SAP Project 2017/18

Final Report Cover Sheet

Project Title:	Developing, testing and enhancing an innovative assessment replicating the UN Climate Change Negotiations.
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Developing, testing and enhancing an innovative assessment replicating the UN Climate Change Negotiations.

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Abstract

This research is based upon the development of a new assessment method within 'GEOG1123: Climate Change: People, Policy and Action' a new L4 module at the University of Worcester. The assessment reflects the UN Climate Change negotiations, with members of the class representing different stakeholders, reaching an agreement and testing the outcome using the C-ROADS simulator. Students are then required to write a critical reflection based on their personal experience of the debate. The aim of the SAP project was to develop, evaluate and improve the assessment using Action Research. The objectives were to create the materials, carry out and evaluate a trial run of the assessment with a pilot group of staff/students and feed improvements into the actual assessment. To explore participant evaluations of their deeper learning, soft skills development and future intentions regarding participation in climate change issues, thereby evaluate the effectiveness of the debate. Finally, to analyse SAP and staff reflections on the process. Data were collected through three focus groups: for the pilot (7 L5 geography students and 3 staff), after the debate (8 of the 12 registered students) and researcher reflection (2 staff and 2 SAP). These were recorded and transcribed for further analysis. Early indications suggest that whilst students identified some limitations overall, they found this a positive experience and identified multiple areas of soft skill development in addition to deeper subject knowledge. Students agreed that understanding the complexities of global negotiations is crucial to enacting change and moving toward a sustainable future.

Introduction

Climate changes is one of the most pressing contemporary issues facing the global community, requiring multilateral action (IPCC, 2014). Despite numerous attempts by the UN to bring countries together to achieve a consensus on tackling this issue, various constraints and challenges have hindered the process (Bailer and Weiler, 2015; Averchenkova and Bassi, 2016; Keohane and Victor, 2016). Understanding these complexities is crucial to enacting change and moving toward a sustainable future (Pearce et al, 2018). In response, the Donella Meadows Institute and the Royal Meteorological Society have both created educational resources to inform and simulate the UN global negotiation process (Climate Interactive, n.d.; RMetS, n.d.).

Within the University environment there is widespread recognition of the need for Education for Sustainable Development (EfSD), particularly for climate change. The need to engender students with multiple transferrable skills required for applying this knowledge in future careers has been recognised (Paschall and Wùstenhagen, 2012; Scott, 2015). One outcome of this has been a drive towards innovative assessment strategies that stimulate active learning (Harwood et al, 2002; Prince, 2004; Paschall and Wùstenhagen, 2012). Active learning engages students in the learning process by encouraging them to undertake meaningful learning activities and reflect on what they are doing (Prince, 2004). This is further supported by Kolb and Kolb's (2005) experiential learning theory, which advocates that knowledge is created through the transformation of experience.

This research is based upon the development of a new assessment method within 'Climate Change: People, Policy and Action (GEOG1123)' a new Level 4 undergraduate module at the University of Worcester. The intention was to design an assessment which takes on board advances in learning and teaching theory, aiming to improve student understanding of the complexities of achieving global consensus on climate change and enhance student experience through meaningful, practical and experiential learning. It simultaneously seeks to develop soft skills and encourage students' future engagement with climate change issues throughout their future personal, work and civic lives.

Students participated in a formal conference in which they act out the positions of different stakeholders, debating the contributions they should make to carbon emissions reduction and other mitigation activities. The goal was for contributors to achieve a consensus and keep global temperatures from rising above 2ºC. This was tested using the C-ROADS Climate Change Policy Simulator (Climate Interactive, n.d.). The assessment was a critical reflection on their individual contribution to the debate and their comprehension of the effectiveness and difficulties of achieving global consensus. The title of the assessments being: '*Write a critical reflection of your experience participating in the World Climate Exercise. Drawing on wider reading; include an evaluation of the key challenges faced by the stakeholder group you represented and identify at least three recommendations to tackle these'*.

Flipped learning for in-class formal debate has been identified as an innovative and effective teaching tool (Lőfstrőm, 2016) which can provide soft skills – critical thinking, communication negotiation, flexibility etc (Gautier and Rebich, 2005; Bergmann and Sams, 2012a; Bergmann and Sams, 2012b; Hunger, 2013; Herreid and Schiller, 2013; Belova et al, 2013; Paschall and Wùstenhagen, 2012). This teaching approach is also recognised for accommodating different learning styles; including divergent, convergent and accommodating learners (Mathieson, 2014 pp. 76-77). Whilst the reflective nature of the final assessment encourages students to think more deeply about their learning journey. The nature of learning and assessment is based on the constructivist assumption 'that learning is influenced by how an individual participates in educationally purposeful activities' (Coates, 2006 p. 17). Essentially this is based on the thesis: "*that learners construct their own meaning through a constantly reconstructed and dynamic process to develop a personal presentation of knowledge*" (Hand and Bryson, 2008 p.8)

The aim of the SAP project was to evaluate and improve the assessment using Action Research.

