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What aspects of reasoning do Further Education College lecturers use in writing rationales?

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ABSTRACT

Commonly, the task of constructing rationales is used in development programmes as a means of advancing Further Education College (FEC) lecturers' understanding of their practice. Often lecturers also teach this task as a part of student project work. Drawing on psychological research on argumentative reasoning the aim was to illuminate strengths and weaknesses in lecturers' rationale construction by identifying (a) components of reasoning and (b) ideas used in rationales. A descriptive sample survey design plus a focus group interview was employed on an opportunity sample of twenty-two FEC lecturers. They provided eighty-nine pages of word-processed responses to nine questions. Content analyses indicated that participants used only two of Kuhn's (1991) five broad components of argumentative reasoning and educational literature was cited without commentary or evaluation. It is argued that course design needs to draw on ideas from at least three bodies of research: pedagogies for learning argumentative reasoning, 'aspects of knowledgeability' (Bereiter, 2002) and situated learning.

INTRODUCTION

Background

In the accredited development programme for lecturers in Further Education Colleges (FECs) in Scotland that is the focus of this small-scale study, a central learning outcome was that participants would write an informed rationale for learning outcomes, pedagogies and assessment tools. This type of outcome appears in many development programmes for FEC lecturers, although commonly the outcome is described in terms of processes such as justifying, judging, appraising and evaluating views. The more general term 'critical thinking' is sometimes used to encompass such processes. The idea that learning to think in these ways might be given higher priority in the United Kingdom post-16 vocational education and training system has been argued in reports of recent research funded by The Learning and Skills Development Agency (Livingston, Soden and Kirkwood, 2003, Moseley, Baumfield, Elliott, Gregson, Higgins, Lin, Miller, Newton, and Robson, 2004). This argument was also put forward in reports of funded research that focused on units of study that engage students in project work (e.g. see Soden and Halliday, 2000, Anderson, Howe, Soden, Halliday and Low, 2001). The Anderson et al research suggested that there is considerable scope for teaching Social Care students to give reasons for the proposals they make in their project reports for improving a care facility.

Many FEC lecturers teach content that draws on the sciences (e.g. engineering and construction, hairdressing, hygienic food preparation) or social sciences (e.g. human resource development, social and health care). Newton, Driver and Osborne (1999) claim that argumentative reasoning is at the heart of science: they argue that the articulation of reasons that justify particular views, the challenging of particular views, the presentation of alternative views, and the co-construction of understanding are central to the practice of science and as such are an important aspect of science learning. Thus, one reason for focusing on rationales for preferred practices written by

FEC lecturers is that it seems helpful for lecturers themselves to understand the reasoning that, according to Newton et al, is at the heart of science. It is easy to imagine that clients might value employees who can inform them about alternative views, and the evidence that supports each view, when they are choosing among options, whether these options relate to complex electronic devices or plans for maintaining their health and welfare.

A more general justification for interest in lecturers' rationale writing is that connections between reasoning, citizenship and employability have been well argued (Gardner, 1999b). Kuhn (1991) believes that the cognitive processes described by the term argumentative reasoning are central to employability and citizenship, while Billig (1989) makes a stronger claim that thinking *is* internal argumentation, implying that weak argumentation competence will manifest itself in poor ability to deal with tasks other than those that require entirely routine application of procedures. Development of reasoning is also likely to be relevant to demands made on FEC lecturers to provide robust reasons for their preferred practices in a variety of circumstances, such as when they collaborate with other stakeholders in course design and evaluation. Thus, if FEC lecturers are to be effective in promoting more general competences associated with employability, and to operate as professionals, it is important to identify strengths and weaknesses in their own reasoning so that development activities can be properly targeted.

