26 *Education*. 2017;34(5):Doc57.  
27  
28 19. Driessen EW, Muijtjens AMM, Van Tarwijk J, Van der Vleuten CPM. Web- or paper-  
29 based portfolios: Is there a difference? *Medical Education*, 2007; 41: 1067-1073.  
30  
31 20. Gibson DR. Promoting effective teaching and learning: Hospital consultants identify  
32 their needs. *Medical Education*, 2000; 34: 126-130.  
33  
34 21. Holmboe ES, Sherbino J, Long DM, Swing SR, Frank JR. The role of assessment in  
35 competency-based medical education. *Medical Teacher*. 2010;32(8):676–682  
36  
37 22. Tochel C, Haig A, Hesketh A, Cadzow A, Beggs K, Colhart I, Peacock H. The  
38 effectiveness of portfolios for post-graduate assessment and education: BEMB Guide  
39 no. 12. *Medical Teacher*, 2009; 31: 299-318.  
40  
41 23. Mok J. "As a student, I do think that the learning effectiveness of electronic portfolios  
42 depends, to quite a large extent, on the attitude of students!". *ELT Journal of e-learning*,  
43 2012; 10: 407-416.  
44  
45 24. Chau J, Cheng G. Toward understanding the potential of e-portfolios for independent  
46 learning: A qualitative study. *Australasian Journal of Education Teaching*, 2010; 26:  
47 932-950.  
48  
49 25. Ramani, S., Post, SE., Könings, K., Mann, K., Katz, JT., & van der Vleuten, C. (2016):  
50 "It's Just Not the Culture": A Qualitative Study Exploring Residents' Perceptions of the  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 Impact of Institutional Culture on Feedback, Teaching and Learning in Medicine, 2017  
4 Apr-Jun;29(2):153-161.  
5  
6  
7 26. Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B.,  
8 Burroughs, H., Jinks, C. Saturation in qualitative research: exploring its  
9 conceptualization and operationalization. *Quality & Quantity*, 2018 52: 1893  
10  
11 27. Ritchie J, Spencer L. Qualitative Data Analysis for Applied Policy Research. Analyzing  
12 Qualitative Data. *In: Bryman A & Burgess RG. (eds.). 1994. London: Routledge.*  
13  
14 28. Anseel F, Beatty AS, Shen W, Lievens F, Sackett PR. How Are We Doing After 30  
15 Years? A Meta-Analytic Review of the Antecedents and Outcomes of Feedback-Seeking  
16 Behavior. *Journal of Management*, 2015; 41: 318-348.  
17  
18 29. Levy PE, Cober RT, Miller T. The Effect of Transformational and Transactional  
19 Leadership Perceptions on Feedback-Seeking Intentions. *Journal of Applied Social*  
20 *Psychology*, 2002; 32: 1703-1720.  
21  
22 30. Van De Ridder JMM, Berk FCJ, Stokking KM, Ten Cate OTJ. Feedback providers'  
23 credibility impacts students' satisfaction with feedback and delayed performance.  
24 *Medical Teacher*, 2015; 37: 767-774.  
25  
26 31. Ginsburg, S., van der Vleuten, C., Eva, K.W., Lingard, L. *Adv in Health Sci Educ* (2016)  
27 21: 175  
28  
29 32. Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H,  
30 Hemmer PA, Kernan WN, Kogan JR, Rafferty C, Wong R, Elnicki MD. Content and  
31 timing of feedback and reflection: a multi-center qualitative study of experienced  
32 bedside teachers. *BMC Medical Education*, 2014; 14: 212.  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

### Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Response / Reported on Page #
<b>Domain 1: Research team and reflexivity</b>		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	<b>See 'data collection' in Methods (page 9)</b>
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	<b>See title page (page 1)</b>
3. Occupation	What was their occupation at the time of the study?	<b>See title page (page 1)</b> REN-HUEI FU is general practitioner at Chung Gang Memorial Hospital, Department of Neonatology; medical educator at Chung Gang Medical Education Research Centre (CG-MERC), Linkou, Taiwan. YU-HSUEH CHO is a Master of Chinese Medicine and researcher of the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan. QUATTRI FRAN, PhD, is a linguist and Post-Doctoral Researcher at the CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan. MONROUXE LYNN, PhD, is a cognitive psychologist and Director of CG-MERC, Chang Gung Memorial Hospital, Linkou, Taiwan.
4. Gender	Was the researcher male or female?	<b>KHF: Male</b> <b>LVM, FQ, YHC: Female</b>
5. Experience and training	What experience or training did the researcher have?	<b>LVM</b> has vast experience of conducting qualitative research and analysis (over 15 years each). <b>FQ</b> has previous experience in qualitative research and analysis. <b>KHF</b> has previous experience in research but not qualitative <b>YHC</b> had training in interviewing <b>LVM</b> supported the team throughout the analysis, coding and writing process.
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	<b>See 'Design' in Methods (page 9)</b>
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	<b>See Data Collection section in Methods (page 10)</b>

8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	<b>Described on page 9</b>
<b>Domain 2: study design</b>		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	<b>See 'Design' in Methods (page 9).</b> We used a qualitative interview design, we explain our analytical process.
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	<b>See 'recruitment' in Methods (page 9).</b> Participants were self-selected using purposive sampling. All participation was voluntary.
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	<b>See 'data collection' in Methods (page 9).</b>
12. Sample size	How many participants were in the study?	<b>See 'Participants' in Methods (page 9)</b> "Participants comprised n=71 PGY1 (60% of cohort; 66% male)"
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Participation was voluntary and participants were not considered to take part until they participated in the interviews. No participants withdrew from the study after participating in interviews.
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	<b>See 'Data collection' in Methods (page 9)</b> "Interviews were conducted in a quiet room at participants' convenience." –
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	<b>No</b>
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	<b>See 'Participants' (page 9)</b> The gender has been reported.
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	<b>See 'Data collection' in Methods (page 9)</b>
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	<b>No</b>
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	<b>See 'Data collection' in Methods (page 9)</b>
20. Field notes	Were field notes made during and/or after the interview or focus group?	<b>None made.</b>
21. Duration	What was the duration of the interviews or focus group?	<b>Individual semi-structural interview, 20-30 min each, "procedure" page 11</b>
22. Data saturation	Was data saturation discussed?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B,

		Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
<b>Domain 3: analysis and findings</b>		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	<b>See 'Data analysis' in Methods (page 10)</b>
25. Description of the coding tree	Did authors provide a description of the coding tree?	<b>See Results Section, Table 1 (page 10)</b>
26. Derivation of themes	Were themes identified in advance or derived from the data?	<b>See 'Data analysis' in Methods (page 9)</b> Themes were inductively and deductively developed.
27. Software	What software, if applicable, was used to manage the data?	<b>See 'Data analysis' in Methods (page 9)</b>
28. Participant checking	Did participants provide feedback on the findings?	We do not report this as we do not consider this to appropriate for our research position (Varpio L, Ajjawi R, Monrouxe LV, O'Brien B, Rees CE (2017) Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. <i>Medical Education</i> . 51(1)40-50.)
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	<b>Yes.</b>
30. Data and findings consistent	Was there consistency between the data presented and the findings?	We have ensured consistency between the data presented and the findings of the study through thoroughly reviewing the manuscript.
31. Clarity of major themes	Were major themes clearly presented in the findings?	<b>See 'Results' (page 10-17)</b> The results section is organized around the major themes of the study, which are described under specific headings.
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	<b>See 'Results' (page 10-17)</b> The results section includes discussion of major themes, and nuances within these were covered.