

# Centre for Excellence in Enquiry-Based Learning

## Project Case Study

The EBL Master Class Series: Exploring Issues around Climate Change through a Process of Enquiry

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### **Abstract**

The EBL Master Classes are a collaborative project between Widening Participation (WP) and Curriculum Development and Innovation (CDI), funded by the Centre for Excellence in Enquiry-Based Learning (CEEBL). The development and implementation of the Master Class programme engage Environmental Sciences students as partners in the design, facilitation and evaluation of the content and process of learning through enquiry whilst utilising their academic knowledge as task specialists.

The Project Team comprises Stephanie Lee, Widening Participation Officer and co-ordinator of the Manchester Access Programme (MAP), and Patricia Clift, Senior Officer (Progress Files and Personal Development Planning), with the additional support of a group of Environmental Sciences students led by Mohamed Ghalaieny, a second-year student and trained MAP student-trainer.

## Background

The EBL Master Class series, 'Exploring issues around climate change through a process of enquiry', is a new development forming part of The Manchester Access Programme - an innovative, post-16 targeted outreach programme. The Manchester Access Programme seeks to encourage and support the progression of local students from disadvantaged backgrounds into a research-intensive university through a mixed programme of learner development, Higher Education (HE) awareness, and motivational incentives.

All the students participating in the Manchester Access Programme are attending local post-16 institutions in Greater Manchester and are in the first year of their post-16 studies. The EBL Master Classes were offered to students as a non-compulsory activity and out of the 120 participating students, 30 chose to sign up for the sessions. Not all the students were from a scientific background, and the invitations to the Master Classes emphasised that no in-depth knowledge of climate change was needed and that students from all curriculum backgrounds would benefit from the sessions.

## Rationale

The University of Manchester has been highly active in Enquiry-Based Learning and in Widening Participation for many years. With this project we hope to give local Further Education (FE) students who have the potential to be successful at a research-intensive university the opportunity to develop their learner confidence and engage with non-traditional approaches to learning that they will encounter when they begin their university education.

## Anticipated Student Benefits

For the HE student facilitators there are a range of benefits such as:

- Increased understanding of student learning;
- Opportunities to engage with different student groups;
- Personal development;
- Opportunity to engage with EBL;
- Engagement with the wider aims of the University community.

For the FE students, in addition to the benefits of engaging with the Manchester Access Programme as a whole, it is anticipated that the Master Classes will benefit them as follows:

- Interaction with University Staff and Students;
- Campus and general HE awareness;
- Greater knowledge and understanding of learning approaches and personal strengths;
- Opportunity to explore and embed knowledge and learning practice.

## Approach

Climate change was chosen as a topic as it contained substantial scope for interdisciplinary learning, and was immediately accessible to the FE students as a result of the amount of media coverage that environmental and climate related events have received over recent months. The large scale of media attention would also give the students a broad range of multimedia resources to work with during the Master Classes.

The design of the Master Classes was carried out by a group of five Environmental Sciences students. The students were given some background information on EBL in addition to relevant details about the Manchester Access Programme. One of the five students, who was also the lead facilitator, had already delivered skills workshops to students on the Manchester Access Programme and so had an understanding of the needs of the young people and what activities they would find engaging.

The students decided to provide the Master Class participants with stimulus material that would act as trigger for their enquiry into climate change. They also proposed a role-play situation where they would act as the Cabinet and the participants would take the role of a government think-tank.

The Master classes were delivered over two sessions using the structure outlined in figure 1.