Despite the fact that the commonly used task in development programmes of writing a rationale for practice seems reasonably well 'aligned' (Biggs, 2003) with aims relating to reasoning, research findings point to an absence of reasoned argument in participants' writing (e.g. Smith, Campbell and Brooker, 1999; Maclellan, 1999; Francis, Robson and Read, 2001). Dye's (1999) analysis of FEC lecturers' course essays indicated that they did not attempt to write an informed rationale for practice or they wrote it in a mechanistic manner. When Maclellan (1999) looked for evidence in PGCE students' essays of reasoning about their practice, her conclusion that the

quality of thought expressed in the writing merits further investigation was similar to conclusions reached by Dye (1999) and McMahon (2001). Weaknesses with aspects of reasoning seem to occur not only in written work but also in one-to-one tutorials when the tutor/researcher presses the lecturer to consider the soundness of evidence (Halliday and Soden 1998). In the Halliday and Soden transcripts of lecturers' responses to a question about how the lecturers knew what they had just asserted about effective practices, there was a predominance of 'unsupported' assertions. More general research suggests that post-school education programmes do not have a strong impact on adults' reasoning about everyday knowledge. Researchers have reported that adults both with and without post-school education did not reason well about issues such as causes of failure at school, return to crime and inadequate recycling of resources (Perkins, Allen and Hafner, 1983; Kuhn, 1991; King and Kitchener, 1994).

Argumentative reasoning

The present study draws on psychological research on argumentative reasoning, a term that is explained below and which has more precise connotations than other words commonly used to describe aims connected with reasoning. By looking for components of argumentative reasoning in FEC lecturers' writing, it is possible to identify which components lecturers might need to develop further. The extensive research that has been conducted in recent years into the nature of argumentative reasoning, and on how it might be improved, can help with interpretation of findings and identifying implications for designing programmes (e.g., Perkins, 1989; Kuhn, 1991; Kuhn, Shaw and Felton, 1997; Anderson, Howe, Soden, Halliday and Low, 2001). Locating the study in argumentative reasoning helps accommodate Kuhn's (1999) point that terms used to describe thinking aims in development programmes need to be deconstructed more precisely if they are to be of use to educators. The authors acknowledge that, while this body of literature is extensive and methodologically robust, there are other more philosophically informed frameworks for understanding argumentative reasoning.

Following Kuhn (1991), argumentative reasoning is taken to include the abilities to a) differentiate opinions from evidence; b) support opinions with non-spurious evidence; c) propose opinions alternative to one's own and know what evidence would support these; d) provide evidence that simultaneously supports one's own opinions while rebutting alternatives, and e) take an epistemological stance which involves weighing the pros and cons of what is currently known. In other words, argumentative reasoning involves the ability to mount reasoned, justified arguments, and to detect weaknesses in justification. Kuhn (1991, p.281) believes that the abilities she includes in the term argumentative reasoning capture what is described in the literature as critical thinking, and helps to elucidate it in ways that might help educators (Kuhn, 1999). Argumentative reasoning includes Lipman's (1991) idea that critical thinking is thinking 'that can be assessed by appeal to criteria'. Thus, professionals might appeal to a criterion such as the practical possibility of implementing ideas about improving practice.

Kuhn's (1991) description is of very broad components of argumentative reasoning. It is helpful to consider too the more detailed description of these components. Moseley et al (2004) evaluated over fifty taxonomies for describing thinking processes in order to produce a framework that is particularly relevant to the post-16 sector. Although this framework includes not only argumentative but other forms of reasoning, some of the sixty-nine mental processes that Moseley et al identified in taxonomies can be seen as sub-components of the five broader abilities that Kuhn (1991) describes as central components of argumentative reasoning. For example, most of Kuhn's five broad components involve sub-components described by Moseley et al such as *identifying* relevant evidence, *evaluating* limitations in evidence, *discriminating* between more and less compelling evidence for and against a view, and *planning* an argument. Moseley et al imply that, when students deploy those and other processes described in the taxonomies, they are likely not only to construct sound arguments but also to achieve a deeper understanding of the

nature, justification, implications, and value of what is known. In other words, the task of writing a rationale for one's preferred practices is one that ought to engage processes that benefit understanding of whatever lecturers are studying.

Problem statement and scope of the study

The problem addressed is the extent to which components of argumentative reasoning, as described in psychological literature, appear in rationales written by FEC lecturers for their chosen aims, teaching methods and assessment tools for an instructional session they had conducted, the ideas they deploy in constructing the rationales, and possible reasons for any patterns.

It is assumed that the knowledge available to the participants included knowledge from learning theories studied during the accredited development programme as well as other 'aspects of knowledgeability' Bereiter (2002, p.131) derivable from everyday experience. The learning theories the lecturers studied can be located within one of the meanings of theory discussed by Thomas (1997): in the sense of an accumulating body of knowledge, a hypothesis, model or heuristic, or ideas formally expressed in a series of statements.

