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## **Making the link – analysing the effectiveness of a module on the role of ICT in developing pupil creativity**

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## **Making the link – evaluating the impact of a module on student teacher creativity**

**Authors:** Pat Freeman and Mike Toyn

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### **Abstract**

This study of first year undergraduate student teachers seeks to evaluate the impact of an ICT specialist theme module on student perceptions of creativity and how they utilise ICT to support creative learning whilst on placement in schools.

The module allows students to develop their understanding of what creativity is and how it might be developed through the use of digital technologies. Module feedback, interviews with students on placement and tutor reflections were combined to provide data to evaluate the impact of the module on student performance on placement.

This research found that many students valued their learning on the module and used it as the catalyst to implement the use of ICT in their teaching. It also found that the students consider themselves to be creative practitioners; however, not all of their decisions to use ICT in their teaching are underpinned by a strong creative rationale.

It also found that students demonstrated a developing critical understanding of how to develop creativity in the classroom and the role of ICT in achieving this. Finally, it emerged that there were a number of barriers that students encountered which limited the extent to which they could implement ICT in support of developing creativity.

**Keywords:** ICT; creativity; placement; school; teaching; learning.

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## **Introduction**

Digital technologies are becoming increasingly widespread in primary schools in England and they offer varied opportunities for supporting, developing and enhancing learning. At the same time creativity in teaching is developing as a focus within education. The National Curriculum for key stages one and two makes a requirement that pupils should have opportunities to develop their ICT capability through its use across the curriculum. This study seeks to investigate the way that a cohort of student teachers at one institution were able to develop their understanding of what it means to develop creativity and the role that ICT can play in supporting this. It makes use of module evaluations, tutor reflections and visits to students on placements to evaluate the impact that a first year module taken at an early stage in a BA programme where students gain Qualified Teacher Status (QTS) has on students' understanding of creativity and the role that ICT can play in developing it.

## **Literature Review**

The profile of creativity in primary education is increasing as both Facer and Williamson (2004: 3) and Craft (2005: 3) discuss. One example of this is the variety of initiatives which exist to promote creativity. For example, the Qualifications and Curriculum Authority (2008) provided a justification for the importance of creativity on the basis of improved self esteem and motivation, preparation for life and an enrichment of school life. One difficulty of discussing creativity is that it is not easy to define as Fisher suggests 'we know creativity when we see it but the mental processes involved are difficult to describe' (2004: 7). Indeed other authors also comment on the difficulty of providing a concise and agreed definition, such as Facer and Williamson, (2004: 4), QCA, (2008) and Reid, Burn and Parker, (2002: 7). However, the characteristics below offered by the QCA in 2008 (pg 7) seem to be widely accepted.

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- Being created for a purpose; such as imaginative activity directed at purpose (ibid; 7). Daydreaming or fantasising would not be considered creative characteristics as they are not linked to a purpose.
- An element of originality; this may mean that an idea or combination of ideas is new for that particular learner, it does not imply original thought that has never been thought before.
- Having some value; this is the aspect which connects the previous two. Creative activity and behaviours are valuable if they work towards the purpose.

Alongside an understanding of what characterises creativity, an understanding of the role that ICT can play in supporting creative teaching and learning is helpful. Loveless and Wegerif, writing about the way in which ICT can support creative activities, (2004: 92) note that ICT should be thought of as a tool for creativity as well as a source of information, otherwise an important aspect of its role will be underutilised. There are a number of ways in which ICT can contribute to the development of creativity which have been categorised as the characteristics of ICT. These are aspects of ICT that provide benefits and advantages to the user and can be employed in specific ways to support teaching and learning. They are speed, automatic functions, capacity, range, provisionality, interactivity, non-linearity, multimodality, communicability and replication DFES (Department for Education and Skills), 2004). Loveless and Wegerif discuss these features and suggest that provisionality allows users to try things out in multiple ways with minimum effort, supporting the idea that they foster creative approaches by allowing users to try multiple versions. They also comment that multimodality allows learners to draw on the interaction between different modes of representation to share ideas (2004: 94) with the implication that users can discuss and share creative ideas. Facer and Williamson, whose work discusses the way that technology can be designed to support creativity, also draw on these features when they suggest that the range of ways in which ideas can be

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represented through multimodality allows children to express things which would not be possible using pen and paper alone (2004: 5). Facer and Williamson also argue that non-linearity works in conjunction with provisionality as learners can revisit and revise their ideas without having to work in parallel rather than sequential ways (2004: 5).

