



Trinity Education Project Capstone Project: Definition and Criteria

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1. Introduction

A key goal of the Trinity Education Project (TEP) is to ensure that all Trinity undergraduates have the opportunity to complete an independent piece of work under academic supervision during their degree course. This 'capstone project', which each student should complete in their final year, forms part of the renewed undergraduate programme architecture developed under TEP and approved by University Council in June 2016¹.

As part of the work programme of the current phase of TEP, Phase 4 Implementation and Mainstreaming, the scope of the workpackage 'Capstone for Every Student' is as follows:

- To ensure that all undergraduate students entering the new TEP programme architecture will have the opportunity to complete a capstone project or equivalent during their undergraduate degree course;
- To compile recommendations on what constitutes the criteria for defining a 'high-quality' capstone of 20 ECTS, including the attainment of the graduate attributes;
- To decide and recommend a process for ensuring that high-quality capstone projects continue to be offered in the long term.

It builds on the definition, purpose and scope of a capstone project that was approved by University Council in May 2016². It aims to refine the criteria that define the capstone project such that a degree of parity will be achieved for students around the quality of the experience and the opportunities to showcase the attainment of the graduate attributes across the disciplines, regardless of the nature of the project undertaken.

This work has been conducted by the workpackage lead, Prof Andrew Bowie, Associate Dean of Research, and the Chair of TEP Features, Dr Áine Kelly, Associate Dean of Undergraduate Science Education, supported by the TEP Project Manager, Sheena Brown.

¹ CL/15-16/203 refers.

² CL/15-16/175 refers.

2. Audit of Existing Final Year Projects

2.1 Key Findings

An audit of existing final year projects offered by all undergraduate programmes was conducted in semester 1, 2018. The purpose of the audit was to gather information on all current final year research projects (or equivalent projects of scale prior to final year) that form part of undergraduate degrees and to get confirmation that planning is in train to ensure that those students entering under the new programme architecture (Phase 1 programmes in 2018/19 and Phase 2 programmes in 2019/20) will be doing a capstone project in their final year.

A survey was sent out to Directors of Undergraduate Teaching and Learning for completion for all undergraduate programmes within their Schools. The survey was completed for all undergraduate programmes across all three Faculties. A copy of the survey is included in Appendix 1 to this document.

The following key findings were uncovered:

- **The vast majority of programmes currently offer a final year project or equivalent³**
- **Of those currently offering a final year project, 71% are weighted at 20 ECTS, 9% at 15 ECTS, and 18% at 10 ECTS**
- **All programmes (with the exception of some programmes in Health Sciences) have confirmed that they will be offering a 20 ECTS capstone project to students entering the new programme architecture in their final year at the latest (many are introducing it from 2019/20)⁴**
- **Health Science programmes will offer a capstone project or equivalent as far as their professional constraints will allow. Where a capstone is not offered, students will have an opportunity to carry out some form of independent research or to complete a reflective clinical portfolio as part of their programme.**

Additional findings are set out in more detail in sections 2.2 to 2.5 below.

2.2 Opportunities to attain the Graduate Attributes

All of the current final year projects provide significant opportunities for students to attain all or many of the four graduate attributes (to think independently, to communicate

³ There are a couple of exceptions currently involving students that specialize jointly in some two subject combinations that have been unable to take a dissertation, but cases of this kind are very few and they will not exist under the new programme architecture.

