FYP Interviews: Summary Notes

This short document summarises the responses to eight questions about the engineering Final Year Project (FYP) and its assessment regime. Six staff were interviewed, with interviews typically taking 45 minutes.

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1. Core concepts

Before exploring the ideal assessment regime for an FYP, two key concepts proved important to discuss: (i) the purpose of an FYP, and (ii) the nature of assessment, especially when contrasted with feedback (Figure 1).

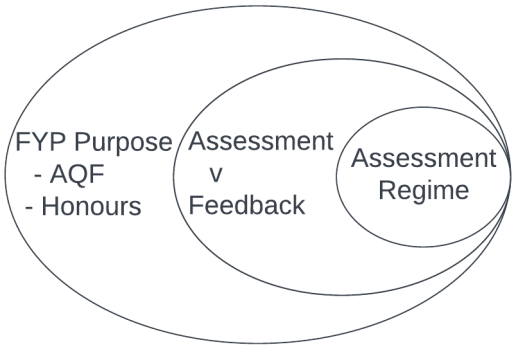

Figure 1 Core concepts raised in the interviews

2. The purpose of an FYP

Engineers Australia (EA) does not define what should be in an FYP, but instead talks more generally about Engineering Application Experience (G02, §3.2.4.4). This section states that the curriculum needs to embody "at least one major engineering experience, which draws on "technical knowledge and skills, problem solving capabilities and design skills from several parts of the program and incorporate broad contextual considerations as part of a full project life cycle." (Engineers Australia, 2008, p. 14). Research is not mentioned.

Further, the Stage 1 competencies clearly highlight the need for engineering graduates to conduct an engineering project. In version 1 of the P05, Engineers Australia National Generic Competency Standards – Stage 1 Competency Standard for Professional Engineers, PE2.5 required graduates to have:

> Experience in personally conducting and managing an engineering project to achieve a substantial outcome to professional standards, or as a member of a team conducting such a project, and ability to demonstrate a key contribution to the team effort and the success of the outcome.
>
> *A Stage 1 graduate should have undertaken and completed two or more construction projects, at least one investigative project and at least one major design project. At least one substantial project should be conducted individually, and at least one as part of a team. Accredited degree programs should provide and require such project work for all students* (Engineers Australia, 2006, p. 8).

Subsequent to version 1, version 3 has provided more detail about the competencies around

- the application of systematic engineering synthesis and design processes (PE2.3), and
- the application of systematic approaches to the conduct and management of engineering projects (PE2.4). (Engineers Australia, 2013).

These competencies focus on engineering projects and not research.

2.1. AQF

The Australian Qualifications Framework (AQF) (https://www.aqf.edu.au) was reviewed in 2019, with changes to AQF7, AQF8, and AQF9 relevant. When AQF was first published in 2011, most universities chose to design their engineering programmes to meet AQF8 requirements, Bachelor Honours degree. Research was a requirement for AQF8 (Australian Qualifications Framework Council Secretariat, 2011). The AQF defines research here: https://www.aqf.edu.au/publication/research.

Version 2 of the AQF was published in 2013, and the AQF7, AQF8 and AQF9 purposes are unchanged from version 1 (Australian Qualifications Framework Council Secretariat, 2013).

Table 1 2011 and 2013 AQF purposes for AQF7, AQF8, and AQF9

2011 AQF7 Bachelor Degree	**2011 AQF8 Bachelor Honours Degree**	**2011 AQF9 Masters Degree**
Purpose The Bachelor Degree qualifies individuals who apply a broad and coherent knowledge in a range of contexts to undertake for professional work and as a pathway for further learning.	**Purpose** The Bachelor Honours Degree qualifies individuals who apply a body of knowledge in a specific context to undertake professional work and as a pathway for research and further learning.	**Purpose** The Masters Degree (Coursework) qualifies individuals who apply an advanced body of knowledge in a range of contexts for professional practice or scholarship and as a pathway for further learning.

