

The LiNEA Project
(Learning in Nursing, Engineering and Accountancy)

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by
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**Learning During the First Three Years
of Postgraduate Employment**

an ESRC (TLRP) funded project

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Project web site: www.sussex.ac.uk/usie/linea

I'm here representing **the LiNEA project**, or '**Learning in Nursing, Engineering and Accountancy**', the short form of our formal project title, which itself is '*Learning During the First Three Years of Postgraduate Employment*', and, as you've just heard, the project is based jointly at Sussex and Brighton.

The linkage with Brighton is because Brighton University offers two of the themes. There is the engineering sector with Professor Fred Maillardet and Dr. Amer Ali, and the nursing side with Professor Caroline Miller and Claire Blackman. At Sussex University we have Professor Michael Eraut, who is unable to be here today (I'm the poor substitute), myself, and Judith Furner. Between us we deal with the accountancy sector and keep an overview of the whole project.

A The Project's Aims - 1

To investigate three research questions:

1. What is being learned?
2. How it is being learned,
3. What factors affect:

the level and direction of learning efforts,
the use and extension of prior knowledge,
and
generic skills brought into employment from
higher education and other life experience.

In this project then, we're looking at young graduates in nursing, engineering and accountancy going into their first jobs, and we're trying to find out what they're learning, how is that being learnt, and what sort of things affect their learning.

In telling you about our project and the way it is working, I also aim to give you some inkling of what seems to be coming out from the people we've already spoken to about higher education, what they've derived from it, what they're able to take into their new employment, That's a sort of second layer in what I have to say.

Now as one of the TLRP's research projects, we're looking to generate some impact from the outcomes of our research, and these outcomes are not just theoretical. They are going to include some training materials for researchers who come after us, who want to research in the same field.

We also expect to produce ideas of practical use, not only in the same sectors in which we're working, but

we also expect that there will be more general lessons, applicable in other sectors as well.

B The Project's Aims - 2

Outcomes that contribute to:

evidence-based practice in the management and support of newly graduated and/or newly qualified employees;

theories of informal learning in "apprenticeship" and other workplace contexts;

understanding of the transition from higher education into employment; and

training materials for future researchers into workplace learning.

In order to get at these research questions, and these aims, what we're engaged on is something a bit different. The first thing to point out is that being a longitudinal study of learning at work is quite out of the ordinary. If you look at the literature, there's hardly anything there. There have been some one-off studies and indeed this project is based on a project in the mid nineties that Michael Eraut and others conducted, which looked at the learning of people in mid career: people who were in engineering, the business world and health care. So you can appreciate the overlaps with our present project.

What that investigation found was the great importance to learning, in the mid-career stages, of the informal structures in the workplace, and how these affected things like the co-location of workers which can provide good opportunities for learning from colleagues. And another finding that came out quite strongly was the degree to which people said they learnt from the challenge of the job. But, of course, notions like that need unpicking.

That project did its work by interviewing people some months apart. The researchers did a first interview and then, some months later, went back and interviewed the same people again, and asked them what they were now doing differently, what had changed since last visit, and tried to approach what had been learnt in those ways. But the problem was the lack of observation before doing the interviews. This made it very difficult to get at the nitty gritty of what the interviewees were actually talking about. So our present study has been designed to tackle that problem.

C The Project comprises:

a longitudinal study of the learning of approx. 30 Accountants, 30 Engineers and 30 Nurses at the start of their careers, **action research**, building on the early results, involving employer-partners and visits to a second group of c. 50 learners; **study of the transition from higher education** into employment, in relation to technical knowledge and generic skills.

But before I get into that business a bit more deeply, we are also engaging the partner organisations we're working with in some degree of action research. So, on the basis of our preliminary findings, which we're pulling together now, we will be presenting these back to our partners and saying to them, 'This is what you're doing. This is what is happening in your sector. (you've got to be careful about anonymity in reports) Is there anything here that peaks your interest enough that you may want to try it?' And we're hopeful that we can negotiate some action research with these partners, which we will then help them to evaluate as it goes on. We're not quite at that stage yet, but that's definitely there as part of our plan.

