
Mentoring for Civil Engineers

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Chapter 1

Introduction

What are trainees and their mentors trying to achieve? And why?

A previous version of this book, under a slightly different title, was published in 2001. At the time, the civil engineering industry worldwide was facing challenges of new technology and the need for suitably capable people to use it. Fast forward 19 years and little has changed in some respects. The graduates recruited in 2001 will now (I hope) have become professionally qualified and will be the focus of this book, seeking, as it does, to support those leading the development of professional engineers. The raw graduates of 2001 will now, as with those of earlier generations, be advising today's graduates, based partly on their own experiences at a similar age.

So will the learning experiences of 2001 be of any use today? Or indeed, those of 1991, 1981, 1971 etc.? I fervently believe that that answer to this question is a resounding 'yes'. I hope that readers of the present text will conclude that their own learning experiences are relevant, but certainly not in isolation.

I have relied on the support of a panel of people to assist me with the ideas in this book. They represent a cross-section of the industry, in terms of both their career positions and their employer types. I have been helped by many graduates and recently qualified engineers and also by those responsible for mentoring later in their own careers. While some tell us that the 'millennials' now coming into the profession have very different demands from their forebears, my research suggests that the differences are very much in the detail and not the substance of such things.

The desire to obtain professional qualification remains strong in today's graduates, possibly more so than, say, 30 years ago. The 1990s and 2000s saw significant merger and acquisition activity in the UK engineering industry. Many of the new investors were engineering companies from abroad and from cultures where gaining professional qualification through institutions such as ICE was not the norm. Some of those countries have state registration of engineers, others confer respect on professional engineers through their academic qualifications and subsequent careers, but not in a measured way. Some of the new owners were quick to question the value of professional qualifications but over time the acquired organisations' commitment to these things has continued. The semi-automatic 'conveyor belt' approach to qualification is not as prevalent as it once

David Cartwright (2017) summed up the importance of learning and development:

The fundamental purpose of learning and development is to create a skilled and confident workforce, by giving people the tools to perform to their best within their role and to develop their potential to fulfil future roles. We won't know the exact nature of these future roles but we can assume they will require a growing level of commercial and leadership acumen. In developing engineers to be at [their performance] capacity we are in effect making businesses stronger and more resilient to future scenarios.

Cartwright neatly describes how tomorrow's engineering leaders have to be developed to deal with problems that we cannot yet foresee. This precisely reflects ICE's attributes.

Learning through experience

Learning is the outcome of curiosity, a desire to know why something happens, why more-experienced people make certain decisions, why some people are prepared to take greater risks than others. Here are some methods of learning, with brief explanations

<i>education</i>	being told
<i>research</i>	finding out from books, Internet
<i>enquiry</i>	asking someone
<i>discussion</i>	talking about it
<i>observation</i>	watching someone
<i>practice</i>	having a go.

Graduates come into the workplace with most or all of these skills, but with the more highly developed abilities concentrated at the top of the list. What mentors should do from an early stage in the trainee's career is to encourage a reversal of the order, with trainees becoming most proficient at discussion, enquiry, observation and – within the strict limits of operational efficiency and risk – practice. Very little of what graduates learn after graduation will be taught.

For trainees to progress and to develop the skills and abilities needed to fill more senior and responsible posts, they need to look at the decisions the holders of such positions take, particularly how and why they decide on certain courses of action. In this way, they will gain experience before it is needed and, hopefully, make fewer mistakes. Of course the decisions witnessed may be wrong and that too provides learning opportunities. The engineering mistakes that led to the collapse of bridges in Miami and Genoa could and should provide learning opportunities for the entire profession. But what also of financial disasters such as Carillion? The decisions taken by the senior management of that company must have puzzled people at the time; they certainly

rapidly'. It identified that soft skills and team working were increasingly important in civil engineers. It also said that civil engineers should embrace digital technology.

What business objectives drive senior civil engineers to develop talent?

My panel of consultees included several senior engineers from major global consultants, international contractors and materials suppliers and smaller organisations. I was also fortunate to hear from several public sector clients in the rapid transit and waterways industries. Despite the diversity of backgrounds, they agree on why their organisations are willing to fund and support the development of professional civil engineers.