The 2019 review of the AQF (Department of Education, Commonwealth of Australia) noted confusion around Bachelor Honours degree, the need for research, and 'embedded honours'. The review's suggestion included (among others) classifying Bachelor and Bachelor Honours at the same level (Table 6), including research into every qualification (in the qualification architecture of Figure 14, this is called 'Inquiry'; a second observation about research suggests including a 'research flag' to indicate whether a qualification needs a research component (p40)), and perhaps creating a new qualification type for the "embedded honours" qualification (p47). The AQF review suggests an unbundling of AQF8, research and honours. These insights may prove useful when considering the purpose of an FYP.

2.2. Honours

The 2019 AQF review made the following observation:

> The Panel was also made aware of the two quite different purposes to which the current AQF Level 8 Bachelor Honours Degree is applied. These purposes are referenced in the volume of learning statement in the Bachelor Honours Degree qualification type descriptor as follows: "The volume of learning of a Bachelor Honours Degree is typically 1 year following a Bachelor Degree. A Bachelor Honours Degree may also be embedded in a Bachelor Degree, typically as an additional year."
>
> Many existing four-year Bachelor degrees have now been redeveloped as Level 8 qualifications on the basis of "embedded honours", while the more traditional Honours Degrees, "typically 1 year following a Bachelor Degree", also continue to be offered, primarily as a pathway for research. Given the quite different purposes of these two types of Bachelor

> Honours Degrees, it might be useful to consider distinguishing them with a new qualification type for the "embedded honours" qualification. (Department of Education, Commonwealth of Australia, 2019, p. 47)

If AQF8, research, and honours are unbundled, honours may be reshaped in the light of academic staff feedback.

3. Assessment v Feedback

The second core concept discussed in the interviews was around assessment and feedback, and their differing purposes as noted in Table 2. The degree of difficulty in problem solving is described in Table 3.

Table 2 Assessment v Feedback points

Assessment	**Feedback**

• Signposting to future employers
  ○ Indicates the level academic and intellectual effort that the student is engaged in
• Happens just a few times over the life of the project
• Supervisor: sees how the student approaches the project, day by day
  ○ Attitude
  ○ Initiative or just follows directions
• Assessment drives student behaviour
  ○ System trains students to focus on activities that are linked to assessment marks
• Assessment communicates the assessor's take on where the student's learning is at
• Needs to be holistic
	• Guiding the student along the way
	  ○ Self development
	  ○ Skills development
	• Happens during the weekly meetings
	• Supervisor: sees how the student takes on feedback
	  ○ responsiveness
	• Supervisor: notes the progress in learning made in the student
	• Mentor
	• Qualtrics feedback form: not useful
	• Students: want feedback on how to get a better grade rather than on their learning or project progress.

Table 3 Assessment grading observations

Assessment	
• HD: student has done something truly novel and original. • Distinction: student has taken on a significant academic or intellectual challenge, demonstrating some mixed success. Grabbed it by the horns and making a serious effort with it. • Credit: • Pass: competent, free from major errors, but pretty straightforward	Grade: • partly reward for effort • partly recognising the contribution made by the student.

4. Learning Outcomes

Interview participants noted that 11 Learning Outcomes (LO) were too many, and that perhaps learning outcomes could be summarised to cover three areas, based on design and execution of an engineering project:

- communication
- problem solving
- integration of content toward a solution

The interviewer notes that perhaps the idea behind learning outcomes has been misunderstood. Learning Outcomes are about what is to be taught, not how the student is assessed. Learning Outcomes shape the content to be delivered in a unit. Learning Outcomes state, at the beginning of a unit, the intentions for the teaching and learning activities. They are not about *opportunity to demonstrate*.

