Forum on "Interdisciplinary Project Work"

Goh Kim Chuan, School of Arts, NIE

The Ministry of Education’s initiative to encourage independent learning, creative and critical thinking, and integrated project work in the context of interdisciplinary studies would feature more prominently in schools in the near future. Some efforts have been made to introduce integrated project work (IPW) in schools, which is showing encouraging results. At NIE, the pre-service curriculum is yet to include aspects of integrated project work as part of the teacher training experience. It was in this context that a forum on ‘Interdisciplinary Project Work’ was organised by the SCTT at NIE on 13 May 1999.

Three papers were presented as follows:

1. Integrated Curriculum: How much do we know and how can we introduce it at NIE? by Goh Kim Chuan
2. Cooperative Learning in Singapore Schools: Potential, Practice and Pitfalls by Christine tee
3. Assessment of Interdisciplinary Project Work by Rosalind Mau

While there is much literature that supports integrated curriculum and interdisciplinary project work as a valid approach to deep learning and in achieving learning outcomes, there is very little substantive or quantitative research on the success or failure of this approach. In cases where its introduction and implementation has not been successful, it was either not well thought out or else it was introduced as a subject that was not examinable. It goes without saying that before introducing such interdisciplinary courses or integrated project work in any curriculum, one should consider the potential problems and obstacles. These include the need to avoid trivialising the need to find time to develop ‘skills’ essential to integrated learning, teacher preparedness and ability to handle such a learning approach, the school structure that should facilitate such learning, as well as the assessment.
Integrated learning is no longer confined to schools as many universities in the United State and Britain have also adopted this approach in professional degree courses. The need for NIE to explore and introduce interdisciplinary studies and integrated project work cannot be overstated for the simple reason that our trainee teachers need to be exposed to such an approach to learning so that they are prepared to handle such a task when they graduate as teachers. At NIE, there are existing modules which are interdisciplinary by nature such as Environmental Studies and Global Issues, the Teacher and Society, and other essential modules. Beyond such integrated modules, staff could explore integrated teaching of topics across disciplines (and several examples were provided by the first speaker to illustrate this point), and get students to attempt integrated project work on themes that cut across disciplines.

There are practical and psychological impediments to the effective implementation of cooperative learning in Singapore, not least the skepticism of teachers. A study carried out by Christine Lee and her research team in Singapore schools showed that cooperative learning has been effective, and this has been used to convince such teachers of the efficacy of this approach. The research team made a survey of some 50 teachers in Singapore and found that the important ingredients to the success of this approach to learning depends very much on the teachers themselves (their competency in implementing cooperative learning lessons, whether they have any prior training, etc) and the pupil group process (group chemistry, task performance, etc). The research team is running in-service courses on cooperative learning strategies to help teachers to be more competent in implementing these strategies in primary classrooms.

Rosalind Mau stressed the need to identify clear IPW objectives of declarative and procedural knowledge as well as the importance of information technology, collaboration, and self-regulation and monitoring. One of the main concerns about IPW is how one can assess the end product objectively. The need to select and develop criteria for measuring the objectives have to be done right at the start.

The forum also invited Ong Teck Chin and Ian Haslam to provide comments and inputs. They also shared their own personal experience of IPW implemented at the Anglo-Chinese School (Independent) and the School of Physical Education respectively.

Email address: gohkc@nie.edu.sg

Reflections on IPW by Ian R. Haslam, School of Physical Education, NIE

Physical education in many countries in the region is a non-examinable subject but that should not mean it is not assessed. Assessment is important to teachers and students in physical education. For the same reasons it is important in other subjects, not least of which is to provide the student with feedback on his or her progress.

However, because the physical education syllabus is not restricted to formal examinations physical education teachers can take a personally meaningful and student centered approach to their curriculum, which should include both IPW, which is assessed, as well as physical education homework. The resources available to help physical education teachers and others interested in IPW include various forms of electronic support.

Group work on projects which are relevant and meaningful to students has been evident in education for a long time (Dewey, U of Chicago, 1896-1904). Recently, however, there has been increased attention paid to the knowledge economy and the need to educate children for a turbulent economic work life. Ammentorp
(1996) and his colleagues (Roca, 1995) rationalise the need for a shift from thinking about the instruction of knowledge in school to the construction of knowledge in school. There is a place where traditional forms of teacher centred instruction is appropriate but there is also a need for greater levels of student-teacher and student-student centred work. Electronic sources now enable the teacher and the student together to construct meaningful and relevant knowledge through project work. For this to occur the information must be accessible and connected and for it to be meaningful it must of course be relevant to the needs of the students.

Having gathered the data electronically (or otherwise) it is possible to extend the traditional problem solving process through the use of electronic mindtools (Jonasson, 1999). I am particularly interested in systems thinking and its applications in IPW in education. For more details see Cross Curricula Systems Using Stella (ICCSUStella) group which can be reviewed at http://www.teleport.com/~suthrie/cc-status.html.

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**Primary School Pupils’ Perception on Studying Mathematics**

**Berinderjeet Kaur & Koay Phong Lee**
National Institute of Education, Singapore &
Hajah Jamilah Hj. Mohd. Yusof, Hajah Zaitun Hj. Mohd. Taha & Wong Khoon Yoon,
Sultan Hassanal Bolkiah Institute of Education, Brunei Darussalam

This study is a result of IDEA 98 (Inter-institute Dialogue on Educational Advances) between the Sultan Hassanal Bolkiah Institute of Education (SHBIE) and the National Institute of Education (NIE) held in May 1998 at the NIE in Singapore. Altogether 543 twelve-year-olds from Singapore and Brunei participated in the study. A questionnaire comprising 26 items was used to gather data on pupils' perceptions on studying mathematics.

The questionnaire, an adaptation of the Pupil's questionnaire used in the KASSEL Project (Kaur & Yap, 1997), sought data on:

**Enjoyment**
- mathematics at both the lower and upper primary levels: mathematical topics, other school subjects and mathematical games

**Aspiration**
- grade at Primary School Leaving Examination (PSLE and PCE)

**Competency**
- self in Mathematics and English Language
- self in mathematical tables
- family members in mathematics

**Use**
- in other subjects
- everyday tasks

**Help**
- tuition (outside school hours)
- person who helped most over the past year

**Homework**
- frequency and when it is done