The objectives of the research were:

- Undertake a review of literature of other innovative assessment methods, to identify opportunities for good practice and potential pitfalls.
- Carry out and evaluate a trial run of the assessment with a pilot group of staff/students.
- Identify areas of improvement from the trial run and feed these into the actual assessment.
- Explore participant evaluations of their deeper learning, on climate negotiations, soft skills development and future intentions regarding participation in climate change issues (theoretical dimensions)
- Evaluate the effectiveness of the final assessment and identify opportunities for further improvement (practical dimensions)

Main section

This research was conducted in the Geography Department within the Institute of Science and Environment. GEOG1123 is a new module with 12 students enrolled, of which 10 agreed to be involved in data collection during the Debate and 8 participating in the further research.

A combination of qualitative methods were used for this 'Action Research', combining focus groups and reflective summaries from both the students and the research team. Gibb's reflective cycle (1998) was employed to inform the students' research process.

Prior to the debate a pilot was conducted with a combination of staff and Level 5 students. The pilot followed the method described by the Climate Interactive World Climate Simulation (Climate Interactive, n.d.) which involved grouping of countries into three categories: (1) Developing A; (2) Developing B; (3) Developed. Feedback from the pilot was used to streamline and improve the actual debate.

Data were collected through three focus groups: The pilot (3 staff and 7 Level 5 geography students); The debate (8 of the 12 registered students); The researchers (2 staff and 2 SAP). These were recorded and transcribed for further analysis.

Ethical approval for the research was obtained from the ethics committee.

Outcomes

There were multiple project outcomes that demonstrate the usefulness of the SAP scheme across a diverse range of stakeholders; the teaching team, the student academic partners undertaking the research, the students who were active participants in the pilot, the students who were active participants in the final negotiation, and the audience of the outputs created. Early indications suggest that whilst students identified some limitations overall, they found this a positive experience and identified multiple areas of soft skill develop in addition to deeper subject knowledge. Key impacts and outcomes are summarised briefly below.

Pilot Study - Outcomes and Impact

On the basis of the pilot study several changes to the climate negotiations were made. Pilot participants did not feel the information provided by the World Climate Simulation for the three geographical areas gave them sufficient knowledge to make decisions. It was therefore decided to provide each student with a different country and undertake two weeks of scaffolded preparation before the final negotiation. A further key change was the provision of information in advance of the final debate on the Paris Agreements to provide students with an understanding of what was possible/realistic for their country in terms of CO_2 reduction and percentage afforestation and deforestation. Pilot participants (L5 undergraduates) benefited from subject insights combined with skill development via observation and participation in focus group methodology. Analytical skills were also employed in their provision of critical feedback.

Final Negotiations - Outcomes and Impact

<u>Student Participants</u>

The outcomes of the project for research participants (i.e. GEOG1123 students) can be classified into three categories: (1) subject specific knowledge acquisition; (2) soft-skills appropriation and student reflection on learning; (3) teaching pedagogy. The focus group demonstrated student awareness and opinion on all three aspects, key findings from this are tabulated below along with supporting quotes from the transcripts.

1) Climate Change Negotiation - Knowledge Acquisition

Students gained considerable insights into the diversity of national political responses to climate change, and the varied nature of current and prospective physical, social and economic impacts. The event was particularly effective in highlighting the disparities between developed and developing countries. It was agreed that participation in the event had deepened understanding of the greater vulnerability of developing countries, due to the greater magnitude and severity of impacts, their heightened risk as a result of financial constraints and the lack of political power to incite change. *"I thought it showed how vulnerable developing countries are, little power they actually have over their own outcomes".*

It was widely acknowledged that this form of learning was more effective in teaching the idea of power relations than a lecture format. Students representing developing nations described how being seated on the floor and having to 'look up' at other negotiators had been pivotal in their feeling of being less able to communicate effectively with seated countries. As a consequence, they recognised that alliances were more likely to form between countries with similar circumstances. Countries who considered themselves 'in the middle', such as India, also felt they were excluded from the internal negotiations of other groups. The debate simultaneously reinforced student understanding of the need for collaborative action to solve the complex issue of climate change. Contributors to the focus group shared their sense of overall powerlessness as individual countries to achieve anything. This was particularly felt by those students representing developing countries who felt disenfranchised and powerless to exert influence on overall outcomes.

