Innovation and Creativity in the Curriculum

Helping students to work more creatively

Several studies have shown that students’ ability to learn in an in-depth and creative way decreases during their university years. The four cases summarised in this briefing show that it is possible to reverse this trend. A wealth of good advice is to be found in the reports. The reports differ in their operational definition of creativity and in the disciplinary areas on which the studies are based, but the agreement in their conclusions is noteworthy. The studies show that it is possible to promote students’ creativity and innovation if some key conditions are met, namely:

• The curriculum must integrate different techniques for creativity and innovation (brainstorming, group work, etc.).
• Student feedback must be sought in a variety of ways on a range of issues.
• Students must be encouraged to provide a critique of the curriculum.
• The institutional atmosphere must provide a safe environment for experimentation.
• The institutional culture must stress the engagement of all in the learning process, not only students but also lecturers. That is, lecturers must be seen as learners and as facilitators of learning rather than just as teachers.
• Students are required to develop real solutions to real needs in real time.

Securing Innovation and Creativity in Design Education - Training Organisation for Professionals in Construction (TOPIC)

The aim of this project was to identify the factors that enhance the creativity and competence of graduates in design. The project examined two successful institutions (as measured both by high levels of student placement and by the career success of their graduates) - Ravensbourne College of Design and Communication and the Architectural Association School of Architecture. The researchers identified a small group of high achieving graduates, with 2 to 5 years work experience, and examined the factors that contributed to their success.

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Twenty graduates were interviewed on the following topics:

- Their pathways to and through higher education
- Their work experience/placement
- Their post-higher education experience, and
- Their continuing professional development

The findings were that students involved in the study were attracted by:

- Choosing what to learn
- Cross-disciplinary training
- Team work
- Benchmarking
- Learning as a continuous process

In addition, a short questionnaire on the 'learning organisation' revealed that these students actively endorsed the underlying principles of such organisations, and that they exhibited key personality characteristics, including:

- Openness to experience
- Risk taking
- An independent and contrary point of view
- A passion for their field

The main findings that emerge from this study are:

1. **Select students for personality**
   Since academic intelligence or analytic reasoning behaviour is not closely linked to creativity, selectors look for personality rather than academic attributes. Both colleges emphasise the importance of the interview in the selection process and view this encounter as a 'critical dialogue' rather than a formal, rigorously orchestrated event. In addition, interviewers include tutors but also current students and administrative staff.

2. **Encourage problem solving that is conversational and confrontational**
   In the learning process, creative individuals do not automatically accept a set of premises on which to construct answers to questions. Instead, they reformulate the questions. Therefore, a good learning environment fosters a form of problem solving which is co-operative and confrontational in turn. A good example is the 'jury' system in which a student or a group of students presents and defends their work before a panel of peers and professionals.

3. **Tutors must learn, structures must be informal, education must be critical**
   There are three main implications of such a learning environment. First, tutors and lecturers must be seen to be learning themselves and to be actively engaged with the learning of others. They are not instructors but 'learning facilitators'. Second, the organisational structure should be as informal and as flat as possible. Third, the organisation must question the content and structure of courses as well as allow students to give feedback and to uncover (deconstruct) the meaning of the subject matter in collaborative groups.

4. **Make close links with working professionals**
   Both institutions benefit from such close links with professionals in the field that the line between education and practice is blurred: education and employment are on the same continuum. In this respect, it is important to note that access to people is more important to students than access to technical equipment.
5. **Provide multiple cultures and view-points**

The path to and through education is not automatic. This helps students acquire maturity and view their subject from different angles. The multi-cultural student body amplifies this.

**Fostering Creativity within Engineering - University of London**

The project explored how creativity in engineering may be fostered and assessed in education and practice. It provides a framework for implementing and evaluating creative programmes. The project was based on the analysis of five case studies and a review of the literature. An ‘enthusiast network’, serving as an advisory group for the project, included representatives from industry, academia and educational development. The project constructed a working definition of creativity as ‘shared imagination’ and examined the positive conditions that foster this. These conditions include personality characteristics, individual motivation, skills, knowledge, attitudes, and environmental factors. Motivators of creativity include rewarding innovation and creativity as part of student assessment and lecturer evaluation, as well as developing a safe environment for creativity. Stimulators to creativity include such techniques as:

- **Brainstorm at the beginning of lectures to bring students’ knowledge to the fore and allow lecturers to adjust their teaching**
- **Visualisation; asking students to collect all manners of items which they can see, hear, feel, to allow them to explore different perspectives and ways of looking at a problem**
- **Set open-ended problems and, after a short briefing, asking students to reformulate the problems, discuss ideas, and find a variety of solutions**
- **Develop a voluntary, student-led group, to work on problems set by companies**
- **Schedule all the lectures of the ‘creative’ type in a block to help maintain the necessary way of thinking**
- **Allow students to deconstruct their courses and consider how these can be reorganised**
- **Assess student learning through a variety of feedback methods such as filming students in action to help them reflect on their own learning, holding small group discussions at the end of each course, asking students to write short-reflective essays on their work, and using groups to critique projects**

The project produced a useful and well referenced handbook entitled *CASE – how to foster creativity*. (ISBN 0 85287 178 3 published by the DfEE 1999)

**Enabling Students to be More Creative in Fashion and Systems Design - University of Northumbria at Newcastle**

The aims of this project were to identify the needs for creative and innovative skills of a sample of businesses in fashion and systems design, and to make recommendations for improving the undergraduate curriculum.