When Outcome Based Education (OBE) was first introduced, many Learning Outcomes were described as, for example, "The student can write a report" or more precisely, "In this unit, students are given an *opportunity* to show their writing skills" without being explicitly taught how to write a report. Learning Outcomes need to be linked to and guide the unit's teaching activities. That means how to progress in the learning outcome needs to be taught. In this writing report example, teaching activities need to allow the student to develop from their starting level of writing skills to a higher level, usually underpinned by a writing skills hierarchy. Learning Outcomes are not about giving the students an *opportunity* to demonstrate something that has not been taught in the unit. A core principle of assessment is that you do not assess what has not been taught.

5. Purpose of an FYP (from the interviews)

FYP should:

- allow the student to integrate their learning across the years of their degree
- allow the student to show the way they approach something that they do not know
    - not just a research project but a methodology of attacking a project when you don't know what the answer is
- require the students to show their skills with (i) people; (ii) the project process ; and (iii) data and technical fluency
- go narrow and deep into a problem and apply engineering skills.

5.1. Types of FYP

- Design project
- Design build project
- Industry project
- Research project
- Educational research project

6. In an ideal world assessments

Six interviews provided six ideal ways to assess the FYP. Common to all interviewed participants were the following:

1. The need for students to be able in real time to answer questions posed by the assessors. This oral assessment or viva allows assessors to gauge the student's technical understanding as well as explain their approach.
2. The need to balance the number of assessments with time spent on working on the project. Too many assessments mean students divert their attention to assessment requirements rather than working on the project, especially if there is a short time between scheduled assessments, or if assessments in other units are due. "too much writing about what they are going to do rather than actually doing it"
3. Reduce the number of learning outcomes assessed.
4. Streamline the Qualtrics marking rubric.
5. Address the out of area marker. If they are marking out of area, then the marker's expertise is limited to report structure and format, rather than content.
6. Ensure the supervisor has assessments in both semesters.

