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Article:

Teaching Social Research Methods on an International, Collaborative Environment & Sustainability Degree Programme: Exploring plagiarism, group work, and formative feedback

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Abstract

International collaboration is central to the Sustainable Development agenda given environmental challenges that span national boundaries. Education for Sustainability therefore needs to account for international/intercultural understandings, such as through international collaborative degree programmes in Higher Education. This paper evaluates a module taught on an international collaborative Bachelor's degree programme in Environment & Sustainability taught between Nanjing Xiaozhuang University, China, and Keele University, UK. Consideration was given to the effectiveness of group work for enhancing student learning, as well as the degree the module content/design decreased plagiarism and formative feedback enhanced learning/performance.

Students had a good understanding of plagiarism and how to avoid it, however a number lacked the English language skills avoid it. Language issues also raised other practical/ethical concerns, like how to teach to a class with varied language skills and how to ensure even distribution of work within group activities (although group work was otherwise well-received). Students appreciated formative feedback, while it helped improve attainment. However, it was unclear whether feedback fostered deep learning or whether students incorporated suggestions uncritically. This paper contributes to understanding some challenges and solutions for international collaboration in Higher Education striving to produce graduates that can address sustainability challenges in a globalised world.

Keywords: Education for Sustainability, China, England, Language

Introduction

Education for Sustainable Development, Internationalisation, and Keele University's International Environment & Sustainability Programme

Education for Sustainable Development (ESD) is teaching and learning that enables "human and natural systems [to] continue indefinitely in a state of mutual welling, security, and survival" (Blake et al., p. 5) and is a term that came into the international spotlight in 1992 following the Earth

Summit in Rio de Janeiro, Brazil (United Nations, 1992). Since then, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) declared 2005-2014 the Decade of Education for Sustainable Development, sparking further developments at national, regional, and local levels (for example, the Higher Education Academy (HEA) in the UK chose to have ESD as a theme running through their work in 2005) (HEA, 2015).

International collaboration has been central to the Sustainable Development agenda (see Millennium Development Goal (MDG) 8 (United Nations 2006) and Sustainable Development Goal (SDG) 17 (United Nations 2015)) as we face environmental challenges that span national boundaries, such as climate change and the overexploitation of marine resources. As such, “there is a need for people trained to work in an international setting [...] or in a local setting with an international perspective” (Buchan 2007, p. 4-5). As a result, a number of university-level programmes have been established to develop graduates with such skills, and different programmes approach this challenge in different ways. Some strive for an international demographic of students (such as Lund University’s International Master’s Programme in Environmental Studies and Sustainability Science and Maastricht University’s Master’s in Sustainability Science and Policy), while others focus on teaching about international development (such as Utrecht University’s Master’s in Sustainable Development). At Keele, one of the approaches used to deliver a sustainability programme producing internationally-cognizant graduates is through delivering a programme taught in different countries. The focus of this paper is an international collaborative undergraduate degree in Environment & Sustainability, which is taught for Chinese students at both Keele University in the UK and Nanjing Xiaozhong University (NXU) in China.

A collaborative degree programme in Environment and Sustainability was set up between the two universities where the students on the programme studied in China for the first three years of their degree and completed their final year in England. Teaching staff from Keele also contribute to teaching Level 4 and 5 modules in the students’ second and third years on the programme through online distance learning and intensive 10-day modules taught face-to-face in China by ‘flying faculty’ (teachers who “‘fly in’ to an overseas institution to deliver intensive short blocks of teaching” (Tang & Nollent 2007, Smith 2014, as cited in Robinson et al. 2016, p. 32) from Keele. These second- and third-year modules have been called ‘bridging modules’ and are intended to prepare the students for their final year in the UK. They do this through introducing students to “different teaching and assessment styles,” ensuring the students have an adequate knowledge-base for their UK-based Level 6 modules, providing opportunities to practice “English language skill for academic study,” and introducing students to the academic tutors they will have in their final year (Robinson et al. 2016 p. 34).

This evaluation was undertaken as part of a module about design and development in teaching and learning in Higher Education, contributing to a Postgraduate Certification in Learning and Teaching in Higher Education. This paper will first provide a theoretically informed justification for the design a new level four module I designed for the international collaborative undergraduate degree programme between Keele and NXU in Environment and Sustainability called ‘Researching Sustainability’, and then will critically evaluate:

1. To what degree the module content and design decreased the amount of plagiarism,
2. How effective group work was at enhancing student learning, and

3. The degree to which formative feedback enhanced student learning and performance.

I will be evaluating the module using evidence gathered using the following methods:

1. In-class evaluations (both official forms and short, qualitative three-question evaluations),
2. Assessment and attainment in the module, and
3. Personal reflections on observations when teaching.