- Competition. All organisations want to have good people but, in a competitive market, we want ours to be better than our competitors. That is a repeated refrain, particularly from private sector consultants.
- Organisations wants to stay up to date. Bringing in graduates and developing them to ICE's standards is perceived to add value to this process. Many consultees recognise and respect the level of technical knowledge that recent graduates bring to their jobs. In the current environment, they perceive that younger members of staff are more proficient with ICT.
- Sustainability as an organisation. People elsewhere in the organisation will continue to resign, retire, get fired and leave gaps that need filling.
- New graduates tend to provide the 'engine room' to a lot of activities after their initial training, thus assisting productivity in the organisation. This is important because learning and development needs to pay for itself in the long term.
- Most of my consultees referred to the public interest role of ICE and the profession. Their organisations want to serve customers and society, particularly those in the public sector. Employing and developing young people contributes to those objectives.
- Retention and motivation of employees relies heavily on support for professional qualifications. Most ambitious graduates look for the offer of support when considering where to apply for jobs. The level of support has become competitive, with two of my consultees, both consultants, telling me that they extol the virtues of their respective training systems to potential employees. Almost all of the trainees on my panel reinforced this view; most had looked at the provision of support when considering where to apply. Their considerations were wider than just support for ICE qualifications. They asked whether the potential employer had a culture that encouraged learning and questioning and whether the company would welcome an inquisitive, curious mind. One consultant spoke of wanting to allow employees to develop a career with that firm, implying a longer term commitment.
- Consultants particularly speak of the greater fee levels that can be commanded for the work of professionally qualified engineers when compared with their

trainee, for example. By challenging the trainee to look at other solutions, the mentor can start the process for the trainee. The mentor might also ask how other people might view this challenge.

The *movement* stage involves finding solutions to the problem and setting a plan to turn these into firm results. Of course, setting out what the results might be can be difficult in some respects. The development of communications skills sufficient to pass an ICE professional review is something that many trainees have to work on. Setting tangible targets may not be easy. Here, the strength of the relationship will be important in discussing and agreeing targets. Each target needs to be time-limited and, where appropriate, the role of third parties should be decided.

GROW

GROW (Alexander, 2006) is a simple tool, named as an acronym.

Goal	What do you want to achieve?
Reality	What is happening as the backdrop to this situation?
Options	What are the possible solutions or ways forward?
Will	What will happen, what is the way forward?

Some commentators refer to this model as 'TGROW', with the additional letter standing for 'topic', i.e. what is to be solved.

It is a tool that you might want to use once the mentoring relationship has been established. Most trainees' progression is not a straight line and setting goals as the sole activity is probably wrong. But where goals can be set, this is a model that can work.

Engineers tend to be structured thinkers, so tools such as this one can fit well with current processes. But, as before, don't stick to the model if there are good reasons not to.

What should we do if the trainee says 'no'?

A trainee may choose to do something their own way and not do what you, the mentor, expected. Your instant reaction may well be surprise, even annoyance, but it is important to consider whether the trainee's method is equally (perhaps even more) valid than your established one. The desire to 'do it my way' is critical to a trainee's self-belief, because it respects the trainee's uniqueness. Doing something the mentor's way lessens the trainee's involvement, perhaps by the avoidance of thought or abdication of responsibility. It may even prove to be an uncomfortable method for the trainee to follow. Trainees should be encouraged to adapt the mentor's help to their own situation and style, thus enabling them to wrestle with the details, try different approaches and discover their own strengths and talents. An effective mentor lets go, being careful not to control or direct the trainee;

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Chapter 13

Mentors' responses to development reports

The written word will form an unavoidable part of the communication between the mentor and the trainee. The reports will provide a record of each party's view on the trainee's progress. Care must be taken by the mentor when commenting on reports. Unlike an ill-judged spoken slight, one made in writing leaves an indelible record that can allow resentment to be created or reinforced.

Comments on development reports

The success of mentoring in ICE's training system is hugely dependent on the response to development reports and the general attitudes and trust that the process should engender. Once again, it is not only the process of writing comments, but predominantly, the spoken dialogue that takes place, that is vital. I see far too many reports where the mentor has merely 'gone through the motions'; the worst possible example is a tick and dated signature on the last page of the report. This is mere compliance with a perceived system.

Each submitted report should trigger a discussion shortly after delivery. Immediacy is essential, since trainees are on a very steep learning curve and things are soon forgotten in the surge onwards. Development reports that sit for weeks in someone's email inbox, and are then dealt with rather cursorily, are a huge disincentive to a trainee, suggesting strongly that the SCE or DE does not value them. This discussion should definitely not be the mentor telling the trainee their understanding and knowledge, but must rather be probing questioning, trying to get the trainee to work things out for themselves. There are various ways of providing this feedback on the report itself. The use of Word or PDF files suggests an electronic method of commentary; some mentors prefer to print a physical copy of a report and write comments on it by hand. The mentor and the trainee should work out the best method between themselves, but the likelihood is that the final, commented, version will be electronic for ease of storage. If the outline questions are written on the report, and the trainee subsequently responds in kind, then maximum value, and a training record, is assured. Time is always pressing but doing it this way is an efficient use of time and requires only a short meeting subsequently.

The trainee should never rewrite a report, however desirable this sometimes seems. The only exception I could possibly think of might be the naive revelation of a commercial or