Both Reid, Burn and Parker (2002: 8) and Sutherland *et al* (2004: 413) have identified the temptation to see anything done with any relatively new form of ICT as creative as a function of its 'newness'. The provision of a framework such as the characteristics of ICT can help to ensure that ICT is being used in a productive way and is not simply being used for its newness or novelty factor. It is much more likely that pupils will have an opportunity to develop their creativity when they are working with familiar tools than when they are working with new ones as they need time to embed their understanding of the tool and how it can be utilised.

Whilst ICT provides a range of tools that can support creativity, it will not achieve it on its own. The role the teacher plays in planning learning experiences to develop creativity and the way in which ICT is employed are crucial (Loveless and Wegerif (2004: 93). The role of the teacher is important for two reasons; firstly, they need to ensure that ICT is being used in a productive way (by ensuring that the characteristics of ICT are being employed effectively and secondly, by creating learning experiences for their pupils. Karpinnen (2005: 233) suggests that effective learning experiences are meaningful and suggests six elements which constitute meaningful learning. These are:

- The learning should be active
- It should be constructive and individual
- It should be collaborative and conversational
- Learning should be contextual
- It should be guided

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- Learning should be emotionally involving and motivating.

Underpinning these elements is the belief in a constructivist approach; Karppinen summarises this by saying the 'process of constructing knowledge is a process of meaning-making, not of knowledge-reception' (Karppinen 2005: 238). Digital media can provide an environment where constructivist activities can take place when appropriate activities are planned by the teacher. A useful summary of the role of the teacher in relation to creativity is provided by Cremin (2009) who writes:

'In seeking to become a creative teacher you will want to widen your understanding of your own creativity, and the imaginative approaches and repertoire of engaging activities that you can employ in order to develop the children's capacity for original ideas in action. You will also want to exert your professional autonomy, learning to be flexible and responsive to different learners and diverse learning contexts.'

Thus an effective module on creativity and digital media should combine an understanding of creativity as well as providing students with experiences of suitable classroom activities and an understanding of what to use and when.

In order for teachers to be able to employ creative approaches to their teaching they need a degree of professional autonomy. The acquisition of which is a developmental process. Twiselton (2006) & (2007) argues that student teachers can be categorised into distinct groupings based on where they are in their understanding of what it is to be a teacher. Many at early stages of their course would be categorised as 'Task managers' who are orientated to ensuring that activities in class run smoothly. As skills develop they would move to become 'Curriculum deliverers' who have developed a range of teaching and learning skills and can effectively deliver curricula provided for them; finally leading to 'Concept and Skill builders' whose focus is on both the task and the skills needed to deliver it. To be able to apply professional autonomy, student teachers will need to have what Grainger and Barnes (2006: 209-225) call a 'creative

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pedagogical stance' this embodies several features which, they argue, constitute the behaviours of creative teachers and are:

- A learner centred ethos
- A questioning stance
- Creating space, time and freedom to make connections
- Employing multimodal teaching approaches
- Prompting full engagement, ownership and ongoing reflection
- Modelling risk taking and enabling 'students' to take risks

Grainger and Barnes (2006: 209-225)

As will be seen in the next section, the design of the module in question draws upon these theories and attempts to support students in developing their understanding of how to support creative thinking and the role that ICT can play in this.

## **Context**

'Developing creativity with digital media' is a specialist theme module taken by students who are in year one of a three year BA with QTS programme. The module has two main aims. Firstly, it introduces a range of techniques involving digital media to students that can be adapted to a range of classroom situations. Secondly, it introduces students to some theories about creativity and the use of ICT in primary schools in order that they can be used to evaluate the digital media activities undertaken. Students get the opportunity to work in a variety of small groups both inside the classroom and outside using a range of different technologies.

During year one of their course, students undertake a range of school experiences. It is the impact of the developing creativity with digital media on a five week school placement which forms the basis of this study. Indeed, one of the aims of the five week placement is that students 'make links between

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university courses and School Based Work; between theoretical understandings and practice'

'Developing creativity with digital media' begins with an introductory session which asks students to consider questions such as 'what is creativity?', 'what characteristics does a creative learner show?', 'is it more important to teach creatively or to teach creativity?' and 'how can ICT support creative learning activities'. This introductory session underpins the rest of the sessions as it provides a theoretical standpoint from which subsequent activities can be evaluated.