The project involved a questionnaire survey and follow-up interviews of businesses, as well as the introduction of creative problem-solving techniques at the University of Northumbria. The lectures were videotaped and both the lecturers and students were interviewed on the value of these techniques. The findings include:

- **While 77 per cent of businesses indicated that creative and innovative skills are important to their competitiveness, commercial reality requires that creativity must be tempered with a practical approach to getting jobs done within time and budget.**
- **The majority of the businesses defined creativity in terms of problem-solving and providing products and services in line with customer needs and wants. A few businesses adopted a more radical view.**
- **Students and lecturers saw clear benefits in using creative teaching and learning techniques. They identified as stimulators of creativity: thinking differently, interpersonal behaviour, emotional climate, and expression of individuality/personal style.**
The final report, which extends to over 100 pages and is well referenced, identifies some 55 recommendations for action to stimulate students’ creativity, at levels ranging from individual courses and units of study to whole institutions, as well as suggestions for assessing students’ creativity. For instance, the report argues for the need to embed creativity in the curriculum. Specifically, the curriculum should include a clear statement of the appropriate attitudes and skills that would foster creativity. This statement should be at the core of the courses, be rooted in all the courses, and introduced in a progressive way. Institutions must strive to reduce or eliminate cultural obstacles to creativity at the institutional level and include the development of students’ creativity as a criterion in quality assessment. The report proposes that the Institute for Learning and Teaching in Higher Education include creativity and innovation in its requirement for teacher accreditation.

A useful poster has been produced which summarises the necessary prerequisites for stimulating student creativity. This costs £3 and may be ordered from their web-site http://hswe.unn.ac.uk/cahe.htm (Because of the poster design, the authors recommend ordering them in pairs)

Creativity in Town Planning: A Report by the Town Planning Network - University of Westminster

The purpose of this study is to assess the extent to which teaching in urban design (Planning Law and Development Control) promotes creativity in students. The project involved a literature review as well as surveys of 50 practitioner organisations, 108 undergraduate and postgraduate students in five schools, and the module leaders of 23 schools.

The final report of this project is very well presented and referenced. Although the project is subject specific, many of the issues raised are generic. Conclusions and recommendations include:

- Creativity is important in urban planning in so far as the new economy requires that towns and cities are able to attract creative businesses. Therefore, urban planning units must, themselves, be creative and innovative.
- Employers tend to define creativity as problem solving and flexibility. Many felt that planning education should place more emphasis on short, client-led projects, role-playing, and work-based learning.
- There is considerable evidence that creativity is (often implicitly) encouraged in the planning curriculum. While a wide range of methods is used in the schools surveyed, a number of institutional barriers were identified which include: time/space in the curriculum, modularisation, the students’ capabilities, inadequate studios, and budgets.
- Innovation and creativity are best conceived as capabilities that can be fostered in individual and group learning through explicit learning outcomes and assessment criteria.
- The development of innovation and creativity require time and freedom for experimentation, within a supportive and positive learning environment.
- Employers and practitioners should encourage staff to become ‘creative practitioners’. Methods to encourage this include staff development, appraisal and the promotion of learning organisations.
- Students should be aware of the skills and capabilities they have acquired, and be prepared to make these explicit when applying for jobs.
Project titles in this theme

- Securing innovation & creativity in design education (Training Organisation for Professionals in Construction – TOPIC)
- Fostering creativity within engineering (University of London)
- Enabling students to be more creative in fashion & systems design (University of Northumbria at Newcastle)
- Making the connection between the curriculum & professional practice in town planning & urban design (University of Westminster)

Complementary theme project titles -

- Key Skills in Geography in Higher Education (Cheltenham & Gloucester College of HE)
- Diagnosis, Guidance & Support, & Recording Achievement of Key Skills in HE (De Montfort University)
- National Students Learning Programme (National Union of Students)
- Skills Development in Science & Engineering (Queen Mary & Westfield College)
- Student Self-Development & Key Skills Acquisition (University of Bradford)
- Key Skills in Higher Education (University of Central Lancashire)
- Training Research Students for Employability (University of Leeds)
- Implementing a Dissemination Strategy for Key Skills in HE Development Work (University of Nottingham)
- Embedding the Development of Key Skills within a Traditional University (University of Nottingham)
- A Strategic Approach to Undergraduate Key Skills Development (University of Salford)