And the study of the transition from higher education into work is built into our project in a number of ways. One of them is that we pick up students before they actually leave university. We've done telephone interviews with people just as they left. We were able to pick up students from following through cohorts and actually find out what they were expecting and what they found when they arrived in their new jobs. And we are also able, because this is a longitudinal study, to follow the way their thinking changes about the value of their higher education courses. We will be doing up to four interviews, roughly six months apart, over an extended period of time. I say 'roughly' for reasons that come clearer later on.

Why did we choose these three sectors? You've got to focus down, as you will realise. But why these particular three? Well, I've already said that the previous project had a similar broad focus and quite a degree of overlap. But you can also see that these three are definitely areas of concern in the present day economy. There are important issues in each sector: retention of nurses in the National Health Service; the low numbers coming forward to even go into engineering; and accountancy underlies everything.

D The three professions:

play **key roles in the UK economy** and public services; use **contrasting approaches** to professional formation.

The graduate accountants and engineers:

are formally **contracted trainees**. Their employers have systems of **organised training support**.

The newly qualified, post-diplomate nurses:

start full-time work with **greater practical experience** than accountants or engineers. But remaining **learning needs may be neglected** -despite official sanction of both induction and preceptorship when nurses start work.

We also made this choice because we expected to see contrasts between the sectors. In engineering and accountancy there is the chartered status framework that exists. Now, if we went into these situations and we tried to assess how fast trainees were progressing, the managers and others would say, 'Who are you to judge?' The progress through the chartered status gives us some handle on that, as does talking to managers and mentors, as I'll come onto later. So there's a contrast there with the nurses who don't have that formal chartered structure and actually come into full working life, having had a more practical based training in most people's eyes, including the nurses themselves incidentally. They arrive in many ways expected to be able to perform from day one. And there are interesting consequences of that expectation that, indeed, we're seeing already. So we are expecting to get added value out of the ability to contrast what's happening in these different sectors as we go through the project.

One of the problems that we're addressing in adopting this research approach, this going into the workplace and observing, is the difficulty of getting at what people know, and have to learn, that they acquire without being conscious of it.

This will lead us into how we're working. If we want to know what the trainees are learning, we have to be able to access what they've learnt since they left university or since they've gained their diploma and, later on, what it is they have learnt since our last

visit. Getting at the knowledge that they possess is not that straightforward.

There's public knowledge, there's codified knowledge. You know the different forms of knowledge that have been postulated. But our research problem is getting at the *tacit elements* there. What have the trainees picked up; what do they know and use without being able to vocalise it or describe it because they do not realise their achievement? They need prompting from someone with sufficient knowledge about what they're doing to supply appropriate prompts?

So that's why the observational side of what we're doing is so central to our project's methodology. And looking at events over a period of time is because, of course, we're interested in progression. And that brings up several related concepts.

E Some Related Explanatory Concepts

- Forms of Knowledge
- Transfer of Training
- Apprenticeship
- The Growth of Expertise: Progression Models
- Learning Trajectories
- Learning community vs. Community of practice

Now I realised on my journey towards you today that in putting together this summary (see panel E above) that I was a bit hasty. I neglected things that were in my tacit knowledge, that I took for granted and didn't include. So there are things like 'theories of learning', for example, that, with further reflection, I would have added.

But it gives you some idea of the concepts we are dealing with: the business of transfer of training, the sort of experiences trainees have had in higher education, how does that transfer into the world of work? What enables them to use that knowledge; to readapt it; to learn the extras that make it workable; and the kind of skills that are needed. When it comes to things like the growth of expertise, well you're familiar with the model of the Dreyfus brothers and the way that's been used in the work of Benner .

I think there is a problem with linear models when it comes to learning because I can't avoid being fairly subjective about this and reflecting on the way I've learnt. For me, it's pretty much a backwards and

forwards process. It's a networking thing; a construction of networks or grids, call it what you will. While there are always gaps in your knowledge, you can often work your way around them using the network of ideas and skills you have. And I often go back and reinforce things that other people would consider I knew fairly well, Nevertheless, that's part of my learning process. I think sometimes progression models oversimplify these processes.