Module Overview

Intended Learning Outcomes (ILOs), content, and theory informed design

'Researching Sustainability' was set up as a new 'bridging module' primarily to comply with the requirements of the changing regulatory environment in China (Quality Assurance Agency 2013; Robinson et al. 2016), however there were also a number of other benefits it provided. Before the module was introduced, much of the teaching received by the students on the course focused on the environmental science components of sustainability. This had a variety of implications on the students' transition to Keele and overall educational experience. Having not been exposed to the social science side of sustainability, students were lacking a fundamental understanding of the relationship between social and environmental phenomena, and therefore were unprepared for the third-year modules with a social science focus. Furthermore, this also meant that most students on the programme were choosing to do their dissertations on an environmental science topic, which resulted in pressures on laboratory space and time due to the large number of NXU students. The module therefore served an important purpose both practically and educationally.

The aim of the Researching Sustainability Module (ESC-20069) was:

"...to provide training in a range of social science research methodologies appropriate for an interdisciplinary degree in Environment and Sustainability. This will help prepare students for their final year independent project work and help students appreciate the importance of the integration of natural and social sciences for the tackling of sustainability issues" (Module Proposal Summary 2015).

The Intended Learning Outcomes (ILOs) for the module were for students to be able to:

1. "*design* and *apply* appropriate social science research methods to investigate a range of sustainability issues;
2. *design* a piece of research with a strong social science component, achievable as a third year dissertation project and applicable to the field of environment and sustainability;
3. *synthesise* the research literature, *select* appropriate techniques for data collection and analysis, and *demonstrate* an understanding of ethics and risk assessment in the context of research suitable for a third year dissertation;
4. *outline* and *discuss* the issues of ethics in research and collect empirical data with due ethical consideration;
5. *collect* empirical data using a range of different social science methods, *analyse* quantitative and qualitative data, and *present* the findings of a research project in a report format" (Module Proposal Summary 2015, emphasis added).

There was also an additional ILO not listed (though was implicit in all assessments), which was for the students to *understand* what plagiarism is, and to be able to *write* an academic piece of work mainly *using* their own words and properly *attributing* ideas and quotations through citations and references.

There were three summative assessments for the module: a portfolio of exercises, a group research project, and an individual proposal suitable for an undergraduate dissertation. All the assessments (with the exception of two portfolio exercises) had the opportunity to be assessed formatively.

In its design, this module was rooted to the constructivist principles of learning through constructive alignment, which emphasises the experience of the learner by specifying the ILOs as activities (by using verbs, as can be seen in the ILOs for the module listed above). Teaching, learning, and assessment should also reflect (or be 'aligned' with) the ILOs, according to Biggs and Tang (2007), which is different from other outcomes-based approaches in which the ILOs and assessments may be aligned, but the teaching and learning activities may not. The ways in which the teaching, learning, and assessments in this module were aligned with the ILOs can be seen in Tables 1 and 2.

The module was also designed based on the principle of Bruner's (1977) spiral curriculum, in which learners "revisit basic ideas repeatedly, building on them until the student has grasped the full formal apparatus that goes with them" (p. 13). The purpose of the portfolio was to introduce key elements of social research (eg. research design, methods and ethics) in small, manageable, self-contained assignments. For each exercise they were required to apply the knowledge they had been introduced to through the readings, lectures, and group discussions. The group presentation (formatively assessed) and report (summatively assessed) were then intended to give the students an opportunity to make use of the different elements of social research together in a mini-research project. The group presentations were given a week before the report was due in order for the students to have time to incorporate the formative feedback from the presentation into their report. The reason for doing the assignment in a group where it was first formatively and then summatively assessed was meant to give the students an opportunity to learn in a less risky situation because they could discuss with and learn from their group mates before they went on to do their group report and their own research proposal. The group presentation and project also gave them an opportunity to collect and analyse primary data, which they wouldn't do again until actually undertaking their dissertation. Finally, the dissertation proposal was intended to consummate all the different elements of the module in order to propose a fully-formed research project (including topic, research design, methods, and ethical considerations) for their dissertation. See Figure 1 for further details about the use of the spiral curriculum in the module.

