

SAIMechE's
Professional Development Programme (PDP)

*The Implementation of a Work-Integrated
Programme to Develop Professional Skills in
Young Graduates*

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My Objectives

- I hope to explain the PDP in a clear and logical way so that you understand it sufficiently to form an opinion about it.

Note: This is the objective of today's presentation.

- I would like to hear your opinion of the PDP

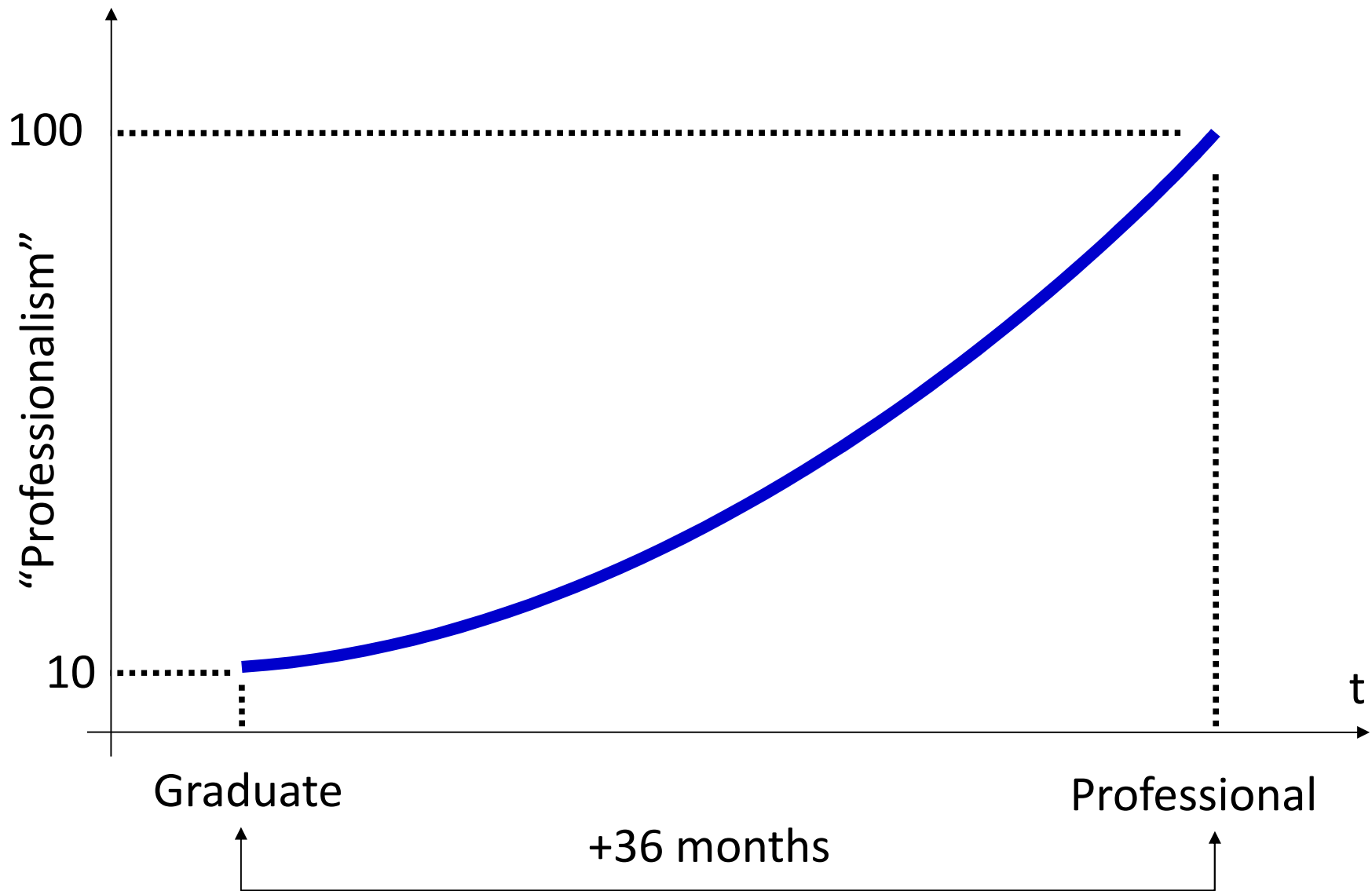
Note: Sometime from the end of the presentation into the future. I'll wait to hear from you.

Why a “professional development programme”?

- Professional development at all levels is a key objective of professional institutions
- Professional development in the period immediately after graduation (the *Candidate phase*) demands the most attention at the moment
- A *working programme* to develop professional skills, specifically in the Candidate phase, is an essential offering from a professional institution
- We couldn't find anything available which suited our needs

PDP – Broad Strokes

- Take a Graduate (N.Dip., B.Tech., B.Sc./B.Eng) into the work environment
- Systematically measure, develop and demonstrate specific professional skills to an acceptable level
- End up with a Professional!



What is “*professionalism*”?

