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# Ecstasi Project: Using Technology to Encourage Creativity in the Assessment Process

Maria Kutar<sup>1</sup>, Marie Griffiths<sup>1</sup>, Jamie Wood<sup>2</sup>

<sup>1</sup>Salford Business School, University of Salford. <sup>2</sup>School of History & Heritage, University of Lincoln

Email: m.kutar@salford.ac.uk, m.griffiths@salford.ac.uk, jwood@lincoln.ac.uk

## Abstract

*The notion of creativity has attracted increasing attention in Higher Education in recent years, and is seen to be of importance in a variety of disciplines, not just those which are closely associated with the creative industries. This provides a challenge to educators to understand how the concept can be incorporated into student learning and assessment. This paper introduces the Ecstasi project, which is studying the creative learning journey of students in two different disciplines and institutions, on modules which use an inquiry-based pedagogy. The students are encouraged to creatively utilise information technology to develop artefacts for their assessed work.. A key challenge is the assessment of creativity, which we consider this using the dimensions of person, process and product. The paper discusses creativity and its assessment in HE, presents preliminary results from the on-going longitudinal study, and considers the role of technology in this process.*

**Keywords:** IT, Technology, Creativity, Education, HE, Assessment

## 1 Introduction

Rapid advancements in digital technology and applications have led to a generation of higher education (HE) students who may be described as digital natives (Prensky 2009), comfortable with the permeation of technology across their personal and educational lives. Whilst the true extent of their digital skills may be more mixed than the digital natives narratives suggests (Jones and Shao 2011), the changing technological landscape is leading the increasing digitalisation of HE. This offers opportunities and challenges to educators to develop teaching, learning and assessment approaches which exploit both the benefits of the technologies themselves and students' increasing skills in utilising them. In this paper we report on a study which investigates the use of technology to encourage creativity in student learning.

The study examines the creative learning journey of two contrasting cohorts of students - a first year undergraduate humanities group, and a final year information

technology group. The students are encouraged to use a range of technological tools in their assessed work, and to share their perceptions of creativity. We examine the extent to which these perceptions change as a result of their experience on the modules, and investigate the creativity of the work produced. In this paper we provide an overview of this study, which is now in the final stages of two years of data collection.

## **About the Project**

The Ecstasi project (**E**ncouraging Creativity in Students **T**hrough **A**pplying Student **I**nquiry) is investigating whether Inquiry-based pedagogies can help to foster student creativity, in areas which are not viewed as being inherently creative (specifically, Business Information Technology and History). Inquiry Based Learning (IBL) can be defined as approaches to learning that are based on a process of self-directed inquiry or research where the lecturers are facilitators in the process of knowledge whilst the students discover the knowledge for themselves (Khan and O'Rourke 2005). The project draws data from two modules at two different HE institutions - one in the North West of England and one in the East of England. Running for two years this gives data from four discrete groups of students.

An IBL pedagogy is employed in both of the modules. The modules were redesigned to support students in developing skills such as information literacy, collaboration, and communication whilst focusing on the issues which form the rationale for the module. Moving away from the traditional lecture and seminar approach, students engage in guided inquiries, whereby they assess their existing knowledge, are supported in formulating strategies to build on this, and share their findings collaboratively within their cohort. A key motivation in using this approach was to encourage students to become more engaged with their studies, to encourage deeper learning and to give them greater scope and ownership of the ways in which they can demonstrate their learning within the confines of summative assessment regimes. Students were asked to produce information artefacts which would act as learning tools for someone new to their discipline. The humanities students were guided in the use of technology (using an open educational resource called Xerte), whilst the

information technology students were given free choice regarding the technology they used.

Data has been collected through four areas. Students were informed about the project at the start of the module, and invited to take part. (The project has received ethical approval from both institutions and it was emphasised that participation in the study itself was voluntary and would in no way affect students' grades or studies). Those that agreed to take part completed a questionnaire at the start of the module, which examined their perceptions of creativity at the same time as asking them to make a self-assessment of their own creativity. Students participated in the module in the usual way, with one assessment component - the information artefact - being designed to encourage creativity in student work. Following completion of this assessment component a second questionnaire was administered which again assessed the students' perceptions and self assessment of creativity, and also the extent to which students felt their creativity had changed as a result of their experience on the module. Once the module was completed (and students had received their results), we assessed a sample of the information artefacts for their creativity, using a rubric adapted from Brookhart (2013). Finally in the second year of the project, two student focus groups have discussed creativity and their experiences in developing their information artefacts.

This paper explores the challenges faced by researchers and academics in defining the notion of creativity. This is followed by a review of how creativity is positioned with higher education, which is then extended with a discussion of how creativity is embedded in the assessment process. Creativity and technology is also explored to understand any perspectives that might contribute towards this discussion. Preliminary findings of what we can learn from the use of technology in the HE environment, and the extent to which this encourages creativity, are discussed to conclude the paper.