⁴ 20 ECTS capstone project will be offered to new entrants to new programme architecture in 2018/19 in their fourth year (2021/22) and to new entrants to new programme architecture in 2019/20 in their fourth year (2022/23).

effectively, to develop continuously, to act responsibly). A sample of the graduate attributes that are attained through current final year projects is set out in Table 1 below:

Table 1: Examples of Graduate Attributes attained through current Final Year Projects
- Critical thinking
- Self-directed learning
- Analysis and synthesis of evidence
- Ability to demonstrate in-depth knowledge on a particular topic
- Ability to do independent research
- Ability to present work through a variety of media including but not limited to video, writing, performance, oral presentation, poster presentation
- Ability to present work coherently; capacity to connect with people; presentation skills
- Ability to communicate experimental data and explain the relevance of research findings for an expert audience
- Commitment to enhancing personal development through reflection, and to grow in capability to adapt to change
- Lifelong learning – the development of skills in sourcing and evaluating research is a critical skill in a practice profession for life-long learning and ensuring that practice is evidence-based
- Ethical awareness: Ethical approval must be obtained for many research projects and this requires reflection upon the ethical implications of the research
- Development of responsibility through management of data generated and careful keeping of records

It is clear from the survey returns that many current final year projects already provide opportunities for students to showcase their attainment of many of the graduate attributes. It will provide a solid basis for such opportunities to be embedded into capstone projects across all programmes.

2.3 Types of Projects Offered

The survey provided visibility around the wide variety of types of current final year projects on offer across disciplines. It will be important that the definition of the capstone project is sufficiently broad to encompass this diversity, and recognises that there is not a ‘one size fits all’ approach to the type of capstone project offered by a programme. Examples are set out in Table 2 below:

Table 2: Examples of Types of Capstone Project Currently Offered
- Research-informed dissertation
- Dissertation with practice (feature-length screenplay or video essay)
- Composition
- Recital
- Conduct research and use data to complete major case writing project in target

language
- Desk-based research and/or research with human participants and presentation
- Original lab research project in a research laboratory resulting in thesis, oral and poster presentation
- Independent piece of work where field work or the analysis of original source material plays a primary role
- Field work-based mapping project with subsequent write-up (including production of geological map and accompanying short report, plus oral presentation)

2.4 Key Criteria in Setting the Project

A common theme emerged from the survey returns about the key criteria used in setting the project across the three Faculties. Generally criteria involved encouraging students to use original and creative thinking, to develop their research skills and to engage in self-directed independent research with the support of an academic supervisor. Other criteria included the ability to apply the skills acquired throughout their degree programme, and to exhibit their personal powers of invention, analysis, problem solving and to communicate their findings. The project culminates in a substantial piece of academic work.

These and other key criteria have informed the refinement of the recommended criteria set out in Section 3 below.

The process of identifying a project topic varied; while some students are provided with a list of topics; for others it is a collaborative process between student and supervisor. While recognizing that it may not be feasible in all Schools to facilitate students to suggest their own project topics, it is to be encouraged where possible.

2.5 Key Criteria in Assessing the Project

The survey uncovered a wide range of criteria used in assessing final year projects. Examples of current criteria used are set out in Table 3 below:

Table 3: Examples of Current Criteria used in Assessing Final Year Projects
- Evidence of in-depth engagement with primary and secondary sources
- The stringency of the strategic analysis
- How thoroughly has the student researched the primary and secondary literature
- How well structured, expressed and presented is the dissertation
- Originality of conception and analysis of primary source engagement, structure and focus, quality of argument and expression, range of knowledge
- Demonstration of understanding of what the key goal of their project was and why their work is important
- Presentation of data in a clear manner that supports their conclusions
- Demonstration of understanding of the implications of their findings and how this relates to the 'bigger picture'
- Ability to devise and implement a research methodology
- Ability to present results and critically evaluate them

- Performance of a student in the laboratory: level of independence achieved; technical ability; work ethic; understanding of the science and methods underlying the project; quality of the lab book
- Scientific writing (writing style and general formatting, referencing)
- Ability to communicate findings by oral or poster presentation
- Quality of content and cohesion of written thesis – review of literature, aims, methods, presentation of results, discussion, critical thinking, clarity of communication, layout and overall presentation.

Given the wide variety of types of projects, the range of assessment criteria is not surprising. However it will be important for all capstone projects, that assessment methods and criteria map directly onto the learning outcomes and are commensurate with the work involved.