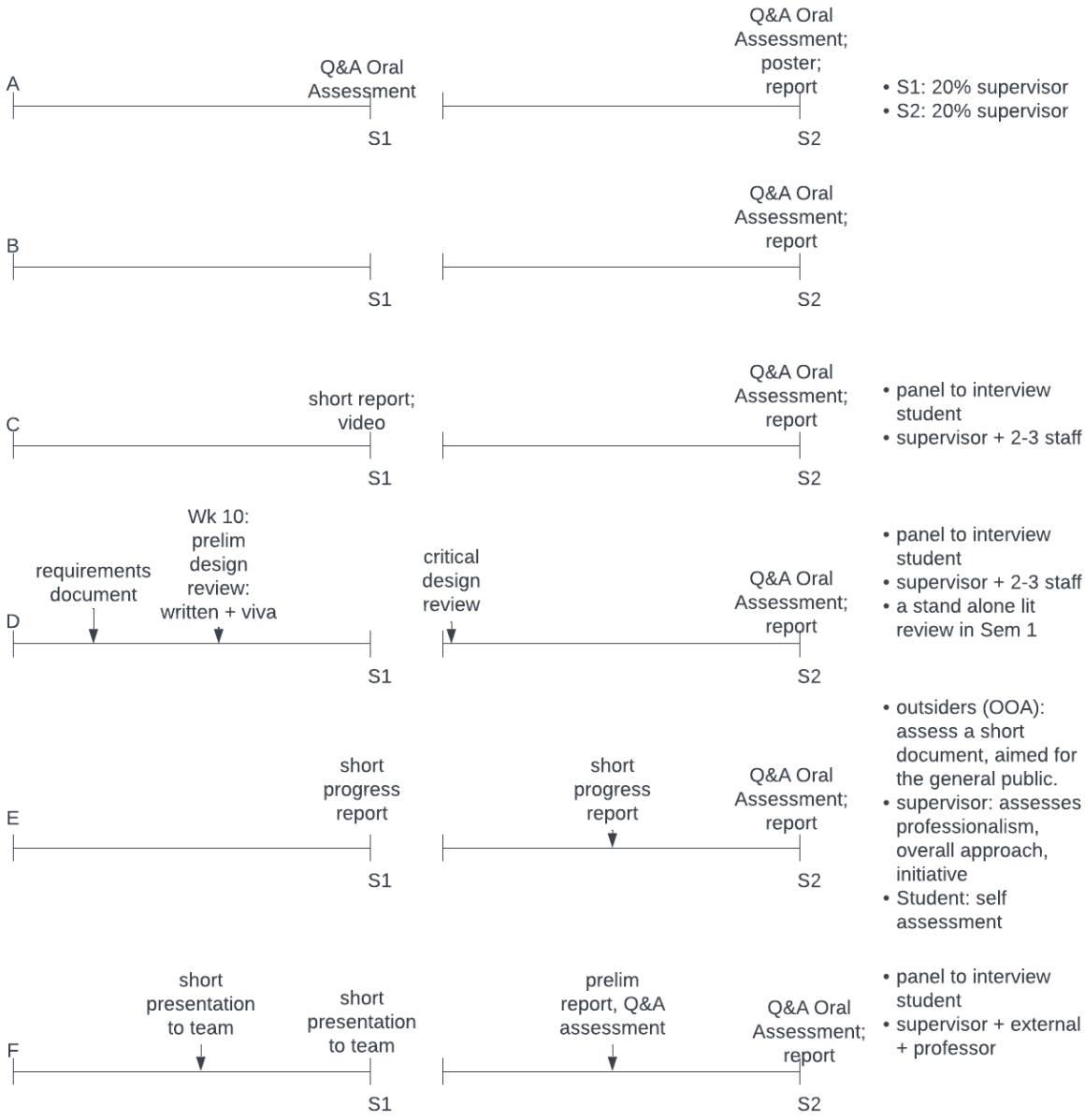

Figure 2 In an ideal world assessment schemes (Qu 1)

While not unanimous among all six interviewed participants, at least two participants noted the following:

1. Refocus the FYP on engineering project work by separating Honours from FYP. This means returning to an earlier iteration of Honours where perhaps only the top 15% of students earned the eligibility for Honours.
2. Refocus the FYP on engineering work so that research is a requirement for Honours but not the basic degree.

Both notes 7 and 8 and supported by aspects noted in the 2019 AQF review.

Suggested by one participant:

3. Introduce page limits for reports to focus attention on good writing.
4. Have separate assessment for different audiences – e.g., a short document, aimed for the general public for outsiders, and in in depth document for supervisors and other technical experts.
5. Have a teaching team for each FYP student.

7. Key points

- Unbundle AQF8, Honours and FYP
- Refocus the FYP on engineering projects for most students
- Revise the Learning Outcomes

8. References

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9. Interview Questions

Eight interview questions were asked. The eight questions and the preamble were sent to interview participants before the interview.

This interview is part of a project that looks at the *assessment regime* now in use for Final Year Engineering projects (FYP). FYPs are key to collect evidence of students' achievement at AQF8 level, where, among other things, students need to show (i) development of advanced knowledge and (ii) undertake research.

The interview will cover three areas: (i) in an ideal world; (ii) feedback on the current assessment structure; and (iii) other FYP assessment feedback.

In an Ideal World

Think about in an ideal world, perhaps starting from scratch, think about assessing a FYP.

1. From the viewpoint of student learning – what would be the ideal way to assess a FYP? (how many? How often? What types?)
2. From the viewpoint of you as an assessor – what would be the ideal way to assess a FYP?

Feedback on the current assessment structure

3. Currently, the FYP has 6 assessments. How well do the current 6 assessments give students the opportunity to show their proficiency in the project's learning outcomes?
4. Do the 6 assessments allow students to show progress in their learning?
5. What changes would you suggest to improve the assessment structure?

Other FYP assessment feedback

6. Sometimes students focus too much on meeting the assessment criteria rather than learning. How much have you encountered this and how could we address this?
7. What are some of the barriers you encounter when marking FYP assessments?
8. Any other comments.