The Degree to which Module Content and Design Decreased Plagiarism

Going into the module I knew that plagiarism was prevalent on the collaborative Keele-NXU Environment and Sustainability programme, as well as that the plagiarism could be related to different cultural or educational contexts, and/or be symptomatic of the language difficulties experienced by the students. There were two ways that I attempted to decrease plagiarism on the module: through a plagiarism exercise to learn what plagiarism is and how to avoid it, and by designing the assessments such that they couldn't be plagiarised.

While the purpose of the plagiarism activity was mainly to address the chronic issues with plagiarism on the course, it also gave me opportunity to speak with each student individually to assess their English language abilities (to decide on groups for the Group Research Project and assess their individual needs).

The assessments were designed specifically for the course and required students to analyse data, fill in Keele-specific ethics forms, undertake a campus-based research project, and come up with an original topic and methodology for their proposal. Because of the specific and context-based natures of the assignments, it was difficult for students to plagiarise.

The Evidence

- When I gave instructions for the activity, a number of students communicated a good understanding of what plagiarism is by answering questions I posed to the class.
- Seven students were referred to the Academic Misconduct Officer for 'patchwriting' plagiarism (copy-pasting text from a number of sources), and I suspected an additional six of plagiarising through 'back translation' (converting texts written in Mandarin into English) (HEA, 2013). There was not enough evidence of academic misconduct for these latter cases to be referred to the Academic Conduct Officer, however the assignments all failed because they did not fulfil requirements.
- One of the students that fell into the latter category submitted a draft of his Individual Proposal for feedback, and I suspected it was plagiarised using 'back translation'. I gave him detailed feedback on the assignment explaining how the piece of work was not a proposal, that I suspected it may have been plagiarised, and how to write a proposal. However, he submitted the same piece of work for the summative assessment.
- In the module evaluation, 76% of students agreed or strongly agreed with the statement 'I understood the language used to deliver the content' (see Figure 2).

Analysis

What this evidence indicated is that the students have a good understand of what plagiarism is and how to avoid it; however a number of students lacked the English language skills to do anything about it. Three quarters of the class appeared to be confident in their academic English, however a substantial portion did not. While the plagiarism exercise was an effective way to scaffold the skills of paraphrasing and referencing appropriately using good and bad examples, the students who were most at risk of plagiarising weren't doing it because of a lack of knowledge or skills. This is a substantive issue, and indeed is a contributor to the termination of the Keele-NXU collaboration.

The more problematic of 'patchwriting' and 'back translation' is 'back translation', as the students had less engagement with the material, it is more difficult to prove as it doesn't show upon Turnitin, and the piece of work failed because it was so unrelated to the assignment's objectives. Students using 'patchwriting' usually were attempting to paraphrase, but struggled as they did not have the skills to do this. A potential solution would be to have paraphrasing activities on the back of the plagiarism activity to help students develop the needed skills.

However, the module is due to be taught to two more cohorts of students while the programme is being taught out. This poses pragmatic questions for these cohorts: when half the class has the

language skills to effectively engage with the material and the other half does not, at which level do you teach to? And furthermore, is it better for the students that struggle with English to learn the content in Mandarin from their peers (even if they aren't able to communicate the knowledge in assessments), or should the focus be on encouraging the students to communicate in academic English?

Ultimately, the module is Level 5 and therefore the students who are able to engage with the material at that level should be given the opportunity to. However, there is also potential for making teaching decisions that help the students that struggle with English to learn some of the material in Mandarin. These will be detailed in the following section.

The Effectiveness of Group Work in Enhancing Student Learning

Group work was weighted as 68% of the final grade, and this was mainly because a) it meant that the students could collect and analyse primary data as part of a mini-research project (the Group Project) during the course which would have been too much work for an assignment assessed individually, b) the students could draw on others' language skills and communicate in Mandarin to one another to better understand the content, and c) more detailed formative feedback could be given because there were less assignments to consider.

The Evidence

- During group work session in class, when speaking English the students were engaging in on topic conversations, students were writing up their portfolio exercises in class, asking questions, and communicating in Mandarin to one another.
- When asked to give qualitative feedback in the module evaluation, many students expressed an unprompted appreciation for the group work, saying it allowed them to draw on the skills of each group member and learn from each other.
- Four students did not submit any independent work that was not plagiarised and still passed the module.