When we look at what goes on in teaching and learning, whether it's in a school classroom, in a higher education lecture theatre, or between a lecturer and a tutorial group, we can overlook the learners' need to construct their own networks. I wouldn't want to skip over the complexities behind some of these concepts.

F Methodology 1

Problems of accessing what people really need to know at work (tacit knowledge):

only formal knowledge, acquired in educational or training settings **is easily brought to mind**, articulated and discussed; **tacit, personal knowledge** and the skills essential for work performance tend to be **taken for granted** and **omitted** from accounts; often the most important workplace tasks and problems require **integrated use** of different kinds of knowledge. **Integration of those components is itself a tacit process.**

So, as I say, the essential problem for us is: how do we access what people really come to know at work, including the tacit knowledge that they deploy? Formal knowledge: they can tell you about courses. The organisations we've been in to, by and large, supply or pay for formal training events. Recent graduates know they've been on those. They can be articulate about it. But the personal knowledge that they generate by engagement with the processes and procedures where they work, the communication skills they develop, the knowledge of who it's important to communicate with, lots of things like that, that they take for granted, are not really visible to an outsider.

Let me give you an illustration supplied by the Open University last night in one of it's programmes. Take reading. Now we all read quite well, and we have

tacit skills in reading that we take for granted. For example, when we read what the *Daily Mail* is writing about a prominent politician's wife, and we compare that with what *The Guardian* or *The Independent* might be writing about the same person, we're able to make allowances because we're deploying tacit skills. But how do we get at them, and how would we interview people to uncover those kinds of skills, to reveal them and bring them forth? We're doing the observations as a part of tackling that problem, and for other reasons as well.

G Methodology 2

Hence, **four two-day visits over 3 years.**

Researchers:

- observe** the work-place context,
- talk** to mentors, preceptors, managers and trainers, and
- interview** the learners.

This lets researchers **ground interviews** in the observed actuality of daily working life of: **tasks, relationships, situational understandings, implicit theories, cultural artefacts, etc.** Increasing the chance of **eliciting the full range of what is learned, and what is tacitly assumed to do the work.**

I can give you examples from my own fieldwork. Recently I was with a civil engineer, working on an upgrading of water main systems. On the first day she insisted that I accompany her to a meeting of the agents who are responsible for digging up the pipes and for the work of renewing or replacing them. She took me to two places where this was going on, to show me what the pipes look like and what can be done to the insides of these pipes.

Without that observation I would have been unable later on, during the visit, to fully understand what she was telling me about, let alone anything else, even before I could begin opening up the areas of learning that she's been engaged in. So observation is a very important part of our work.

The people around the trainee or postgraduate are also important for providing information about the working context. It's also from the managers and mentors that we get at what is being looked for. What are the judgements made about progression of these new recruits? If managers say so and so is doing well, the next obvious question is, what makes

you say that? Criteria are often revealed with a bit more probing. And, of course, at the end of the two day visit, when we interview the trainees, we can pick up on things that we've observed.

To give you another example, again from a personal experience, I was observing a mechanical engineer who was working at her desk and I was sitting, by force of circumstance, with my shoulder jammed up against her small bookcase, with her personal books on it. So, at one stage, to relieve myself of boredom, I started to look along the books and spotted a manual on a particular software programme which I'd never head of before. So I asked her about it, not in the formal interview, but at another time of the day. She said, 'Oh yes, that's something I'm working on.' And when we got to the interview itself, it turned out that she had been picked by senior people in the firm to find out how that piece of software could be used by the firm to do their forecasting of risk assessments and allied costs. The senior management had picked on her because, in their eyes, a young graduate was expected to be well up in IT skills.

All that came from observing what was there on the bookshelf, and just picking up and running with it. So the element of observation in the project is extremely important. It can let us into what we need to know.