Throughout the module the tutor team explicitly model and verbalise how they had planned to teach creatively and develop learner creativity amongst the students. This approach was key to understanding and evaluating how, when and why the students ultimately explored similar or differing approaches when they took skills into the primary classroom.

Subsequent sessions introduce practical activities using digital technologies and students are invited to evaluate them in relation to the ideas introduced in the first session in order that they can apply their understanding of creative learning to practical situations. After each practical activity, students are asked to consider a range of questions about how the activity might be adapted to cater for different year groups, levels of ICT resource, school settings etc. in order that they will develop their ability to make professionally autonomous decisions about the use of ICT in schools.

It is natural to expect students to apply module based learning to classroom situations in a variety of ways as each student is unique as is each classroom. One of the ways of meeting the aims of this study is to consider the frequency

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with which students adopt and apply learning from the module to classrooms and also to consider the barriers that prevented further application of module learning.

## **Methodology**

As this study is concerned with the impact that this module has had on student practice with the long term aim of implementing changes to future iterations of the module it was appropriate to adopt an action research methodology. Cohen *et al.* (2007) point clearly to this praxis noting that ‘action research is necessarily dialogical- interpersonal; involving small cycles of planning, acting, observing and reflecting’. Clearly there has only been once cycle through this process and subsequent iterations of the module will be informed by the outcomes of this study.

The impact on student practice can be considered to be twofold: firstly, there is the way the students engage with the module and, secondly, there is the way the module influences and directs student practice when on placement. For these reasons a methodology was adopted that would embody these sources of information by making use of naturally occurring data such as module evaluations in conjunction with data collected specifically from schools.

## **Methods**

Planned data collection for the purpose of this research was threefold:

- a. Questionnaire focussed on module evaluation (reflection on workshop sessions and supporting e-learning materials); highlighting that this naturally occurring data was utilised and analysed for future developments of the module.
- b. Semi Structured interviews with 16 of the 20 students whilst out on school placement. This had a second outcome in that the students were also encouraged to critically reflect and analyse their practise based on

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frameworks outlined earlier in this report. Thus helping them 'Make the link' between university and school.

- c. Reflection of teaching and learning activity design by module tutors.
- d. The three approaches allowed for triangulation to take place between the different data sources.

The module evaluations gave a clear set of quantitative data based on questions using Likert responses and qualitative data based on open responses to questions about the module. The reflections by tutors were based on a set of headings provided by the faculty and also included other observations relevant to the study. The interviews conducted were of a semi structured nature to allow the topic area to be discussed in freer responses; as described by Kember:-

'interviews have a small schedule of questions to point the interviewee towards an area of interest, but then allow the opportunity to raise any issues or points within the general topic area' Kember (2000: 47).

It was of high importance that these interviews occurred whilst students were out on school placement. This allowed us to consider the link between university and school. The students had examples of practice to hand in a placement situation. Cohen. *et al.* (2007) highlight the strengths of this type of interview explaining 'respondents answer the same questions, thus increasing comparability of responses; data are complete for each person and bias of the interviewer can be reduced through open ended responses. However, standardised wording may constrain the naturalness and relevance of some questions and answers'.

BERA ethical guidelines (2004) were employed for safety and rigour to be given to the process. Informed consent was employed. All students were informed of the basis of the research project and participants agreed to take part. An email explained the context and that all information given would be used anonymously.

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It was also explained where the data would be utilised (this was reiterated at the start of the interview). All had the right to withdraw from the interview at any point. Their confidentiality and anonymity were achieved at two stages. Firstly, the module evaluation was purely anonymous. Secondly, the responses to interviews carried out in school were anonymised on amalgamation of data by renaming students by number.

Data, once collected, was amalgamated for comparison and analysis. The analysis of the quantitative data recognised that the data set would not lend itself to statistical analysis (only 16 responses) so the pattern of response type and modal averages were utilised. The analysis of the qualitative data was achieved through grouping and counting similar responses. These groups were not predetermined but based on data obtained. Agreement throughout was determined by pattern in the type of response. Noting the underlying ethos of action research; we based data analysis on occurrence rather than hypothesis testing.

## **Findings**

Several trends were identified as important in relation to the aims of this research. These arose from the three main sources of data and reveal some interesting outcomes.