Analysis

Students appeared to enjoy the group work – for example, in the course evaluation, one student said they enjoyed *cooperation with classroom, so that we can learn from other people.*

However, some students found the group work to be challenging, as another student communicated in their evaluation:

Everyone has a different level about their English. So when you divide us in groups you may more care about the balance in the group. Because someone don't do anything, and some people may difficult. To do most thing, they tired.

When designing the course, I specifically allowed time on the first day to speak to each student individually in order to gauge their English skills in order to make sure each group had a good balance of students with different levels of English. The intention behind this was to encourage the students to talk about the material in Mandarin with their peers in case they struggled to

understand the content or assignments. Apparently this is not what happened in some groups in which most of the burden of the work fell upon one or two students. Furthermore, because so much of the assessed work was group work, some students (mostly those who struggled with their English) were able to 'coast' through the module.

To remedy this issue when I next teach this module, I plan to have the students mark the participation of their group mates and also explicitly encourage students struggling with English to take on tasks that they can reasonably do with their language abilities (for example, reviewing Mandarin literature for the background section, formatting the references, and doing the quantitative analyses).

The Degree to which Formative Feedback Enhanced Student Learning and Performance

The Evidence

- The assignment with the lowest average (excluding non-submissions) was the only assignment with no opportunity for formative feedback (the Coding Assignment) (see Figure 3).
- Only 46% of students submitted a draft of their dissertation proposal for feedback. Those that did received (on average) a 31% higher grade than those that did not.
- In the module feedback forms students expressed appreciation for timely feedback.
- Many students were able to communicate effectively orally about the benefits of qualitative methods and how to use them, but did not make effective use of open questions in their Group Project, did poorly on the Coding Assignment, and included very few qualitative elements in their Dissertation Proposal.

Analysis

Overall, formative feedback was well received by students and there appeared to be a positive relationship between receiving feedback and students' performances on assignments. However, in some cases it was difficult to tell, after having given formative feedback, whether the students genuinely understood why I had given them the feedback or had just incorporated the feedback into assignments without a genuine understanding. For example, every morning I would begin by 'recapping' what we had already covered so far in the module by asking some key review questions. When one student answered what the benefits of qualitative research methods were, I probed to see if she really understood what she was saying. She responded by rephrasing her answer (correctly) in an apparently spontaneous manner. Therefore I felt that she had a good understanding of why and how one would use qualitative methods. However, a few days later when working her Group Project, I found that her group had only included one open question in their questionnaire, which was easily answered in a single word. When I asked her about it, she struggled to see the disconnect between the theoretical understanding she verbally communicated and limitations in the way her group had incorporated qualitative elements into their assignment.

A superficial interpretation of this would be to characterise her behaviour as very skilful rote learning of material such that she could be very articulate on the subject without any depth of

understanding. Indeed, Chinese students are often stereotyped as being passive surface learners that rely on learning by rote (Kember 2000, Hing Wa Sit 2013). However, this has been criticized widely as an over-simplification that doesn't take into account the more complex realities of learning preferences and styles (Kember 2000, Hing Wa Sit 2013). Without discussing further with this particular student, I wouldn't be able to understand why there was an apparent disconnect between her theoretical and practical understandings. However, to speculate, it may be because of the emphasis on objectivity and numeracy rooted in the scientific method (used in the rest of her modules) was so deeply ingrained that a genuine understanding of qualitative methods would require a substantial shift in the 'rules' of the science she had studied – something that couldn't be achieved in the short two week period. In future, it may be productive to offer feedback on the coding assignment in some capacity to help students understand the value of qualitative analysis and how to make use of qualitative methods effectively.

Conclusions

Language issues were a central challenge in teaching the module, which raised a number of practical and ethical concerns, such as how to teach to a class with varied language skills, what happens if some students can't keep up, and how to do group work fairly in such settings. Formative feedback seemed to be one of the strengths of the module as students appreciated it, and it also helped improve attainment. However, it was unclear whether the feedback genuinely fostered deep learning or whether the students merely incorporated the suggestions without fully grasping why they made the changes suggested. Following the evaluation in this paper, the module was run again with some suggested changes outlined in this paper (formative assessment was offered for the coding assignment and there was also peer assessment of participation for group work). While comparing cohorts is not an objective means of evaluation of these interventions because of inter-cohort variation in skills, knowledge, and abilities, it is a positive sign that the performance on the coding assignment and dissertation proposal resulted in substantially higher marks for both in the more recent cohort. In spite of having the same number of students in the class, there were also only three cases of plagiarism reported to the Academic Misconduct Officer compared to the seven in the previous cohort and only one suspected but unsubstantiated case of 'back translation' plagiarism compared to the six in the previous cohort. International collaboration to deliver Education for Sustainable Development poses a variety of challenges, but such education is essential in order to produce graduates who can work to address sustainability challenges in an increasingly globalised world. For it is not just sustainability literate graduates that we need, but graduates that understand how different nations, cultures, and communities understand sustainability literacy itself.