- Professionalism is accepting and conforming to generally accepted standards of:
 - professional **conduct**
 - professional **practice**
- **Conduct** is typically embodied in a code which prescribes the expected behaviour relative to clients and other professionals
- **Practice** describes a systematic approach or method using *technical* and *professional* skills

Technical vs Professional Skills

For our purposes:

- **Technical skills** define a profession

Note: Technical skills are learned primarily during tertiary education, but also through work experience and CPD

- **Professional skills** define the manner in which technical skills are used

Note: Professional skills are largely common between professions and engineering disciplines, are developed solely through professional practice

Defining “professional” skills

- Include in NQF, thus outcome-based standard
- Professional skills defined as learning outcomes and assessment criteria
- The order in which the skills are presented and learned should reflect the order of use of the skills in practice, thus the standard is also a practice method
- First introduced by ECSA

Professional Skills

- Group A: Engineering Problem Solving
- Group B: Managing Engineering Activities
- Group C: Impacts of Engineering Activity
- Group D: Judgement, responsibility, ethics
- Group E: Continuing Professional Development

Group A: Engineering Problem Solving

1. Define, investigate and analyse problems
2. Design or develop solutions
3. Comprehend and apply advanced knowledge

Group B: Managing Engineering Activities

4. Manage part or all of one or more activities
5. Communicate clearly

Group C: Impacts of Engineering Activity

6. Recognise and address social, cultural and environmental effects
7. Meet legal and statutory requirements and protect health and safety

Group D: Judgement, responsibility, ethics

8. Conduct activities ethically

9. Exercise sound judgement

10. Take responsibility for making decisions

Group E: Continuing Professional Development

11. Undertake professional development activities to maintain and extend competence

Outcome 1: Define, investigate and analyse problems

Assessment Criteria

- i. Identify and formulate an agreed definition of the problem to be addressed
- ii. Collect, organise, and evaluate information
- iii. Use conceptualisation, abstraction, modelling
- iv. Make and justify assumptions
- v. Use analytical methods, both mathematical and non-mathematical
- vi. Evaluate result of analysis, using judgement
- vii. Express understanding emerging from analysis

How do we assess the achievement of the learning outcomes?

- Start from what we want at the end, and work back into the programme
- Not possible to actually demonstrate the skills at the time of assessment
- Assessment can only be based on evidence of work done which demonstrates competence as measured against some aspect of the standard
- End product: a *verified portfolio of evidence* (PoE) of work done which supports a claim of competence as measured against the standard

The Portfolio of Evidence

- Real, hard evidence (copies) of actual work done – not simply a report of what was done
- The PoE should clearly connect to relevant assessment criteria
- Evidence must be verified as to its accuracy, relevance and whether it is actually the work of the individual – this is a key role of the Mentor

Steps to creating the PoE

- Understand the literal requirements of the standard
- Understand the requirements of the standard as found in the professional working environment
- Do work which can be connected to the standard and used as evidence to support a claim of competency
- Retain the evidence to build a PoE

3-Step Philosophy of the PDP

Step 1: Teach and evaluate understanding of the literal meaning of the standard

Step2: Teach and evaluate understanding of the connection between the standard and the typical work of a professional

Step3: Evaluate the PoE of work performed.

Evaluating progress in Steps 1 & 2

- In both steps, the evaluation is based on a short presentation by the Candidate (10 min)
- Step 1: The Candidate's presentation must demonstrate a literal understanding of the standard – may use any context
- Step 2: The Candidate's presentation must demonstrate an understanding of the standard in the professional context

Evaluating Step 3

- The evaluation is based on a short presentation, and supporting PoE
- The PoE must contain the actual work of the Candidate, verified by the Mentor

Mentors and Supervisors

- Mentor:
 - Focuses on developing professional skills
 - Preferably external
 - Must be trained and accredited
- Supervisor:
 - Line manager – working in same company
 - Supervises day-to-day activities
 - Focuses on employer objectives

PDP Operational Constraints

- Work integrated
- Remove Candidate from work environment for no more than 1 day per month for teaching and evaluation
- 11 outcomes, 12 months per year – one per month
- Candidate cells: max 6 Candidates, 1 Mentor

Format of the monthly meeting

- Meeting etiquette
- Presentations from all Candidates on previous outcome
- Review of POE
- Structured teaching on following outcome
- Discussion on work towards next meeting

Meeting schedule

SAIMechE PDP - Mentor/Candidate meeting schedule

Start time	End time	Duration	Activity
08:00	08:15	00:15	Welcome, introduction, meeting etiquette (Chair, Secretary, matters arising)
08:15	09:15	01:00	Candidate feedback presentations (allow for 6 x 10 minutes)
09:15	09:30	00:15	General discussion on presentations and other assignments
09:30	09:40	00:10	Hand out and familiarise with today's workshop manual
09:40	10:15	00:35	Lecture on learning outcome-Section1
10:15	10:30	00:15	Tea/Comfort break
10:30	11:20	00:50	Group discussion
11:20	11:30	00:10	Initial Test (Self Test)
11:30	12:30	01:00	Lecture-Section 2 Part 1
12:30	13:15	00:45	Lunch
13:15	14:00	00:45	Group activities
14:00	14:30	00:30	Lecture-Section 2 Part 2
14:30	15:00	00:30	Assessment Test (Self test)
15:00	15:15	00:15	Tea/Comfort break
15:15	16:00	00:45	Small group activity (Report and Presentation Evaluation)
16:00	16:30	00:30	Class discussion (Case Studies and Admin)
16:30	16:45	00:15	Generic statement of guiding principles
16:45	17:00	00:15	Summary and close

PDP Output

- Candidate able to demonstrate competency through his POE – clear links to the competency standard
- Candidate and Mentor can assess competence
- Documentation signed off by Mentor and review committee

Cost

- PDP material (manuals, forms, presentations, etc.) *available on open platform to SAIMechE members as free downloads*
- SAIMechE offers to provide a system for the successful implementation of the PDP
(Full-house SAIMechE PDP: R30 000 p.a. per Candidate - includes Mentor)

Thank you for your attention.