Some participants felt a strong sense of attachment and ownership of their country, this empathy to their place was significant in highlighting the problems faced when making decisions about the climate change issue. For example, the Russian representative spoke in depth about the fundamental problem of having an economy that was dependent on fossil fuels. *"I never really thought about Russia whose main source of income is how coal and things that they're obviously not going to run to reduce their emissions if that's their main source of income even if there is the right way to do things I've never really thought about it that way."*

The debate also provided students with a realistic sense of the time limitations and frustrations of being part of a global negotiation event. A number of comments were made in the focus group concerning the need for more time when presenting their pledges to give greater depth to their context and rationale behind their positionality. *"We were so focused on the numbers that we didn't really get to the emotional pitch...get the emotional heartstrings going OK."* The facilitators were very strict in time management to reflect the reality of these situations. This effect has also been noted by Lőfstrőm (2016)

It was widely agreed amongst the students that whilst they already had some preconceived ideas regarding the difficulties of achieving global consensus, the debate process helped them understand these at a deeper level. They recognised that through this process they had a much greater sense of the difficulties and complexity of achieving published literature (e.g. Gautier and Rebich, 2005; Schweizer and Gregory, 2005; Paschall and Wùstenhagen, 2012) *"It was really difficult and it did make it clear what difficulties there would be on the world stage, countries are trying to make their own policies on climate change it's kind of highlighted how there's an awful lot of other things going on in the world and that these can affect climate change but people have bigger agendas in other countries climate change isn't the same for some countries as it is in others so it's a bit of a headache thinking about what the country wants to do but also tackling climate change."*

Students admitted to losing focus towards the end of the negotiations in terms of disregarding their country's positionality in a bid to try and successfully achieve the goal of 2^{o}C. *"We were so keen to get the numbers down by the end that we went further than the actual countries would have done"*. "everyone forgot what countries they were". This demonstrated considerable engagement with the process and their real hunger to know what would have to be done to achieve the required reduction in CO_2 to stabilize at 2^{o}C.

2) Soft-skills Appropriation

Results indicate that students gained a wide range of soft skill experience and development through this method of learning and assessment. These are outlined in Table 1.

Table 1: Soft Skill Experience and Development

Skill	Observation / Researcher Reflection	Example of supporting quote
Critical thinking	Translation of reading into applied context. Ability to zoom in and out at different scales to see detail but also the wider picture (Hunger, 2013) Conflicted beliefs, having to argue the opposite of your own viewpoint strengthens understanding. However, students found they struggle with criticism if they personally do not believe in what they were having to argue e.g. US and fossil fuel lobbyist (Schweizer and Gregory, 2005)	*"I like the experience from taking your research and actually putting into words and arguments"* *"it's kind of highlighted how there's an awful lot of other things going on in the world and these can affect climate change… climate change isn't the same for some countries"* *"I learnt from Russia that they control a lot of the natural gas that's used in the EU…I changed my viewpoint on Russia and kind of there is more of political angle"* *"well I was trying to stick to what my country's actual views are but then towards the end I had my own feelings because I was trying to get this towards the target so I didn't really stick to my guns"*
Team work	Recognise that working together they could negotiate more effectively (Gautier and Rebich, 2005)	*"Venezuela by teaming up with other countries we were able to make ourselves more powerful"* *"then we teamed up a bit more it felt like we had a bit more [to] say"*
Listening	Accepting new arguments and adapting your own. Cascade of learning, builds incrementally and in layers – onion analogy (Gautier and Rebich, 2005)	*"You could learn a wider amount of information from everyone else not just from going on the internet"*
Negotiating	Learning the difficulties of negotiations when there is personal conflict within the message (Lőfstrőm, 2016; Paschall and Wùstenhagen, 2012)	*"I think it would have been easier and more interesting to be the Maldives because they had something to argue about [US]"* *"it was really hard to argue for Trump policies [US]"*

Prioritising	Balancing country's internal economic issues with climate change plus network with compatible countries (Hunger, 2013)	*"as the Russian economy is based a lot of fossil fuels you can't be too environmentally conscious"* *"countries have different priorities than climate change"*
Empathy	How hard it is to listen and come to an agreement (Belova *et al*, 2013)	*"[I]really think about that position that country was in...and how hard [it] actually is [for] countries to listen to each other and to make an agreement"* *"we wanted to be realistic and ambitious at the same time and that was hard there are challenges in it's going to be hard for people to get there"*
Persuasive speech and writing / Time Management	Two aspects to this: preparing and delivering pledge in restricted time	*"you're trying to get people on side"*

3) Participant reflection on learning and teaching pedagogy

Students shared a wealth of insights on their personal reflections on the task from a learning and teaching perspective. These were detailed and generally positive, a summary of key points made is provided in Table 2.