Resources

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Figure 1. The ways in which Bruner’s (1977) ‘spiral curriculum’ manifested in the assignments in the Researching Sustainability module. Toward the left is low-risk group work and module content presented in self-contained assignments, and toward the right is individual work joining together different elements of module content in the same assignment.

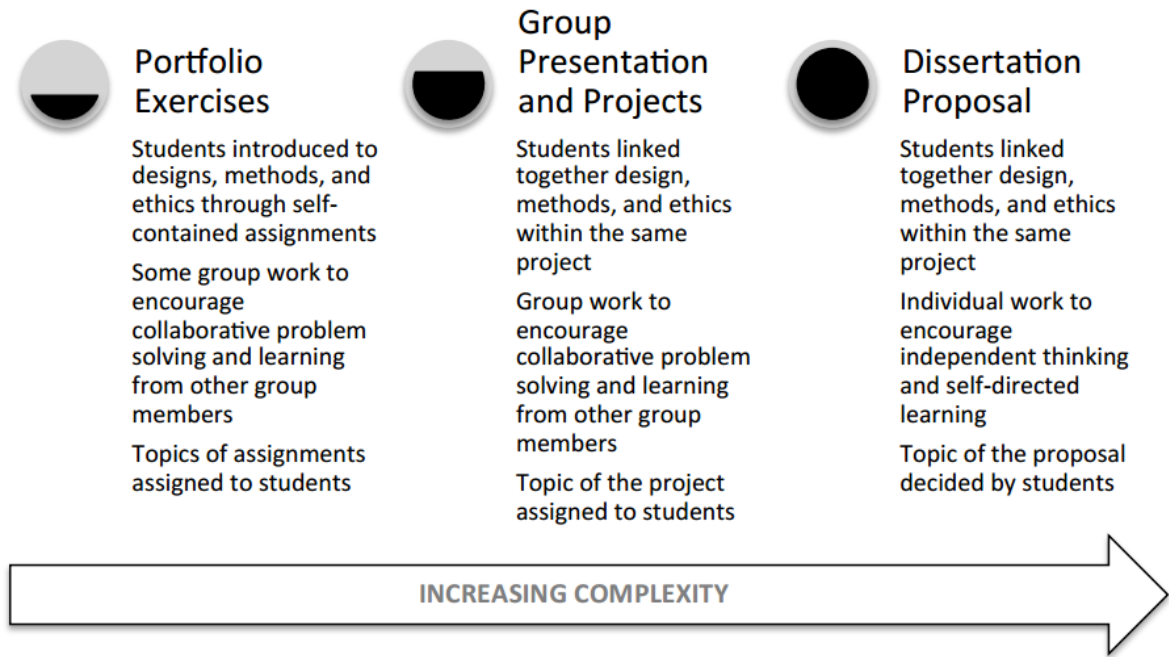


Table 1. The formative and summative assessments for Researching Sustainability (ESC-20069), including whether it was individual or group work, which ILOs it addressed and the overall weighting of each assessment.

		ILOs	Individual/ Group Work	Formatively/ Summatively Assessed	Weight
Portfolio	<i>Plagiarism Exercise</i>		I	S	3%
	<i>Mini-study Design</i>	1, 3	G	F & S	9%
	<i>Coding Exercise</i>	3, 5	I	S	9%
	<i>Ethical Approval Exercise</i>	3, 4	G	F & S	9%
Group Presentation		1, 3, 4, 5	G	F	0%
Group Report		1, 3, 4, 5	G	S	50%
Dissertation Proposal		1, 2, 3, 4, 5	I	F & S	20%

Table 2. The topics of each teaching/learning activity, how it was delivered, whether or not it was assessed, and which ILOs it addressed