### **Creativity and Learning**

The concept of creativity is challenging to pin down, there are on-going problems in defining the term, especially as it has been undisputably coupled to the discourse in education. Kleiman (2008) provides a comprehensive review of how academics and

educators have attempted unfurling the word 'creativity'. These have ranged from "Creativity is a bit like pornography; it is hard to define, but we think we know it when we see it" (Mitchell et al, 2003:7), to "Creativity is considered as the ability to provide novel answers to a proposal or problem given, or to discover new relations and give them new mental structures, respectively" (Piedra et al 2010: 1511). Brookhart (2013) defines creativity as: 'Creativity is a simple concept that can be difficult to get your head around. In its most basic sense, creative means "original and of high quality" (Perkins, 1981: 6).' 'Probably the foremost characteristic of creative students is that they put things together in new ways (Brookhart, 2010). Fasko (2000) conducts a historical review of past and current literature on the relation of education to creativity in students. What is pertinent in this paper is that researchers continue to probe similar complex issues regarding creativity and learning with Guilford (1975: 120) suggesting, 'the student be taught about the nature of his own intellectual resources, so that s/he may gain more control over them'. Furthermore in 1991, Davies argues that it is important to help students understand what creativity actually is and this understanding should increase creative consciousness, demystify creativity and increase creative ideas and products (Davies 1991). Interestingly Fasko (2001) also reports on Treffinger's (1980) suggestion that the creative processes of fluency, originality, and flexibility be incorporated in an inquiry- discovery approach not unlike the IBL approach adopted for our study. The issue of creativity is not a recent concern for academia.

## **Creativity in HE**

Current trends in higher educational discourse now include the familiar terms of enterprise, entrepreneurship, the much-valued innovation, and now the complex idiom 'creativity' (Livingstone 2010). Many universities have moved quickly to ensure these terms have been embedded across the curriculum and marketing material, particularly as current generations of young people are now immersed in networked spaces and negotiating omnipresent digital environments (Jones and Shao 2011). There is no doubt that digital technologies are altering work, play and learning spaces, resulting in complex changes in HE. However evidence indicates that students do not demand changes to pedagogy at universities but they will respond positively to changes in teaching and learning strategies that are well thought out and embedded across

courses and degree programmes (HEA 2011). The challenge to educators, when creativity is often perceived as the panacea - the new “must be good” discourse in education (Livingstone 2010) - is how can we foster this and re-educate students to re-imagine their own creativity. Sinclair (2006) makes the pertinent point that HE, in its very structural procedures actively discourages the notion of creativity, whilst Jackson (2006) identifies that there is a ‘problem’ with the notion of creativity in HE and he argues for a *process* to develop and encourage students to be creative and become critical enquirers. There is not necessarily a need to *teach* creativity per se, but, as Jackson (2006) argues, to develop students awareness and understanding of their own creativities as they develop their self-awareness. A major role of universities is guiding students in processes which encourage this; Livingstone (2010) adds that HE institutions are about learning not teaching, a distinction which is particularly appropriate in the context of developing creativity.

### **Creativity and Inquiry-Based Approaches**

Forms of learning that require students to present the outcomes of their work, either in person or virtually, to an audience other than their tutor, have been shown to be effective in terms of motivation. Such audiences can be the public, ‘clients’ or the other students on the module concerned. What is particularly important is that because their peers and others can see the students’ work, more effort and care often goes into producing work for presentation to such audiences; the students take their work more seriously the broader the audience that it is going to be presented to (Wood and Ryan, 2010; Levy et al., 2010). Yet the motivational effects of creative, outward-facing learning experiences derive from far more than a positive side-effect of ‘peer pressure’. Literature on creativity in education has suggested that inquiry-based pedagogies may be a particularly effective in promoting creativity among students in primary, secondary and higher education (Tan and Grigorenko, 2010; Driver, 2001; Fasco, 2001). Freedom and creativity in the choice of problem-task appear to have a positive effect on student learning even in large inquiry-based undergraduate classes (Oliver 2007). Learning experiences that require engagement in creative acts are likely to involve students in a wider range of social, emotional and cognitive actions than transmission forms of learning and thus to develop a broader range of skills, knowledge and dispositions.