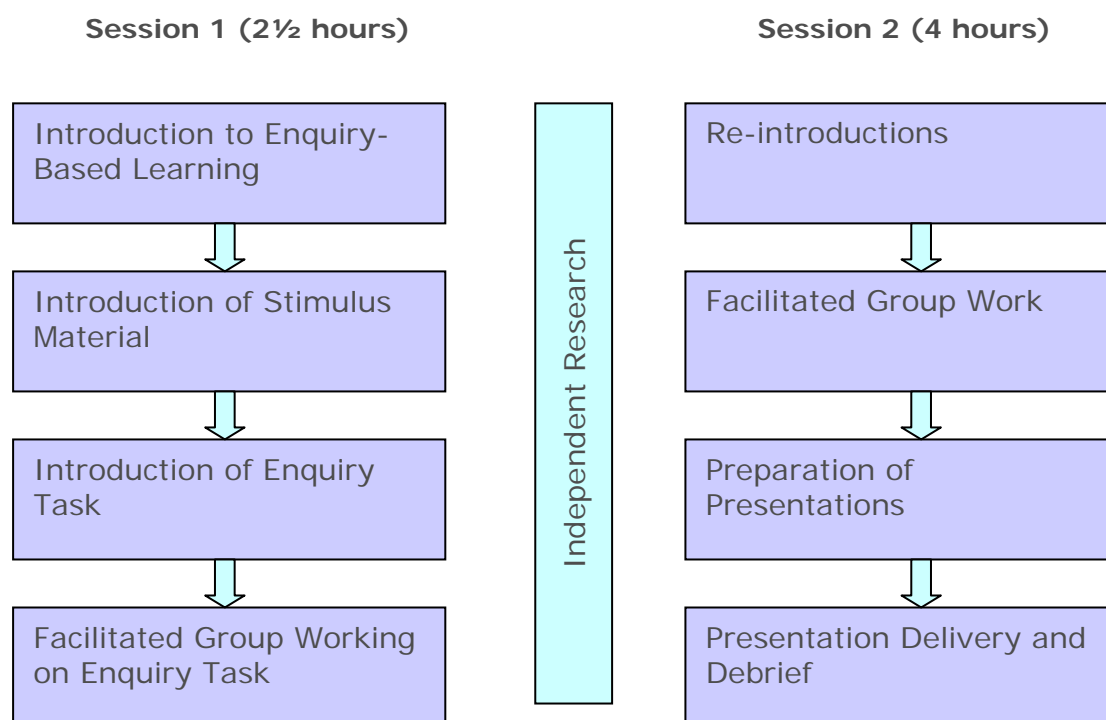


Figure 1 Structure of sessions.

## Stimulus Material

- A Government Memo (created by the Student Facilitators)
- An article from the Independent newspaper dated 16 January 2006
- Series of government reports
- A BBC documentary (shown half way through session 1)

## The Government Memo

*This article has appeared in the media and has caused nationwide concern and debate. As an expert think-tank, the Government has commissioned you to brief the Cabinet in order to direct its future action and policies on the remediation of climate change.*

*The Cabinet expects you to report back with three supported recommendations for future policy, and areas in which further research is required.*

# Delivering the Master Classes

## Session 1

This session was delivered in a teaching room on campus. An outline of the session is provided below. The participants were allocated to groups prior to the start of the session so that each group contained students from a range of curriculum areas. There was a maximum of six participants in each group.

- An introduction to EBL was delivered by the Student Interns who work at the University's CEEBL.
- The Student Facilitators presented the stimulus materials to the participants.
- In their groups, the participants were encouraged to define the problem they had been set:
  - What is it that we are being asked to do?
  - What are the possible directions we could follow?
- Each group held a brainstorming session in order to identify what they already knew about the problem.
- From this they were able to identify gaps in their knowledge and discuss what further information they needed and how this would be gathered.
- At the end of the session they allocated areas of individual research that would be followed up before the next session in two weeks' time. Groups were also asked to consider how they would present their findings.

Although not all participants knew the other members of their groups, they quickly formulated a plan of how to approach the problem. This was mainly done through mind-mapping, which enabled the group to easily identify current knowledge and where there were gaps. During this time the Student Facilitators were available to offer guidance and facilitate groups where needed.

## Session 2

This session was held at the University's CEEBL. The lay-out of the CEEBL is very conducive to allowing the participants to divide themselves into small working groups. They also had access to the internet during this session. An outline of this session is given below:

- At the beginning of the session individuals reported back their research findings to their groups.
- With this additional knowledge the students were able to follow new research paths.
- An hour into the session, groups were asked to begin preparing their assignments and were given an hour and a half in which to complete this preparation.
- Each group presented their three key findings and their recommendations for future research to the Student Facilitators, who were in role as members of the Cabinet.
- After each presentation the Cabinet asked a series of questions about the group's findings, often asking them to elaborate on particular points.

All groups decided to use PowerPoint to report back their findings and some groups also chose to present a poster. Groups responded well to the Cabinet questioning and it was evident that the participants had achieved a certain level of understanding of the issues surrounding climate change.

## Assessment

As the Master Classes were voluntary, they were not formally assessed and will not form part of the overall assessment of the students participating in the Manchester Access Programme. However, whether the Master Classes remain voluntary or not next year, there will be an informal assessment for participants which will focus on their effort within the group and their contribution to the final presentation.