H The Visits as Planned

- Day 1** **Observe** activities, talk with managers, mentors, etc. as opportunity allows.
(Sometimes talks are taped)
- Day 2** **Morning** continue as above.
Afternoon - taped trainee interview.
(Semi-structured)

The visits as planned, as we wrote them up in the project proposal, were supposed to take the following form. Day one, go along and do your neat observation, stay out of the way and quiet, but talk to the managers and mentors as you get the chance to do so. The next day continue observing, and in the afternoon do the interview with the advantages of observing that I have just described to you.

But what happens in actuality? Because, as those of you who're doing research will know, life is not quite like that. Arrangements fall down. Judith, in the accountancy sector, has been the person who has perhaps suffered the most through this, because the

young trainee accountants she's dealing with have their assignments chopped and changed at very short notice. She may have set up an appointment and, at the very last moment, the day before, she'll get an e-mail or phone call to say, 'I'm sorry, I can't now do that. Can we re-arrange it?'

always two days in length. But the key consideration seems to be, can you get enough of the action observed to have meaningful interaction with the trainee to find out what's going on with them and their managers?

Nowadays many engineers and accountants, spend much of their time in front of computer screens. So you go along to do an observation, and you find yourself sitting there six hours, looking at the back of someone's head. Well I don't know about you, but my eyesight is not that good, and seeing a computer screen from further than three feet away is a bit of a challenge. So we negotiate what goes on in those circumstances and, if it's not profitable to prolong an observational period, we negotiate it down, or we rearrange how we spend our time and do it in different ways.

I Actual Visits

Arrangements fall down & renegotiated

- Appointments changed at short notice
- Shift patterns cut across planned timings
- The two days not consecutive
- Not always two days in length

Observations NOT as Anticipated

- Computer screens and backs of heads
- Too busy for chat or to be interviewed
- Illness interrupts

J Interference Effects

- Trainees work harder; or
Don't find observation 'natural'
- Colleagues stay away; or
Want to be in on things
- 'Site visits' require negotiation

I had an example myself, when I phoned someone whose second day visit hadn't gone as we planned it, so I hadn't done the interview. I wanted to arrange the interview and I said, 'Could you do this Friday?' And he said, No, I'm going to such and such a place as I've got to look at their documentation. And I said, 'Oh, if we don't do it then, it'll be over another week.' So he said, Hang on, can you come early? So I said, Yes. Got there the crack of dawn, doing the interview with him, when the phone rings. Someone tells him, don't come over, we can't find the documentation. So I was lucky: I was getting my interview. But that shows you the speed of change that we're having to cope with.

Obviously there are possible interference effects where visits and observations are involved. We've deliberately asked the people we have observed, has it made a difference to them? Audiences like yourself obviously want to know about interference effects, and we try to pick up on them. And they often say, 'Well I worked a bit harder than I would have done, if you hadn't been around.'

Claire in the nursing sector is finding the shift patterns determine how long her observations last. And so, although we said a day and a half observations, the natural period of observation is often not that. We have to go with the flow, and quite rightly so. She's also finding that nurses are so busy, that finding the time to do the interview is a problem in itself. In fact they are so busy that, by the end of their shift, they've forgotten what they were doing at the start of the shift. This is actually a common problem which previous researchers who have done PhDs at Brighton and with us at Sussex have illustrated before, so we knew some of that was coming.

Now I've done a bit of Ofsted inspection work in schools and, believe me, school teachers work harder when the Ofsted inspectors are around, so that's not surprising.

Amer, in more than one of the organisations he's been into, found that the managers want to be in on the act. Now, I'm not quite sure at this stage whether it's just because they want to know what's going on, or because they feel that they've got some important inputs to make. But he has found it wise, politically, to take up those offers of chats and talks. In another company, as a matter of policy, the training manager who organises the liaison got me interviews with the top managers, the functional managers in the organisation, because it was important that they did know what was going on.

In practice, it's not turning out to matter very much if the two days are not consecutive. We are still able to pick up on what's going on. And the visits are not

FIRST QUESTIONS

Now that you've got some sort of picture, can I just pause, and ask are there any questions at this stage?

