



Reflective Essay

Faculty: Natural Sciences
Department: Centre for Environmental Policy
Module name: Innovation and Entrepreneurship for Sustainability (B&E Option) and Infrastructure of Urban Environments (USE option)
Degree: MSc in Environmental Technology,
Options: Business & Environment (B&E) and Urban Sustainable Environments (USE)
Level: Master's level
Academic Years: 2019 - present
Format: Individual essay, submitted electronically on Blackboard
Approximate number of students: 20-26 per option
Delivery mode: In person
Duration: Spring term
Weighting and credit:
B&E: 100% of the Innovation and Entrepreneurship for Sustainability module (33% overall Spring Term)
USE: 50% of the Infrastructure of Urban Environments module (16.5% overall Spring Term)
Module ECTS: 7.5 (B&E) and 7.5 (USE)
Module Type: Elective

Insights colour key

Educational Developer

Inclusivity

Learning Designer

Registry

Careers

AI

Assessment overview

A reflective essay is a piece of writing, where students are expected to describe and reflect on their experiences regarding a module's activities and learning outcomes, based on their experiences. B&E students are expected to submit a 3,000-word limit essay, while USE students have to submit a 1,000-word limit essay at the end of the module's term.

For both options, the reflective essay was designed as a term-long activity and as an end of term assessment to incentivise students to describe and critically analyse their learnings, experiences and contributions to group discussions, whilst consolidating knowledge and reflecting on activities conducted (for example, field trips, or consultancy experience) during the module.

In the case of the B&E option, students are expected to derive a personal development plan (PDP) from the narrative of their essay, which is not summatively assessed. When designing the module, the convenors originally posited a more formal, summatively assessed PDP as an independent sub-assessment, but found this was going to be overly time- and resource-intensive to sustain. Instead, the module leads integrated the PDP into the reflective essay. Now, students use the lessons from their reflections to think about what they'll do in the future and how they may go about doing it.

The PDP is intended as a tool for students to support their self-reflection, continuous learning and skills development outside of an academic environment.

A personal development plan is something that many employers ask that employees do throughout their career as part of their annual appraisal hence asking students to reflect on it as part of the assessment is closely aligned with transferable skills for the workplace. At an interview stage some employers might ask to explain what the candidates learnt from doing various activities so reflecting on this early on can help them better prepare for those interviews.

Design decisions

Rationale for Reflective Essay

The reflective essay was inspired by the convenor's experience as a student of the B&E option and has been chosen as an assessment to facilitate revision of module contents, and to consolidate knowledge, while providing a mechanism for students to self-reflect, emphasising students' preconceptions and critically analysing their own thought-process, challenging what they have learned.

For the USE option, the reflective essay was chosen to adapt the Infrastructure of Urban Environment module to COVID-19 restrictions in place at the time, and their impact on the field trips. In previous years, students had been asked to keep a field diary of each weekly field trip, however many students could not attend field trips because of COVID-19.

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Therefore, the diary assessment was transformed into a personal reflective essay, where students are expected to discuss their own learnings, experiences, and relate those to the topics covered in the field trips.

It is highly unlikely that the students would use AI software to fully generate the assignment. This is because the essay focuses on personal understandings of the problems and understanding of their own ideas, situations in the context of the knowledge that they encounter. The use of AI on the programme is encouraged as a tool to help them learn effectively. This is exemplified by the following suggested uses:

- Using AI to help students think about language constructions. However, they shouldn't just cut and paste the answers generated by AI as this would be classed as plagiarism. Paraphrasing is allowed in the sense of them doing the paraphrasing of the content generated by AI. Asking the system to paraphrase and then simply cutting and pasting the generated answer is not allowed and if detected would count as plagiarism and incur penalty.
- Using AI to help students develop aims and objectives for their essays
- Using AI to get a better understanding of the module material

It is important to clearly outline to the students what is permitted and what is not permitted when it comes to AI. The College encourages staff to create opportunities where students' AI literacy can be developed. College's approach to the use of AI for assessment is outlined in "[AI tools in teaching and assessment](#)" document.