It is not the purpose of this paper to argue a case for the inclusion of learning theories in FEC lecturer development programmes, but simply to point out that the participants' knowledge might be assumed to include knowledge of theories studied in the course.   Neither is it the authors' purpose to consider complex relationships between theory and practice (e.g. see O'Hear, 1988; Thomas, 1997; Rowlands, 1999; Loughran, 2002; Stevenson, 2003) nor is it to contribute to descriptions of professional and vocational knowledge (e.g. Eraut, 1994).   Instead, the study focuses on quantifying the incidence of some components of argumentative reasoning described by Kuhn (1991) in lecturers' responses to an invitation to say why they prefer some practices to

others, and by considering this alongside the concepts they use in their reasons. By looking at these matters it is possible to examine structural aspects of reasoning and ideas the participants regarded as useful.

Soden and Halliday (2000) argued that, taken together, the research outlined above points to a need for development programmes for FEC lecturers to prioritise reasoning.   However, changes in this direction require more knowledge than is currently available about the specific aspects of reasoning that pose particular difficulties for lecturers. There is no claim that the study addresses all forms of reasoning but rather that it focuses on some forms that have been extensively researched. The present small-scale study is designed to provide a starting point for further research.

METHOD

Design

A descriptive sample survey design was employed on an opportunity sample. Since the aim of the study was to identify (a) components of reasoning (such as weighing up evidence) that posed difficulties for FEC lecturers in responding to questions that asked them why they preferred the practices they used, and (b) to identify ideas they used (e.g. student centred) in constructing their reasons, it seemed appropriate to gather relatively unstructured qualitative data, and to use two forms of content analysis on the same data. The form used in the first analysis derived themes from concepts that the participants deployed in their responses. The second content analysis, which was more theory-driven, enabled a picture to be built up of the proportion of statements that resembled argumentative reasoning. In order to pick up any development that might occur during the course, the data was gathered during the eighth and fifteenth months of the

programme. In addition, one focus group interview was used to help with interpretation of the findings from the content analysis.

Participants

The respondents to the survey questions were twenty-two (22) further education lecturers who were enrolled in a part-time accredited continuing professional development programme that was delivered on a day-release basis over sixteen months. The participants had a vocational qualification (in engineering, hairdressing, computing, applied biology and chemistry, administration) at Higher National Diploma or degree level, or a professional qualification (in social work and accountancy). They received course credit for their participation in the study.

Instrumentation - participants' responses to survey questions

Data for the study consisted of the participants' written responses to nine questions that prompted them to describe and argue for and against practices they had chosen to use in an instructional session nominated by themselves. The responses amounted in total to 89 pages of text - 34 pages written in the eighth month and 55 pages written in the fifteenth month of the programme. The responses earned credit towards assessment requirements.

The instructions to participants were as follows: please choose a one or two hour instructional session that you have planned and delivered recently, and please respond to the questions below about your chosen session.

1.   a. What did you intend your students to learn? Please describe this as

         briefly as possible.

Now please respond *fully and equally* to the next two parts of this question.

         b.   Why did you think this learning would benefit the students?

c. What might someone say who disagreed, and how might you rebut

their objections?

2. a. What did you do? Please describe this as *briefly* as possible.

 Now please respond as *fully and equally* to the next two parts of this question.

b. Why did you think that this would promote the intended learning?

c. What might someone say who disagreed, and how might you rebut

their objections?'

3. 3. a. What did you do to find out if your students learned what you

intended? Please describe this as *briefly* as possible.

Now please respond *fully and equally* to the next two parts of this question.

b. Why do you think this would tell you what they had learned?

c. c. What might someone say who disagreed, and how might you rebut their objections?

In your response to each of the above questions please try to:

- mention the sort of evidence that might support or cast doubt on your own views and on the

  views of those who might disagree with you:

- weigh up the pros and cons of evidence you cite.

Six of the nine questions broadly prompted participants to exercise abilities defined earlier in the

paper as argumentative reasoning in relation to teaching/learning/assessment that had already

taken place. The other three questions about aims and teaching methods were included as a focus

for the reasoning.

Focus group interview with participants

The researchers conducted a 30 minute audio-taped focus group with half of the participants,

using the following questions: **'**What is it important to do in writing the sort of rationale that has

been required during the programme for assessment purposes? Follow up questions included:

can you give me examples of these things, and is there anything particularly difficult about what you think you have to do?