Q1 Can I just ask, in terms of watching people who are using computer screens, have you gone through any protocol or talked through what it is that they're doing at the time because, in this business with computer working, there must be a huge amount going on there?

A1 Yes, you're quite right. You do. Under those circumstances what you use is the small breaks for coffee and such, and you say, 'Tell me what you've been doing.' And when they make a big change on the screen you can get some idea that they've shifted focus. So you can say, I noticed you went into form so and so etc., and clarify what they were doing.

In one organisation where there were two trainees working together, alone in a room, which is fairly unusual in that organisation, their senior manager came in and said, 'I want to tell you about this software package you're using.' And he sounded off about it at great length. That gave me an 'in' to talk about exactly what they were doing on the screen and the way they were handling the auditing using that particular software package. Yes, it is useless just to sit there trying to see something from a distance, it doesn't work.

Q2 I was interested in the sort of advantages you saw in observing and I wondered whether you had considered using video techniques to get around some of these interference effects?

A2 Well, it was fleetingly considered in the early days. But we didn't go that way because what we've aimed for is minimal interference. We're selling ourselves to these organisations on the basis that we don't interfere at all with the trainee while they are working.

Now okay, we, as researchers, could argue that the video doesn't impose as much as a human presence. But on the first visits, we want to let them find out that we don't actually stop the new recruits working. Video use might come in later on, but I doubt it. However, interestingly in the nursing sector, what we are moving towards is digital photography to help the nurses remember what they did when you want to talk to them about procedures. This is partly based on the experiences of a PhD student who used it

recently. There are problems particular to nursing, because you need the permissions of all the patients as well, so digital photography has to be used judiciously.

Q3 A bit intrusive as video may be, wouldn't it be better in a programme such as you describe because of the quality of the data you can obtain? We have used video in busy classrooms with quite successful outcomes, and other team members can inspect the video.

A3 For what's it worth, I think at the moment the method we've adopted (and I know I am bound to say this, aren't I) is very valuable. We're getting very rich data, as a consequence of it and, at the moment, I wouldn't want to use video for fear of upsetting things.

But, in relation to the second part of your question, Yes, I think I would risk using video methods in that kind of set up because I think there's a good degree of experience that people do forget the cameras much faster when there are multiple interactions, than if there is just one person working and they feel the focus is on them. Individuals feel skewered whereas, with multiple interactions, that's not quite the same.

END OF FIRST QUESTIONS

Now I want to talk about some of our emergent findings, and I've used the word emergent deliberately for two reasons. One, you've seen from the numbers that we're dealing with, that we're not talking here thousands. We aimed to get thirty in each sector of our main sample for following through over an extended period. We've managed to over sample successfully in engineering and in nursing because we expect attrition, and indeed that's begun to happen already. But in accountancy we're still trying to bring up our numbers a bit. But the numbers are still not large, so the things I point out to you now are based on small numbers and we might firm up what we have to say about these things as we get further data over time and from greater numbers.

The second reason for saying they're emergent is that, as a team, we are debating what the data is showing us. And to some extent, what I'm showing you today is a bit of my personal spin, for want of a better word, on what I'm putting in front of you. So don't particularly hold Professor Eraut, or the project, to account for this presentation at this stage in the project.

K Emergent Findings - Sector differences

Accountants & Engineers

Status as 'Learners' openly accepted
 Organisational arrangements for formal support - induction, mentoring, & co-location
 Chartered framework frequently used
 Planned, mandatory training events
 Examination success required for accountants

Nurses - Much greater variation

Status as 'Learners' uncertain
 Unstable arrangements for formal support - induction, mentoring, etc.
 No Chartered framework
 Training events and progress via Exams more optional

The sectors show, I think, startlingly clear differences in the extent of the scaffolding that's available for learners: the sort of things which support them while learning and ease them through their early months. It's very clear to us, and it became clear very early on, that trainee engineers and accountants were accepted as people who still had to learn and the organisations that they are in surround them in ways that help that. Some organisations make it very easy for them to work with people only one, two years ahead of them. That means the people just ahead of them still know what it was like to be a learner. It's easy for them to respond to the questions that the new trainee asks, and where that's not done, they have other arrangements in place.