2.5.1 Project Assessors

95% of programmes involve external examiners in the project assessment process. The level of involvement varies – most external examiners moderate the assessment marks of projects and have access to all or a sample of projects. In order to ensure that the high-quality of capstone projects is embedded, it is considered essential that external examiners would at a minimum moderate the marks. They should evaluate a selection of projects across grade bands to ensure projects are of an appropriate standard and that project marking is fair and consistent with expectations of achievement at specific grade bands. Their access to as many projects as is feasible is also to be recommended and where there is an opportunity for them to be present at oral presentations, this too would be encouraged.

2.6 Conclusions

From the audit of current final year projects, it can be concluded that the majority of students already have an opportunity to complete a capstone project or equivalent during their undergraduate degree course. Any programmes which do not currently offer a 20 ECTS capstone project have confirmed that they will have one in place for students entering the new programme architecture when they reach their final year. The only exceptions to that are those who, due to professional accreditation constraints, are unable to offer a 20 ECTS capstone project and they have confirmed that their students will have the opportunity to carry out a piece of independent work during their programme of study⁵.

Given that many of the capstone projects being offered currently are of a high-quality, the findings have informed the recommendations on what constitutes a high-quality capstone presented in Section 3 below.

⁵ Dental Science, Medicine, Nursing, Midwifery, Occupational Therapy, Pharmacy

3. Recommendations on Criteria for Defining a High-Quality Capstone

In considering recommendations on what constitutes the criteria for defining a high-quality capstone project, we have built on the definition, purpose and scope of a capstone project that was approved by University Council in May 2016. We have also taken into consideration the current offering of final year projects.

The following definition is proposed:

The capstone project — though defined differently by different subjects — is the common element across all degree exit routes and is weighted at 20 ECTS. It requires a significant level of independent research by the student. It should be an integrative exercise that allows students to showcase skills and knowledge which they have developed across a range of subject areas and across their four years of study. It should result in the production of a significant piece of original work by the student. It should provide them with the opportunity to demonstrate their attainment of the graduate attributes.

The following are the proposed criteria for defining what constitutes a high-quality capstone:

- (i) All programmes are expected to enable students to complete a capstone project. For accredited professional courses such as in the Health Sciences where there may be some constraints on course content the expectation is still that students should undertake some independent research.
- (ii) With regard to (i), in a joint honors programme, the choice of a capstone project in either subject should be offered. A joint capstone project shared by both subjects may be offered where feasible or appropriate, with the appropriate weighting of 20 ECTS and with the role of the supervisor(s) clearly defined (see (v)).
- (iii) Where possible, students should have input into the choice of the specific topic of their capstone project.
- (iv) Programmes determine which type/s of capstone are appropriate to their discipline that will fulfil the learning objectives of the capstone. The definition of 'independent research' and 'original work' will vary between different disciplines.
- (v) Programmes should outline in their handbooks the exact nature of involvement of a supervisor in the capstone so that students' expectations of this involvement will be clear.
- (vi) The capstone project should be a standalone module of 20 ECTS in the final year, although in some programmes the project may need to extend over more than one year.

- (vii) The capstone represents, and is assessed as, an individual student effort (with a weighting of 20 ECTS), although the process or product may involve other students (e.g., a performance which involves support at the level of stage management, or a composition which involves other performers).
- (viii) Through the capstone project, the student is expected to produce a significant piece of original work.
- (ix) Methods used to assess the capstone will vary depending on the nature of the capstone. This may include one or more of the following: written dissertation, poster presentation, oral presentation, assessment of technical ability, etc. Assessment may be undertaken by more than one staff member (e.g. in some disciplines capstones are routinely double marked), and, where appropriate, the external examiner. If several assessment methods are used they should map to specific learning outcomes and should link to the graduate attributes.
- (x) Capstone project marks should be moderated by External Examiners, who should have access to all projects or a sample of projects.