Analysis of participants' responses to survey questions

For both analyses, participants' answers to the nine survey questions set out above were split into meaning units. Following Tesch (1990) a meaning unit was defined as a segment of text that is comprehensible by itself and contains one idea, episode or piece of information. In the first analysis three coders extracted all the ideas that the participants used to generate responses to the questions and grouped these ideas into themes. The concern of the second analysis was not with concepts used but with structural features of the arguments. Thus, to gain a global view of the incidence of statements that took the form of any of the five components of Kuhn's (1991) description of argumentative reasoning (e.g. offering evidence, considering and rebutting counter-arguments), the meaning units were allocated to one of four categories described below. The first two categories capture responses to survey questions 1a, 2a and 3a, which ask only or description. The development of the third and fourth categories, which capture responses to survey questions 1b, 1c, 2b, 2c, 3b and 3c, arose from iteration between the data and literature on argumentative reasoning. The four categories of meaning units, together with examples of responses that were allocated to each category are shown below:

1. Description of participants' aims and what they did with students to promote the aims

Example: *I wanted to promote their team work skills; I used a small group task.*

2 Description of what participants did to find out if students had learned what was intended

Example*: I used a multiple choice test*

3. A reference to research literature or to a theme (in each case without elaboration) is offered as a reason

Example of theme (student group factors): ... because the students cannot make notes //and they don't listen if they don't have to write it down

Example of reference: *... because this improves their communication skills (Bloggs 1999)*

4. Imagined objections/rebuttals/commentary on ideas or evidence/weighing up arguments

Examples: /*... but this requires willingness on the part of students to learn (objection) //but some writers say that lecturers can do something to encourage willingness// (rebuttal). ... some things only work with some students. There are practical difficulties in realising the benefits claimed by Bloggs (1999) for..., such as. ...(objection). However, these might be mitigated to some extent by ... (rebuttal). Since any research on ... with FE students has also involved other factors, such as ...we cannot give too much weight to Bloggs' findings.... They might be due in part to one of these other factors (commentary/attempt to weigh up views).*

Reliability of coding

After initial attempts by research assistants to classify meaning units in the responses into themes and into the four categories described above, a reliability check was conducted with three other research assistants assigning meaning units selected at random from the responses to the various themes and categories. In both analyses the reliability levels achieved were acceptable (Kappa co-efficients for each section ranged from .82 to .92).

Findings

In summary, 971 meaning units were extracted from the participants' writing at the two points in the course. Initially, the data gathered at the eighth and fifteenth months of the programme were analysed separately, using the two types of content analysis. Since

there were no significant differences in any of the variables of interest in the two analyses, the data from the earlier and later points were combined. The number of meaning units allocated to each of the four categories (exemplified above) is shown in Table 1 below.

Please insert Table I about here if possible

There were six themes that account for the ideas that the participants invoked in writing about their practice. These are shown in Table II below.

Please insert Table II about here if possible

The most predominant themes in Table II were *organisational constraints* and *empirical research*.

No shift overall in practices described

Inspection of the responses to question 2a showed that all participants described and advocated what are commonly described as student-centred teaching methods in both the first and second sets of writing. Thus, there was no significant shift in practice overall nor did individual participants report different practices in the different classes they taught at the two points in the programme. All participants described and advocated some form of formative assessment in both sets of writing. The group can be seen as very homogeneous with respect to these descriptive parts of the data.

Focus group interview with participants

Recurring themes that emerged were the lecturers' perception that:

much literature citing was required;

their grasp of the literature was fragile;

they could achieve a pass grade by telling about literature

they don't know what the tutors wanted to satisfy some criteria (e.g. a critical appraisal)