Alignment with other assessments and the programme/ module

This assessment contributes to distinct intended learning outcomes in both options. For B&E, the reflective essay particularly contributes to 'work effectively as individuals and as a team, taking responsibility for your own and group learning and performance', while for the USE option, the assessment contributes to 'Take field notes and transcribe summaries efficiently and clearly' and to 'Gather, analyse, and synthesise and critically evaluating information in an appropriate way'. The reflective essay is complementary to the other assessments in the option's modules as it requires

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the review and consolidation of knowledge on such themes as consultancy-based projects, group presentations and peer-assessment feedback. The key idea is that the students think about how their knowledge and themselves have changed in response to the course content and interactions with their peers.

The assessment in both options has been designed to evaluate students' core learning skills (for example gathering, analysing & synthesising data, critical thinking, problem solving strategies, and [self-evaluation](#)), thus providing an integrative perspective on each individual students, their skill development, and interests.

Practicalities

Preparing students for assessment

For the B&E option, the preparation for the reflective essay is on-going during the Spring Term. Students have three daytrips to companies with a high sustainability performance. These daytrips are a normal part of field trips where students get to see good practice in the workplace and have some opportunities for networking. After this, students are given the opportunity to write a 400-word (limit) critical reflection to see how their thinking has been challenged by the day trips. This constitutes the first assessment, which is purely formative, giving students the opportunity to receive feedback from the Convenor and practice for their final submission

The daytrips to companies can be a very valuable experience where students can network. An important thing to consider is to prepare students for reflecting from those experiences before their visits commence. This can be done through exposing them about different theories around reflection, looking at examples to help them analyse the strengths and weaknesses of different reflective approaches, practice reflection on basic things or provide them with reflection templates.

Being reflective is difficult and in some cases reflective writing adds a further layer of difficulty. It's useful to remember that being reflective does not necessarily need to be demonstrated in writing. Some students might find it easier to be reflective when speaking so it is useful to consider how oral reflection, for example submitted via video, could be an option for reflective assessments.

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Additionally, students attend an informal weekly Friday discussion session, moderated by two students (who bring snacks), contributing to the creation of a social context, and a building of trust to incentivise a safe zone to reflect and challenge ideas and topics covered during the week in preparation for their reflective essays.

Similarly, in the USE option, the Infrastructure of Urban Environment module is based on between six and eight field visits, alongside practical sessions that provide technical context. These are supported by weekly Friday discussion sessions lead by either by one of the option Convenors or one of the teaching assistants.

During these sessions, students have the opportunity to self-reflect on the field trips and contribute to a group reflection with what they learned during the week. They aim to create connections with previous experiences and technical knowledge acquired during the learning sessions. Guided by moderators, students are often requested to change seats during the sessions to engage in conversation with their different peers and exchange ideas and impressions of the field trips.

Reflection, especially this type of more formalised (assessed) reflection is a difficult process and not at all natural to many. Giving a short series of questions to guide reflection can help to get people started and lead them in direction that is aligned to the intended learning. Designing in a short formative stage where students can practise reflecting in a safe space and obtain feedback that will help them perform better in the summative submission is excellent practice. [Watch this video on summative and formative assessments.](#)

Asking students to reflect on their own performance and the activities that they did is a very valuable part of student learning. It is about making it absolutely clear to the students what the learning outcomes are what the assessment criteria are. Also offering a level of preparation here is important, as it is done with shorter formative opportunities and explicit discussion around reflective models.

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Students on the autistic spectrum might find reflection challenging. Understanding personal motivations and awareness of how learning journey had happened can be difficult for these students to flesh out. Students should be offered individual support from the Specific Learning Difficulty Tutors.