In engineering the existence of the chartered status, and working within teams, also supplies that kind of structure. Again because they're learners in engineering, and because mistakes can be quite costly, there's a lot of double checking that goes on. And in accountancy, the gradation of the work that trainees do is judged so that they're not going to make crucial mistakes in their early days.

But the nurses are thrown in and potentially many of the procedures they do can go seriously wrong, and it could end up harming patients and costing a hospital money. But you find that, often because of the pressures on the system, because of the demand for rapid action, for coping with things in understaffed environments, that nurses are acting under intense psychological pressure because they're not necessarily sure that they can do things correctly.

They haven't had the opportunity to practise under supervision a sufficient number of times to give them that confidence.

Their status as learners in the nursing sector varies a great deal. There's a big variation from ward to ward even in the same hospital. So it's just not a question of the ecology of a particularly NH Trust. The other things (in panel K) are matters of degree to some extent, it can be argued. But the degree of difference is marked. In nursing where the structure is weak or absent it's very noticeable, and we've not really got into many situations in engineering and accountancy yet where those structures are absent.

Now, having just said that, I'm immediately pulled up, because we are following a couple of accountants who have fetched up in small firms. They are in an analogous position to the nurses. But again, their status as learners is a bit better recognised. I can't say much more on that because we haven't opened it up sufficiently and the numbers are so small it would be wrong of me to make too much of it.

So, bearing in mind we're in the SRHE conference, I'd like to give you a flavour of what people are saying about their HE experience. Here's a summary based on telephone interviews with some nurses, shortly after they started work. (Panel L below)

L Emergent Findings re HE - Nurses

Majority felt unprepared for staff nurse role

Main Reasons

Course **too theoretical** & too many essays (37) not enough time on wards.

'**Idealistic**' lectures didn't relate to ward reality

Timing of theory lectures and practical ward **experience disjointed** (**Continues - Focus of course wrong**, too much on subjects like sociology, social policy, psychology; not enough on anatomy, physiology and pharmacology and relating these to nursing and developing clinical skills.

Paediatric nurses - Common Foundation Programme too adult-based

Repeated complaints about **huge workload** made no difference

Now there's not a lot there that's going to surprise, is there? And what is coming through here comes through in all the sectors really. It is the need to flesh out a trainee's codified public knowledge into the personal knowledge they can only gain by doing the job, by understanding its procedures and processes, by getting involved, and by picking up on what's crucial for a trainee to understand if they are to succeed.

Things come through repeatedly like deciding priorities. That goes for engineers as well, and accountants. Does it matter for an accountant that this figure is wrong? In the scale of a million pound budget are we going to worry about twenty pounds? Or fifty pounds? Well yes, but when? And who should do the worrying about that kind of discrepancy?

The nurses are saying the course is too theoretical, with too many assessments and, of course, that links to the complaints about workload. The idealistic lectures don't relate to the ward reality and the timing of these components doesn't gel.

Now surprisingly, you get the same kind of message from engineers looking back on their HE. Because common to many engineering university degrees is a year in industry. And then, at the end of their course, they tend to do a project. Messages we can infer, from what we are told, point to how useful it would be if they had some brief preparation for going out into the world of work before they actually do their sandwich year. And a brief period afterwards, to help them realise what they've learnt during that time.

What can we say about accountants? Aha! There's something here I didn't fully realise when I was asked to climb on board this project. You get all sorts going into accountancy. You get biologists, budding lawyers, engineers. Judith was interviewing a social anthropologist, turned accountant, and she said, 'So you're not going to be doing any more social anthropology.' And he replied, 'What makes you think that?'

That variety of HE subject background among new recruits to accountancy means it's difficult for us to glean consistent messages to feed back into HE. Nevertheless, things do come through about what their degrees have given them, and they quote things like self-confidence and communication skills. They are conscious of these components in their previous learning and what they've brought forward into their new job.