DISCUSSION OF FINDINGS

Findings presented in Tables I and II

Since the aims of the development programmes that is the focus of this study included constructing a rationale for practice, the aim of the study was to identify (a) components of reasoning (such as weighing up evidence) that posed difficulties for FEC lecturers in responding to questions that asked them why they preferred the practices they used, why others might disagree with their reasons (counter arguments) and how they might rebut others' objections; (b) ideas they used (e.g. 'transferable skills') in constructing their reasons. The proportion of responses (36.3 per cent) in the two descriptive categories was similar to the proportion of survey questions (three out of nine questions, 1a, 2a and 3a) that asked for description of aims and teaching methods. However, there were ten times as many responses (567 meaning units) to the three questions (1b, 2b, 3b) that asked for reasons for preferred practices than to the three questions (1c, 2c, 3c) that invited them to imagine any weaknesses in their reasons (52 meaning units). Taken together the responses to these six questions (1b, 2b, 3b and 1c, 2c, 3c) are interesting for two reasons. First, as shown in the sample data below, predominantly, the responses to the request to provide reasons in questions 1b, 2b, 3b took the form of an assertion, followed by a reference to research literature or a reference to one of the six themes. Second, according to Perkins et al (1983) the scarcity of responses in the data set to the questions that ask them to imagine reservations about the reasons offered (1c, 2c and 3c), suggests that imagining pitfalls in their own reasons was particularly difficult for the participants. Since responses to

questions about why participants chose certain aims and practices were mostly of the form below a few examples are sufficient:

I want to improve their problem solving skills. Problem solving is an important transferable skill (Bennett, Dunne and Carre, 2000). Harvey, Moon, Geall and Bower (1997) reported that employers value problem solving. In my lesson I got students to do a case study, because this promotes problem solving (Fry, Ketteridge and Marshall, 2001).

I read out the questions, as many students in this class have difficulty with reading (theme: student group factors).

I use written tests on how to do vegetables because this is what has been agreed within C…College. (theme: course requirements).

As stated by Lave and Wenger (1991) practical activities facilitate learning.

The finding that 567 statements were allocated to category 3, which captures assertions followed by evidence stating, suggests that participants operated predominantly with two of the components in Kuhn's (1991) definition of argumentative reasoning: a) differentiate opinions from evidence; b) support opinions with non-spurious evidence. That there were only 52 responses to the three survey questions (1c, 2c and 3c) that asked participants to imagine what someone might say who disagreed can be interpreted as evidence that few participants were able to operate with any of the other three components of argumentative reasoning. These others involve proposing opinions alternative to one's own and knowing what evidence would support these, providing evidence that simultaneously supports one's own opinions while rebutting alternatives, and to weigh the pros and cons of what is currently known. The fourth code captured any statements that resembled sub-components of Kuhn's five broad categories, and which

are described in the wider critical thinking literature (see Moseley et al). Therefore this category included statements that questioned ideas or evidence in the references that were cited, that discussed what might be problematic about interpreting ideas cited into practice, or explored what is to be included or excluded by concepts such as 'student-centred learning' and 'transferable skills', as well as more straightforward objections. Despite this fairly broad definition of category 4, only 8.4 per cent of all the statements in categories 3 and 4 fell into category 4. Since there was greater variation in this category than in the others several examples in category 4 are provided:

...however, following discussions within the social care cognate group it was

recognised that this medium did not provide all learners with a sufficiently broad canvas on which to work and therefore ...

However, on reflection I realised these aims were far more intrinsic than would initially appear

... All of this strongly suggests that ... yields only short- term results- results which almost certainly do not extend much beyond the assessment period, and which do not promote the development of learning strategies in individual students.

the notion of expertise informs the selection of aims. It is defined as ...

However, Neaths (1997) research into students' acquisition of group work skills indicates the complexity of the transfer issue.

There is a danger that innovative teaching methods might be attractive because they legitimate less resources being spent on teaching, rather than because they improve the quality of learning...

Very rarely did participants try to clarify what the concepts they used might mean, nor did they mention anything problematic about 'applying' them to their teaching. Since there were so few instances of counter-arguments in the data set, there was little scope for evidence of rebuttals to

emerge. Participants who made the highest number of references to published literature were no more likely to operate with more than two of Kuhn's components of argumentative reasoning than those who cited little such support. The category system was devised to allow responses to be counted that drew on the participants' experience, as well as on course reading. They could have addressed the part of the question that asked for counter-arguments to the view that '*employers value problem solving*' by drawing on their own work experience.

The more restricted reasons captured by the third category were just as prevalent when participants used ideas such as *organisational constraints* rather than references to literature in their reasons. *Organisational constraints* were usually represented as 'givens' that determined practice. Similarly, student group factors such as 'they don't get on' were taken as determining methods. Thus, it seems that the participants were unfamiliar with components of reasoning rather than with the ideas they used. Dye (1999) found this mechanistic approach in assignments written by similar course participants. However, Dye also reported a reluctance or inability to use theory at all in assignments, which is not the case in this study. Arguably, the mechanistic use of literature that appeared in the present study represents little improvement on Dye's finding that her participants were reluctant to use published knowledge.