When introducing the use of AI tools for students it is useful to consider the issues around equity. The number of AI tools will continue to grow and access to them could be limited by regional access but also by access to paid versions that not all students will be able to afford. To ensure fairness, especially if the use of AI is needed for assessed work, either specify what tool is expected to be use (choosing one that will be accessible to all of the cohort) or provide a list for students to choose from.

The students were thoroughly briefed about using AI for their learning. This briefing focused on the following:

- Explaining what Large Language Model systems are, how they work and what their strengths and weaknesses are
- How to use prompt engineering
- How AI can be used on the programme to support student learning and where other tools can offer a similar support
- Imperial policy on the use of AI outlining specifically what is not allowed
- Showing some examples of effective applications of AI to support learning

The slides for this session alongside notes generated by AI are available [here](#).

Feedback and Marking Arrangements

For this assessment, in the B&E option, the marking rubric has been replaced by a standard marking scheme co-created by the students and staff. The standard marking scheme is developed through multiple iterations between the module's Convenor and students. Initially, the students work in groups thinking about their wishes for their learning over the term, as well as their concerns. After this, the Convenor presents a simple model on assessment types (e.g., 'assessment of learning', 'assessment for learning', 'assessment as learning') which is

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complemented by academic sources, e.g Stephen Brookfield's critical thinking lenses. Based on both these exercises, the students discuss and agree on high-level assessment criteria, and these are then further detailed until an agreement is achieved discursively. Figure 1 shows the final criteria co-created with students for the assessment in the academic year 2020/21.

Criteria

1. A critical analysis of your background and previous experiences, showing how these have affected your emotions, opinions and actions towards sustainability and business.
2. The examination and evaluation of your understanding of sustainability and business from a range of perspectives. These may include: your own (autobiographical); those of others, including lecturers, peers and wider personal interactions; from other course content; from external interests; from theory. See the appendix for more ideas of the information that you could use.
3. What have you learnt about sustainability, business and sustainable business and how will you use that to shape your future career and aspirations?
4. What this reflective thinking means to me and how has it allowed me to better understand sustainability, business and sustainable business
5. What am I going to do now? [this is your future action plan]

Figure 1. Final assessment criteria, co-created by the module leads with students

This process is overseen by the module convenor to ensure rigour and adherence to pedagogical guidelines and the module's learning outcomes. The co-creation of the marking scheme allows students to gain a sense of ownership over the assessment. For both the formative 400-word essay and the final reflective essay, students receive written feedback from the Convenor based on the assessment criteria agreed and detailed in the marking scheme.

Assessing reflection can be really difficult due to the fact it's so individual and expectations around what reflections looks like. Talking about emotions, opinions and actions can become quite subjective and so communicating expectations to the students can be difficult. Student preparation is key and co-creation of assessment criteria can help establish common understanding around what is expected.

Students have to understand the marking criteria to be able to perform well in an assessment. Co-creating assessment criteria is excellent practice in negotiating expectations and establishing joint understanding of what is required. If the work is not pass fail then a further discussion should be had around what excellent good and satisfactory performance looks like in relation to each of those criteria. If possible and appropriate, this could be supported with the use of exemplars where students can apply the criteria to pieces of work to further understand what is required. The danger of using exemplars with reflective work is that students might think that the example presents the only 'correct' way of reflecting, which in turn might lead to copying that piece of work. In this case showing sections of reflective writing illustrating a criterion and the depth of reflection required that are not necessarily linked to what students are asked to reflect on as part of the assessment could still demonstrate the requirements but without the temptation to unintentionally plagiarise.

In the USE option, an adapted marking rubric is used to allow for additional flexibility and for the inclusion of subjective assessment criteria. As this is an end-term assessment, the students receive written feedback from the Convenor, based on the marking rubric.

The students submit their reflective essays on Blackboard (Turnitin) and all the written feedback is available and accessed through the platform.