M Emergent Findings re HE

Accountants

Many HE backgrounds to those in accountancy, e.g. degrees in law, engineering, music, maths
Accountancy degrees not necessarily welcome

Engineers

Much variation in views of HE courses
Curate's egg verdict in many cases

Implications for ALL Sectors re:

Required meta learning skills
Setting expectations of learning at work

Engineers? Well we've got a range of engineers, electrical engineers, software engineers a few, one or two civil, one or two mechanical. When they talk about their HE courses it's a case of the curate's egg. Some of it's good, some of it's bad. But, particularly at this SRHE conference, I don't want to leave you with the impression that all the messages are negative.

I spoke to one young woman who did very well at university, gained a prize for her project, top student of her year. She rated her course as good the first two years, excellent the third year, and she still wanted something else. She would have liked a bit more electrical background because of the job she found herself in. And we've got to be realistic about what HE can do for people going into a very diverse world of work, and the students are fairly realistic about it themselves.

Recently, I was reading the interview account of, rather an exception really, someone who trained as an accountant and ended up doing accountancy, and again he was extremely complimentary about his HE accountancy course, the way it had opened his eyes to the range of accountancy, giving him some understanding that it wasn't just about numbers, that you had to understand what lay behind the figures, giving him a view of how he might be helpful to businesses as he came into the profession. And this is being said by someone in their first few months at work. So it's a very positive message in that case.

LAST Q & A SESSION

Let's take one or two general questions.

Q4 I have been interested in the broad range of things you have talked about, for example, I was struck by the pressures on nurses, and the sorts of things they say when looking back on their diploma or graduate training and their first days as qualified nurses. Because I think one of the things that was happening when students went into the wards was they were being told, you don't need all that sociology. I certainly remember the first degree year nurses got amazing flack because their bed making was so neat. And one of the things on the course is that sometimes there are genuine tensions about situations that change. So I was wondering about the breath of your approach to nurses learning things Are you working with a broad definition of learning or a rather narrow one?

A4 The broadest there is really because we're looking at what they need to know to get the job done and how their expertise grows over time. And in order to get the job done they not only need to have the knowledge of anatomy and all the rest of it in nursing that enables them to appreciate what they're doing, but they need to build up those practical skills and knit them together. Plus things like prioritising: they have to learn how to prioritise. They have to learn how to judge signals coming to them from the patients, and from other members of the ward team as well. And they have to learn procedures like the hand over at the end of a shift, the liaison with people outside the immediate nursing area, from the social services - and things like that. And I haven't mentioned the doctors yet.

So yes, what we're taking is a very broad definition of learning because we're interested in what builds a person's expertise in the job and that may come from all number of directions and we've not gone in with preconceived notions.

Q5 I find it very fascinating stuff and there are all sorts of things I would like to ask, but I just wonder about the backgrounds of the graduates you are studying. Presumably some of them have acquired all sorts of work experience along the way, some during their undergraduate period, some before the undergraduate period. And these people are going to vary in all sorts of ways and I'm wondering to what extent the research interviewing, and what you're seeing, allows you to pick up those differences?

A5 Yes, we're picking up a lot of that data. One young man, who is now an accountant/auditor, at one time drove a heavy goods vehicle into Europe, delivering goods, and has a very funny story to tell about arriving in an Italian town on a Saturday evening and getting stuck up a narrow street. But I won't go into that now.

We do get told about the things that turn them towards engineering, the things that made them want to get into accountancy, what they expect from it, and so on

We are hoping to be able to look for patterns across sectors in the way we're analysing this. To give you some idea of the kind of data we're handling, our early interview transcripts, with reasonable margins and not double spaced, run to 20 odd sides. And we have found that, when we put them back to the people we've interviewed, that they get over faced. So we're now moving towards an interview account which takes out from the transcript the key data they provide and ask, Is this a true representation? That's been very useful as a step to ourselves understanding what's there in the data, and we're just at that stage. So yes, I'd like to be able to answer positively but, hand on heart, I don't know how much we're going to be able handle in the time available.