The findings in this study, as in studies that have used a different theoretical framework, suggest that there is significant scope in development programmes for enhancing reasoning. There was no evidence that experience of teaching per se influenced participants' ability to imagine pitfalls in their arguments for preferred practices. This interpretation is consistent with Kuhn's (1991) finding that adults who had professional experience in areas such as teaching and prison work were little better at handling evidence about professionally relevant issues than those who had no such experience. According to King and Kitchener (1994) the deployment of processes described

by the term 'critical epistemology' (Perkins, 1983), such as considering assumptions underlying positions and limitations of ideas, might well be prerequisites for high levels of reflective judgement about ill-structured tasks such as teaching. Francis, Robson and Read (2001) suggest that a rational write-up of any issue should contain a considered evaluation of a range of knowledge, and that its execution requires the use of processes described by Perkins and others. If FEC lecturers are to help students to communicate rationally, development programmes need to focus more on development of these abilities.

Even if it is argued that the five broad components of argumentative reasoning described by Kuhn (1991) are not the most important ones in reasoning about professional work, the data suggests that other aspects of reasoning were also missing. There were few indications that the participants engaged in processes implicated by Moseley et al's concept of 'productive' thinking, which encapsulates a very broad range of reasoning processes. One element of thinking that appears in most of the taxonomies evaluated by Moseley et al is connecting various pieces of relevant knowledge. The construction of statements in the category labelled *imagined objections/rebuttals/commentary on ideas or evidence/weighing up arguments* seems to require participants to make connections. The very small percentage of statements in this category implies that participants did not connect knowledge. That there were few indications that participants connected ideas about learning and teaching implies that the way they thought about the programme knowledge was not particularly productive. Arguably, the purpose of engaging with ideas from a variety of sources, including educational literature, is to increase the probability of making effective judgements about practice.

How the findings might be addressed

The focus group data suggests that reasons for the findings can be understood to some extent in terms of three sets of ideas. One set comes from the theoretical perspective known as situated learning (e.g. Brown, Collins and Duguid, 1989; Cole and Engestrom, 1993; Lave, 1996). A central assumption in this perspective is that learning is equivalent to the acquisition of the beliefs and practices that are specific to a particular culture, whether that culture be the one of a particular academic discipline or a workplace. Brown et al argue that knowledge is difficult to learn if it comes from a different culture, such as educational research, if such knowledge is taught as if it were independent of the original research context in which it arose. Viewed in this light, the experiences reported by the focus group make sense: if the programme did not encourage participants to study educational literature in the way it is studied for research purposes, they had no way of knowing that they could do much with it other than match a reference to a point they made. In a research community there is likely to be iteration between literature and practice to generate critiques or ideas for improvement. Soden and Halliday (2000) offer a compromise by proposing that, if programme participants are to engage with ideas in educational literature, they should be enabled to do it in a way that resembles an apprenticeship into a research culture. In an accredited continuing development programme, FEC lecturers would spend most of their time in discussions similar to those that might arise in a research group concerned with improving practice. Thus, they might discuss and try out Sternberg's (1996) ideas about how they might improve students' ability to analyse practice related issues.

A second set of ideas draw attention to relationships between knowledge and thinking. Taken together, the findings from focus group and content analyses can be related to Rowland's (1999) observation that course participants often describe theories such as Kolb's Learning Cycle as if

the cycle were like some kind of instruction for making a thing called learning. It is difficult to imagine that colleagues engaged in genuine action research to improve practice would handle ideas in this way. The high status accorded to published knowledge in programmes participants had attended seemed to lead them to believe that other knowledge was irrelevant in constructing a rationale for practice. Such a view is likely to further constrain their thinking (Sternberg 1996; Thomas, 1997). By taking more account of Rowlands' (1997) view that theory can be a useful resource but does not have a privileged position, participants might be more inclined to deploy other kinds of knowledge described by Bereiter (2002), knowledge that leads them to suspect that educational literature cannot be viewed as safe conceptualisations. According to Bereiter, aspects of knowledge that have an important role in expertise in any occupation include 'implicit understanding' (p.138), 'episodic knowledge' (p.140) and 'impressionistic knowledge' (p. 141), all of which are assumed to be acquired from employment and everyday experience. It is only when professionals bring together these aspects with published knowledge that they increase their expertise. From a review of literature about knowledge bases for teaching, Turner-Bisset (1999) developed a model that shows how different public and personal knowledge bases might be integrated in making a judgement to practise one way rather than another.