Table 2: Student reflection on learning and teaching pedagogy

Retained Interest	It was generally felt that this form of learning and assessment was more engaging.
Shared workload	Students were empowered by the collaborative nature of the exercise, recognising how their individual preparation of materials contributed to joint learning and the effectiveness of their integrated knowledge.
Constructive criticism	The focus group facilitated students to engage in constructive criticism of themselves, others, the facilitators and the event itself. This process increased their awareness of their role and responsibilities as learners and provided a genuine sense of their being co-creators and collaborators of curriculum.
Props / Space	One of the most controversial aspects of the debate was the decision to employ physical props and space to reflect economic differences between participants as recommended by UN guidance. This meant those who were from the least developed countries were not provided with a seat and were placed furthest from the keynote speaker. There was marked resistance to this in some reflective accounts.

Researcher Reflections on Debate / Assessment process

The research team reflections on both the debate and the assessment process are summarised in Table 3. The research team were pleased with general positive feedback, students felt that they had been provided with sufficient time and resources.

Table 3: Research Team Observation and Comment

Observation	Comment
Existing peer alliances in the group	There was a tendency for friendship groups to influence the choice of alliances which created some unlikely partnerships.
Clarify use of money	It appeared that the students did not fully understand the purpose and expected use of the money for the 'Green Climate Fund' (GCF, 2018).
Sufficient attention on reasoning behind pledges and contributions?	In reflection the students were provided with useful scaffolding to prepare their pledge, however this was adopted by some more than others.
Personal confidence	Some people were less confident in debating and may have benefitted from a more chaired approach with everyone listening and engaging in arguments as a group rather than as a free for all.
Students wanted more rounds, they were disappointed the target was not met	The research team reflected that despite the students requesting more time that the debate should be contained to timings provided by the UN website, as this is more realistic. This reflects similar discussions in Paschall and Wùstenhagen (2012) and Lőfstrőm (2016).

Impact

The success of the project is difficult to quantify; however, module results and evaluations provide some indication of success. These are outlined in Table 4.

Table 4: Evaluation of project success

Assignment grades 1xB+, 1xB, 3xB-, 1xC+, 4xC-, 1xD-
Global Index (satisfaction with module) 1.8 with deviation of 0.5
Use of a variety of teaching methods 2.1 with deviation of 0.8
Quotes from end of module evaluation student feedback
Positives
"The debate was a fun way to consolidate what we have learnt"
"The use of different exercises such as climate change debate was helpful and different"

“The climate debate was a new way to learn”

“The climate change debate was one of the most engaging activities we did in the module”

Negatives

“Make the debate more of a debate”

Quote from student as academic partner
”*I really enjoyed the experience of being an academic partner. For me it was a step up from being a student, I was equal with the lecturers and I felt my contributions were valued and acted on. It gave me an insight into the preparation that goes into a lecture and what goes on behind the scenes. It’s great to think my contributions to this module will be integrated in coming years. Attending the conference gave me a whole new aspect on academia and the use of peer evaluation*.”

Conclusions

Overall the project was successful in achieving its objectives, students were positive and engaged throughout the debate.

Recommendations

Future changes to the assessment based on student and staff reflections are highlighted in table 5.

Suggested amendment	Decision and rationale
Further clarification of rationale for seating plan and props	In some ways student complaints regarding the seating decisions demonstrates the effectiveness of this measure in differentiating the economic and power base of difference negotiating groups. However, more explanation of the rationale for this was necessary.
Policy on absence	Students that do not attend will have to reflect upon the debate in wider context using global negotiations.
Enhance the role play	Increase the use of props to further differentiate groups?
Discourage pre-existing peer alliances	Distribute countries strategically.
Further detailed explanation on the use of money and an example.	Include discussion and examples of how money may be used in negotiations in preparatory session e.g. https://www.greenclimate.fund/home.
Provide more scaffolding for the preparation.	Increase guidance to ensure students recognise that preparation involves wider research in addition to writing the pledge.
Summarising rounds	At the end of each round when contributions are given a rationale must be provided.
More emphasis on the assignment in lectures	Assignments submitted did not use reflective models as had been encouraged, they also had not explicitly aligned content with learning outcomes and marking criteria. Reflection is an important aspect of experiential learning

	(Kolb and Kolb, 2005). Need to emphasise learning outcomes and assessment criteria earlier in module.

From a learning and teaching perspective, the debate process and reflection were effective and we would recommend this approach being adopted elsewhere in the department and wider university.

This research identified areas that could be improved in both the negotiations and the assessment.

How might the project be replicated or extended

The project will be repeated next year with amendments and staff will again use Gibb's cycle to inform a further round of testing and improvement.

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