These criteria should form the framework within which capstone projects are offered.

Exemplars of current capstone projects taken from all three Faculties are set out in Appendix 2 to this document. These have been taken from the survey returns.

4. Process for Ensuring High-Quality Capstone Project Maintained in the Long Term

It will be important to ensure that the feature “Capstone for Every Student” is embedded and that the high-quality of capstone projects is maintained in the long term. In order to achieve this, it is recommended that the measures as set out below from (i) to (iv) be put in place.

- (i) Having overall responsibility for the academic management of the School, the Head of School will ensure that all students have the opportunity to take a high-quality 20 ECTS Capstone or equivalent as part of their undergraduate degree programme in accordance with the criteria approved by the University Council.**
- (ii) Ensure that the External Examiner Report process provides for comment on the capstone project offering, that it meets the criteria and provides opportunities for students to demonstrate the attainment of the graduate attributes.**

This would be done through making the following amendment to the [Annual External Examiner Report template, Section B: Curriculum Design, Assessment, Standards, B.4](#) (~~old text~~, **new text**):

Your comment is sought on the ~~assessment of dissertations/projects~~ **Capstone Projects** and may include strengths, weaknesses and/or opportunities for further development/ improvement. *[Appropriateness of choice of subjects; marking scheme and criteria; quality of submitted work; appropriateness of the assessment methodology, **opportunities to attain the graduate attributes**].*

This change would need to be put in place in time for the first cohort of students taking a capstone project as part of the new programme architecture, i.e., 2021/22 and the second cohort in 2022/23.

- (iii) Embed consideration of the capstone project in quality reviews at School and programme level**

To achieve this it is recommended that the following addition be made to the [School Review Procedures document, Chapter 4: Assessment of Undergraduate Education](#), amending the text as follows (**new text**):

*School response to drivers to review its undergraduate teaching programmes and curriculum (Core Std 3.3, ESG Std 1.9) for example, in the context of the Trinity Education Project, what curriculum architecture applies to the School curriculum; what entry and exist pathways, ‘approved modules’ and ‘Trinity electives’ can students avail off? **Is a high-quality capstone project of 20 ECTS offered in the final year?** Are there opportunities for student mobility, e.g. internships, Study Abroad built into the curriculum structure? Has the School received Council approved derogations in respect of the programme architecture or progression and Awards?*

In addition, the following addition to the [Programme Review Procedures, Section 4: Programme Structure](#) is recommended (**new text**):

if the programme is at undergraduate level, what TEP programme architecture applies **and has the programme included a 20 ECTS capstone project in the final year**? Has the School/Programme received Council approved derogations in respect of the programme architecture or progression and Awards?

This change would need to be put in place in time for the School and Programme reviews when the first cohort of students has completed the four-years of the new programme architecture, i.e., 2021/22 and the second cohort in 2022/23.

(iv) Embed a high-quality capstone project offering in all new undergraduate course proposals

It is recommended that in addition to the [Module Descriptor Template](#) currently required to be completed when submitting a new undergraduate course proposal, a separate template be compiled that would require the proposer to demonstrate that the capstone project would meet the recommended criteria for a high-quality capstone.

This would need to be implemented with immediate effect for all new course proposals.

5. Conclusion

The proposed definition and criteria of what constitutes a high-quality capstone project have been brought through the TEP governance structures (Workstream #3 TEP Features, Workstream #1 TEP Transition, and TEP Steering Committee) for approval. They were endorsed by Undergraduate Studies Committee on 26 March 2019 and are being brought to University Council for consideration and approval. Pending approval, they will be incorporated into the School and Programme Quality Review Procedures and will sit on the [Trinity Teaching and Learning website](#).

Through the delivery of 'Capstone for Every Student', our students will have the opportunity to develop the graduate attributes, to meaningfully contribute to their disciplines, and to engage in research alongside academic staff. This will be one of the defining seven features of a Trinity Education.