

Initial Teacher Education STEM Project

Tony Cowell, Colin Jackson and Barry Cartwright (ACES and D&S)



Promoting learner autonomy in Initial Teacher Education

Background

- This project involved 54 second year Education students from the Secondary 3Yr BSc with QTS. The BSc courses are in Design Technology, Science and Maths (STEM subjects)
- The students were placed in mixed cross curricular groups, each comprising 2 mathematics, 2 science and 2 design technology students
- Each group was asked to design a STEM learning experience for 90 visiting school children from three of our partner schools.
- The members of each group were to collaborate and design activities that would engage the learners in areas of science, mathematics and design technology.
- The students were also required to evaluate, through a written assignment, their own learning by reflecting on their experiences of joint planning and delivery.

Rationale

- The students undertake a module of learning called Developing as a Teacher where they critically reflect on the role of a teacher as a leader in learning.
- Previously much of the reflection was based on their experiences of observing, and sometimes getting involved in lessons during a placement in a partner school. The reflection was therefore not based on their own unique experiences of planning for learning, but on that of others.
- This project aimed to put their reflection on teaching and learning in the context of their own experiences of planning for learning.
- They were also given support through specifically designed seminars and learning activities focusing on what it is to be a reflective learner, and critical thinking.

Approach

- The groups were introduced to the STEM activity planning requirements early in semester one.
- They were introduced to active learning activities, on critical reflection.
- All students visited a local secondary school one day a week for six weeks to observe teaching and learning within a school context.
- Some teaching time was given over to providing an opportunity for the groups to share their activities and planning with the other groups. Feedback was given to support reflection and re-appraisal of their planning.
- All groups resourced their activity with monies provided from the project fund, and the activities were delivered as part of Science Week in March 2010. Pupils from three local schools visited Sheffield Hallam University for the day and the Sheffield Hallam students led the learning.
- The students were asked to carry out an evaluation of the day
- Support lectures on learning theories, gender and ethnicity issues and social context were given. Supporting literature was also provided

Assessment

- All students submitted a reflective assignment on the STEM activity (20% weighting—level 6). This was marked and handed back to them for formative feedback in preparation for writing an extended assignment on 'What it means to be an active learner.' (80% weighting—level 6).

Evaluation

- The time given leading up to the STEM activity was too extended and students did not use the time effectively. Most planning took place nearer the event. For future planning the STEM activity needs to happen earlier. This will give more time after the event for formative feedback on the reflective assignment.
- Students reported difficulties in getting cross subject STEM groups together for planning and development meetings.
- More support for the use of Wikkis and Bolggs to help keep members of the groups in touch with each other during the planning stages.
- Provide reading support materials earlier to help students reflect on each other's unique subject characteristics, and promote cross subject understanding.

Comments

We had some cross curricular tensions but sorted them out.

It proved to be very difficult to get the whole of the stem group to meet regularly

The STEM day activities were great. It made us feel like real teachers, but it was difficult to organise.

For a long time it didn't make sense, but eventually we grasped why we were doing it.

I now have a better idea about what I need to do when I plan a lesson. The pupils need to do more and we need to talk less.



Contact: Colin Jackson-Colin.Jackson@shu.ac.uk Tony Cowell-T.Cowell@shu.ac.uk Barry Cartwright-B.Cartwright@shu.ac.uk