## Evaluation

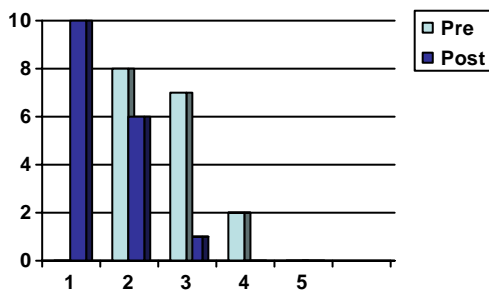
In order to help us with our evaluation, the participants answered pre- and post-Master Class questionnaires covering four main areas:

- Awareness and experience of learning methods;
- Learner confidence;
- Relationship with The University of Manchester;
- Potential impact on current academic work.

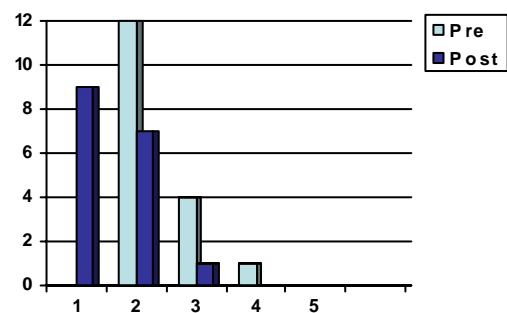
The responses to these questionnaires gave us a picture of the value-added dimension of the Master Classes as well as a solid idea of the learning awareness of students on this programme, allowing us to tailor and adapt the programme and the Master Classes in the future.

The graphs (figure 2) below show the results of some of the questions that were asked. The 'x' axis shows the number of participants and the 'y' axis uses a Likert Scale where 1 = 'Strongly agree' and 5 = 'Strongly Disagree.' The fourth graph in figure 2 shows the results from a question asked in the post-Master Class questionnaire where we wanted to know whether the students thought they would have learnt more about the topic through attending a lecture. We were a little disappointed that students answered this question positively; but, given that the participants are currently in sixth-form, they have little experience of attending lectures and, therefore, it would be difficult for them to make this comparison.

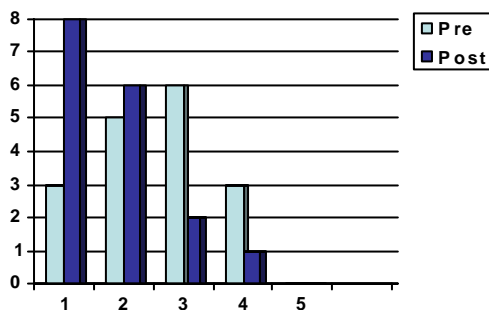
**1. I am confident when tackling unfamiliar problems**



**2. I have good problem-solving skills**



**3. I am confident when working with people I do not know**



**4. I would have learnt more about the topic if I had gone to a lecture on it**

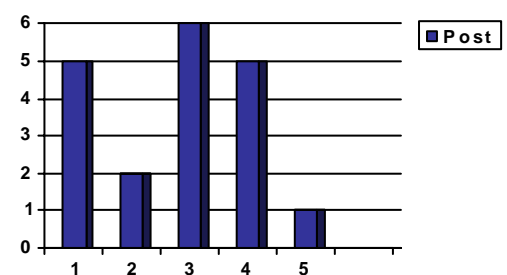


Figure 2 Results of some of the questionnaire questions.

From our evaluation we can see that the Master Classes did help to improve learner confidence and developed the participants' problem solving skills. From our qualitative feedback when comparing the students' awareness of EBL in the pre and post questionnaires, we could see that the Master Classes also increased their understanding of the process of Enquiry-Based Learning and they felt confident if they had to tackle a similar project in the future. In the post-Master Class questionnaire we asked participants what 'Enquiry-Based Learning' now meant to them. Some of the responses are listed below:

Being presented with a problem and tackling it in a group.

Researching a problem and offering different solutions.

Being able to choose relevant information in order to present it to others.

Finding things out for yourself.

Independent learning and sharing information in order to get more information.

It means researching, asking questions, using resources and teaching yourself.

The above list shows that the students have slightly different views of what Enquiry-Based Learning is, but they were all able to readily identify characteristics of EBL after having participated in the Master Classes.

## Future Plans

Whilst this is a pilot for this academic year, it is envisaged that the EBL Master Classes will remain part of the Manchester Access Programme, and we would hope to add different content areas for the students to engage in. The EBL Master Class programme could also be used as a template for other Widening Participation projects working with different age groups and geographical areas. We would also like to investigate the possibility of developing the MAP academic assignment into an EBL-driven assignment.