## **Technology and Creativity**

The extent to which technology may encourage creativity has been widely discussed. Shneiderman (2000) proposed a research agenda to support evolutionary creativity but cautioned that creativity support tools ‘may restrict imagination to only what is possible with these tools’. Within the computing science community, research has addressed the design of tools and interfaces which may be used to support or encourage creativity (Resnick 2005; Shneiderman et al 2006; Greenberg 2007). Other research has examined the process and social aspects of creativity (Warr and O’Neill 2005; Pepplar and Solomu 2011) and its relationship with technology, which are increasingly relevant given the rise of social technologies. We agree that the use of technological tools may influence student creativity and are not concerned in this paper with tools designed to support creativity per se. Rather we draw on students’ increasing technological literacy, and for the technology students in our study, encourage students to use a range of technologies for their work, something which arguably enhances the creative possibilities of their technology use.

## **Discussion: Preliminary Findings**

Creativity has frequently been presented as a desirable attribute of graduates of tertiary education, irrespective of discipline. It is no longer seen to be the sole preserve of students who have graduated from what might traditionally have been considered as ‘creative disciplines’ (Allen and Coleman, 2011; Sternberg, 2010; Tan and Grigorenko, 2010; Charyton et al., 2009). One of the problems facing those who want to assess creativity is definitional: what is creativity? The challenges facing any educator who wants to try to assess ‘creativity’ can be illustrated by the series of questions below (Charyton et al., 2009).

- **Person** – is the student a creative person and have their learning experiences made them more creative?
- **Process** – is the process through which the person learnt or the product was made creative?
- **Product** – is the essay or other piece of work creative?

The Escasti project, in contributing to this discussion, has gathered responses from 57 Business IT students and over 200 History students, and as part of the preliminary

analysis process has used the strands identified by Charyton (2009) to provide additional insight from our findings:

<b>Questions asked to students (within questionnaires)</b>	<b>History student responses</b>	<b>BIT student responses</b>
<p>Person: Do you think Creativity can be taught?</p>	<p>Student 5: ‘No, you’re either a creative person or not, more ‘born with it’</p> <p>Student 10: ‘Reaching your creativity can be helped and encouraged.</p> <p>Student 12: ‘To a certain extent, the person must have a knack, and confidence previously.’</p>	<p>Student 4: ‘It can be improved taking other people's views’</p> <p>Student 5: ‘no’</p> <p>Student 8: ‘Not sure maybe’</p>
<p>Process: Do you think your creativity has changed as a result of developing the artefact?</p>	<p>Student 6: ‘It has allowed me to think in other formats than just an essay and made me think more about presentation.’</p> <p>Student 12: ‘Not really, I think the program was just complicated and wasn't fair that it was new and part of the assessment. Don't think that it was just me that felt this.’</p> <p>Student 20: ‘Thinking outside the</p>	<p>Student 1: ‘yes, I now think of more creative ways of displaying various types of work’</p> <p>Student 2: ‘Yes maybe, I could do a lot more than I expected’</p> <p>Student 3: ‘Yes it</p>



	box more. Making more of an effort to satisfy the audiences needs in creative/ interesting/ interactive ways.’	helped me exercise my creativity’
Product : Do you think you were creative in developing your artefact?	Yes: 11 out of 24 responses Somewhat: 11 out of 24 No: 2 out of 24	Student 10: ‘Yes’ Student 15: ‘Very creative’ Student 16: ‘To a certain extent yes’ Student 17: ‘A LOT’ Student 19: ‘No’

**Table 1: Escasti Questionnaire Findings (adapted from Charyton et al 2009)**

The Ecstasi project addresses each of these strands in turn (see Table 1: Escasti Questionnaire Finding). The survey of students focuses on **person**, examining students’ perceptions of their own creativity, and is intended to track how this changes as a result of their learning experiences on the module. Questionnaire responses for the **person** strand presents a mixed response to this question, not everyone believed that creativity could be taught but it could be encouraged echoing Jacksons (2006) that there should be a *process* in place to develop and encourage students to be creative and become critical enquirers. This links closely to the following strand of **process**. The use of an inquiry-based pedagogy and an innovative assessment approach provided an opportunity within the **process** for students to be creative. The use of technology-based tools for development, presentation and assessment of learning needed to develop the information artefacts provides students with the scaffolding that is necessary for successful engagement with IBL (Levy et al., 2010). The assessments were designed to harness the flexibility offered by technology that might better facilitate, with appropriate scaffolding, student creativity in both the process and product of their work, unlike more traditional modes of assessment in these subject areas (e.g. essays, reports). The **process** responses were favourable, with the majority of students believing their creativity was altered positively as a result of developing the artefact. Finally this links closely to the third strand of **product**. The

information artefacts produced were the **products**, the creativeness of which were assessed, and finally the majority of students believed that by developing the artefact they were being creative (although we acknowledge the small number who did not agree with this view). A more extensive analysis, together with demonstrations of student work from this ongoing project will be presented at the conference, to encourage an extended discussion on the complex nature of embedding, facilitating, empowering and assessing creativity in Higher Education.

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