Writing distinctive marking criteria across grade boundaries can be tricky as finding the right vocabulary to show clear distinctions is a challenging task. AI can be utilised to analyse the current rubrics, see where ambiguities, vagueness and overlaps are and suggest better ways to describe performance according to each criteria at different levels. This was done on this programme. The output generated by AI was then reflectively and critically used to create the final rubric. The rubrics were then tested by the team. The prompts used to generate the output can be found [here](#).

Online Adaptations

The reflective essay is easily implemented online. Indeed, in the case of USE option, this assessment

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was chosen because it was better suited considering COVID-19 restrictions. Overall, this assessment is dependent on student's ability to keep records of topics covered during different module activities, their level of engagement, their depth of learning and their types of experience. The Friday discussion sessions play a key role in teaching students how to reflect about their learning, which can be implemented in an online setting by moderating group discussions on Teams, and using Whiteboard to keep track of main topics covered during the session.

For the diary, should students choose to maintain such a thing electronically, MS OneNote would be a useful, College-supported tool.

Advantages of assessment type

- The reflective essay contributes to developing self-reflection skills, which could support life-long learning and understanding of their own process of meta-cognition (i.e., the process of learning from individual experiences, creating connections with practical knowledge), engaging with experts on the field and producing strategies and scenarios to [think](#) about the future from a professional standpoint.
- With the co-creation of assessment criteria, there is also an increase in student engagement and ownership over their learning process, as students are asked to think about their previous learning experiences and compare how and what they want to gain from their current learning experience.
- Students improve their revision and consolidate their knowledge, as well as enhancing their understand the social value of discussion seminars.
- The assessment helps students think deeply about what they are learning, helps reinforce the experiences they have and helps them evaluate them.

Limitations of the assessment type

- It is a possibility that certain academic backgrounds (e.g., liberal arts or humanities) could give a competitive advantage to students from different disciplines. For that reason, subjective criteria have been included in the marking scheme, allowing to capture individual students' learning processes and skill development.
- B&E requires conclusions to be drawn from the essay narrative and used to develop a personal development plan. It appears that students find it easier to reflect than to develop meaningful future-oriented actions
- From a convenor's perspective, there is an

increased workload associated with the refinement and testing of assessment criteria over the term (normally around three times) but it's fun finding out how students really want to be assessed.

Advice for implementation

- Designing a reflective essay assessment and feedback scheme is a long process (3 months for B&E) that requires effort and dedication from staff members, and open communication between staff and students. Being patient is key to achieve a well-designed and well-thought-out assessment.
- [It is useful to consider embedding reflection points across the programme](#), especially if reflection is an important part of professional practice that the programme aims to develop. This would allow several points of practice across the programme and offer continuous feedback resulting in better developed skills and clear communication of the importance of those skills for the profession.
- Staff members should be cautious about finding a good balance when it comes to assessment criteria
- For students, keeping an updated diary of their experiences is essential, so is reading and reflecting upon is essential to practice critical thinking and to have material to refer back when writing the essays.
- Drawing on the point above, those diaries are best kept electronically for ease of access with MS One Note being recommended as a good, College supported tool.
- While most development plans are about skills as opposed to motivation and understanding of what you might do in the future, a personal development plan that includes an element of thinking about what to do and explore next that could add further value to the reflecting experience.

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- The clarity of the process and the assessment criteria is a very important consideration that needs to be given when designing similar assessments.
- Students may find reflection difficult therefore appropriate preparation and scaffolding is key. Embedding formative points where feedback can be obtained that can feed forward to the summative submission is a recommended strategy.
- On top of that students could be presented with some guiding questions to direct their attention to the depth of reflection required.
- Consider whether written reflection is important and whether the same criteria could be satisfied by allowing oral reflection as reflective writing can be difficult for students from science backgrounds.
- It is important to brief students around appropriate and inappropriate uses of AI in the context of the module or the programme
- In order for AI tools to be embedded effectively into teaching, learning and assessment students must be adequately prepared for the use of the tools. This will help them become more AI literate and as a result help them develop a life long skill that will be needed in future employment.