Topic of Teaching/Learning Activity	Type of Delivery of Each Teaching/Learning Activity				Assessed Work	ILOs
	Lecture	Group Discussion/Activity	Readings	Other		
Introduction to the module						
Proper referencing and how to avoid plagiarism				Online activity and test	Portfolio	
The importance of social research to sustainability						1, 2
Introduction to research paradigms and research design						1, 2
Designing a social research study activity						1, 2
Introduction to social research methods						1, 3
Focus group and questionnaire research activities				Filling in questionnaire		1, 3
World café activity on the pros and cons of different social research methods						1, 3
Mini-study design assignment					Portfolio	1, 2, 3
Introduction to qualitative analysis and coding						1, 3, 5
Coding assignment activity				Individual assignment	Portfolio	3, 5
Quantitative analysis				Video lecture		3, 5
Ethics, research quality, and applying for ethical approval						3, 4
In-class session designing group research project					Group Report	1, 3, 4, 5
Ethical approval exercise					Portfolio	3, 4
Ethical approval meeting				Meeting with teacher to discuss the application form		3, 4
Presentations of Group Projects					Group Report	1, 3, 4, 5
In class work time for Group Reports or Dissertation Proposals				Working on Dissertation Proposals, one-on-one meetings with teacher to discuss Dissertation Proposals	Group Report, Dissertation Proposal	1, 2, 3, 4, 5
Draft Dissertation Proposal submission				Feedback from teacher on Dissertation Proposal	Dissertation Proposal	1, 2, 3, 4, 5

Figure 2. Results from the Researching Sustainability (ESC-20069) module evaluation.

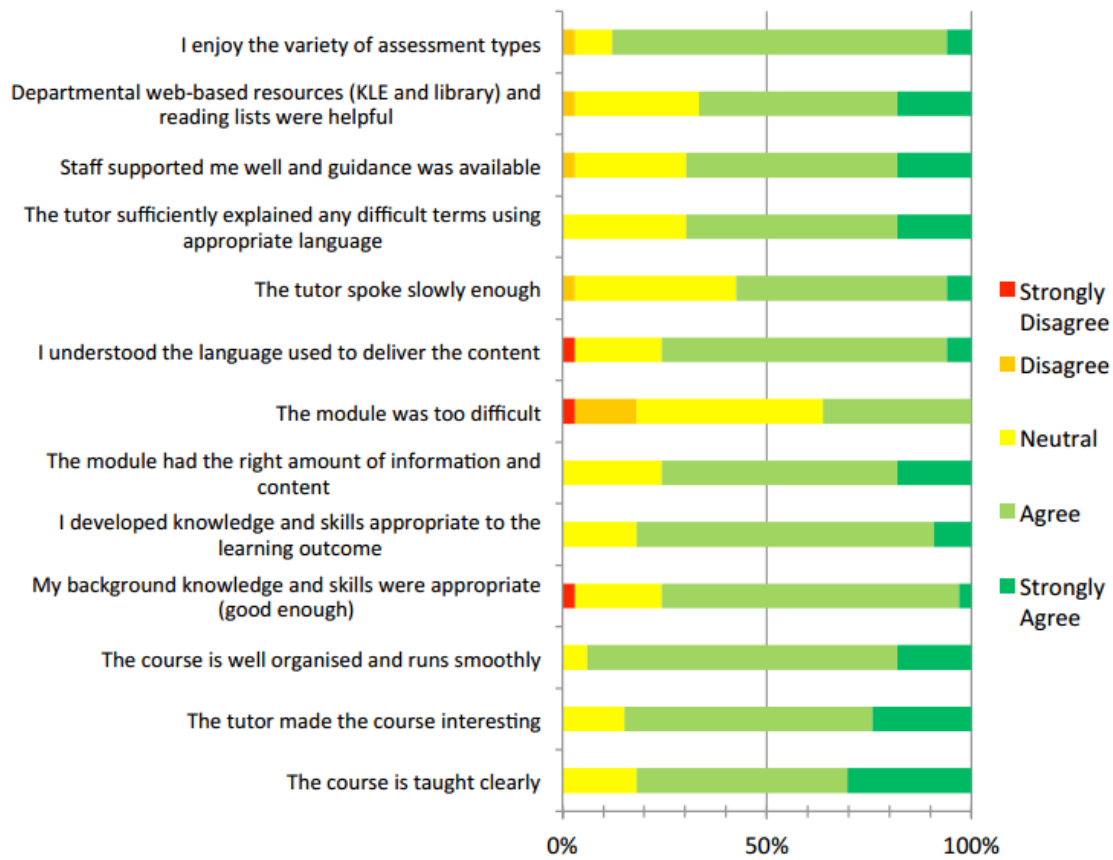


Figure 3. Averages for each assessment on the Researching Sustainability module (ESC-20069), excluding non-submissions.