A third set of ideas for understanding the findings can be found in literature on teaching thinking in post-school education (for a recent review of such literature see Livingston, Soden and Kirkwood, 2003). The focus group findings support the inferences made from the content analysis that the participants had limited understanding of some components of argumentative reasoning. Participants in the focus group were unable to give examples of what counted as the critical commentary that was listed in assessment criteria. A common educational response to such findings has been to teach components of thinking in a systematic way. Typical of what is taught in interventions reported in literature on teaching thinking is encapsulated in Smith,

Campbell and Brooker's (1999) view that processes of synthesising and critically evaluating different information and perspectives need to be modelled for students and practised. Recurring themes (e.g. Salomon and Perkins, 1998; Brophy, 2002) are that peers should provide informative feedback and challenge each other's thinking by eliciting from each other responses in the form of explanations, suggestions, reflections and considerations.

Conclusions

Plainly, researchers working within other theoretical frameworks and research designs might have described other aspects of the participants' reasoning. However, within the limitations of its framework, the findings imply cause for concern. A common response to the concerns expressed above is to mount the sorts of thinking skills interventions evaluated by Livingston, Soden and Kirkwood (2003). However, Livingston et al concluded that, unless these pedagogies are combined with other measures, improvements are likely to be limited and short term. While opportunities to learn to reason are useful, if some knowledge is privileged, such as ideas in educational literature, lecturers are likely to continue to regard such ideas as safe conceptualisations. While 'situated' theorists advocate that all learning should take place in the communities in which it is practised, some sound reasons remain for retaining university or college based programmes. However, since a core purpose of such institutions is the generation of knowledge, arguably, their role in professional development is to offer an apprenticeship into the practice of action research rather than to transmit knowledge that is never critically examined. Like the adults in Kuhn's (1991) research in the United States of America,, the British FEC lecturers rarely seemed to think about ideas in a critical, evaluative way. Since participants in this study rarely enquired into the soundness of the ideas that influenced their practice in ways that would amount to a 'critical epistemology' (Perkins, 1989), it is difficult to see what the participants gained by participating in a university based development programme that they could

not have achieved in the workplace. They certainly do not seem to have understood ideas from theories of learning they studied in a way that would enable them to be effective in supporting life-long learning initiatives.

The authors would not wish to claim that the findings from this study suggest any more than a 'fuzzy' proposition (Holligan, 1997) that requires further investigation: that the design of development programmes for FEC lecturers might benefit by taking into account the three sets of ideas outlined above: the idea that learning in accredited programmes might be 'situated' in a culture of (possibly) action research where a community of practice approach could be adopted to developing lecturers' thinking, and that the role of different forms of knowledge should be clarified. Unless participation in development courses enables FEC lecturers to reason with and about different forms of knowledge, there seems little point in basing development programmes in higher education institutions, and little point in requiring lecturers to meet the ubiquitous demand in such programmes to engage with educational literature.

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Table 1 Number of meaning units allocated to each of four categories, and number of meaning units in category 3 expressed as a percentage of categories 3 and 4

Category No.	Category description	Number. of meaning units
1.	*description* of participants' aims and what they did with students to promote the aims	195
2.	description of what participants did to find out if students had learned what was intended	157
3.	offers as a reason a reference to research literature or to a theme (in each case without elaboration)	567
4.	imagined objections/rebuttals/commentary on ideas or evidence/weighing up arguments	52
	Total meaning units	**971**
	Meaning units in category 4 (52) expressed as a percentage of units in categories 3 and 4 (619)	8.4%

Table II   Concepts in participants' responses organised into themes

Class management (e.g. if they go to find something in the library they don't all come back)

Course requirements (e.g. there's a lot to cover)

Student-centred learning/student group factors (e.g. I use student centred methods unless they don't get on well together)

Organisational constraints (e.g. the video recorder is always breaking down)

General preparation for employment (e.g. giving presentations will transfer to marketing)

Literature citation (e.g. Bloggs et al's research backs up my point)