### *The impact of the module*

One of the first significant findings from the semi structured interviews was that students self assessed their creativity on practice as high (13 out of 16 rated their creativity in the highest two categories). The interviews also revealed that 13 out of 16 students had planned activities in school which had explicitly been designed to develop the creativity of the pupils they were working with. When combined with feedback from the module evaluations which showed that students had used ICT in schools in response to their experiences on the module

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this suggests that the module has had some success in its aim of helping students to become effective in developing creativity in schools through the use of digital media. The following student comment summarises this 'I have been able to transfer knowledge from the module onto placement and managed to plan a successful lesson around this'.

#### *A critical understanding of creativity and ICT*

The tutors had identified a high degree of engagement in sessions with students producing high quality work; being willing to work during break periods and forming effective groups which shared the workload evenly as examples of their engagement. There was also a significant level of reflection evident within the module as students used references to literature and personal reflections on their learning in their assignments to discuss the value of activities in schools.

Examples of this are summarised by the following comments: '*getting to use the software ourselves and applying it to a classroom situation*' and '*each week I set targets to build on my teaching standards and related it throughout my work so that I can become a better teacher and setting tasks surrounding these targets*'.

This was supported by findings from the module evaluations which indicated that students felt the module had helped them become better teachers (13 out of 16 responses). Tutors had noted that students had been willing to question the use of ICT during module sessions and had been willing to suggest occasions when ICT might not be the most appropriate resource to use. However, all these findings provide some contrast to the observation by tutors that some of the ICT activities undertaken by students in school were uncritical and limited in their creativity.

#### *Barriers for students*

Finally, tutors had identified a strong multimodal element in the module sessions and had embodied learner centric approaches such as allowing students to agree on the content of their digital media creations. These reflections were supported

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by feedback from the module evaluations which identified factors such as the interactive approach and the availability of tutor support having been important to them. However, the structured interviews indicated that students had not had the opportunity to implement these approaches in their own teaching when on placement. These barriers to the successful implementation of these aspects of the module can be best explained through student comments, such as 'lack of freedom in planning', in the semi structured interviews which indicated that, as they were in the first year of the course, class teachers in schools did not give them enough freedom to plan their own learning activities to allow them to embody these aspects of their learning. Other barriers included a lack of suitable equipment and a lack of time in which to begin a potentially complex and in-depth project for example *'Resourcing in school didn't allow us to' or 'would like to use digital video to produce a guide to K\*\*\*\*\* but class is too large to take out with the available equipment'*.

## **Discussion**

The first of the findings identified that students rated their own creativity as high. In order to be able to make this self assessment, students need to have developed an understanding of what constitutes creativity and have experienced activities which incorporate the characteristics outlined by QCA (2008) which are discussed in the literature review. This is achieved in the module by tutors explicitly modelling creative teaching approaches as suggested by Grainger and Barnes, particularly through allowing students 'time and freedom to make connections' (2006: 209-225) between the practical activities and the theories which are introduced and by 'prompting full engagement, ownership and ongoing reflection' (ibid). As the module is based on the use of digital media it includes 'multimodal teaching approaches' (ibid) as an integral element.

The first finding also identified that students had planned to carry out activities in school which would develop the creativity of their pupils. This is not a

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requirement of the placement and is something that the students had decided to do based on their experience of the module. Thus the module can be seen to have had an impact on students' practice in school. This might be explained by Cremin's (2009) assertion that creative teachers draw upon a repertoire of activities and that taking part in a number of creative activities on the module has provided students with some experiences to apply when on placement in school. This is exemplified by a comment from a student '*I found the best feature of the module to be: The opportunity for feedback and discussion about the interactive tasks to do in school*'. A further consideration would be that the creative activities were intended to embody Karpinnen's (2005) elements of meaningful learning in order that they would have relevance to the students. It might also be considered that the modelling by the module tutors of risk taking (Grainger and Barnes, 2006: 209-225) had encouraged students to adopt a similar approach in their teaching when on placement. An example of this was provided by a student who had done some simple stop-frame animation. Although little attention had been given to planning focussed learning activities, the student had run an after-school club and presented skill sets to children who then used imagination and play to record simple film clips with soundtracks.

The second finding was based around the engagement in, or ownership of, the student learning process. The tutor team would model how key ICT skills might be taught and then provide an opportunity for students to discuss how this might be applied to both process and product when working with children in school.

Our findings show that there is evidence of students attempting activity adaption during their five week placement. One school visited saw children utilising a range of activities adapted from sessions within a theme of Healthy Eating. It was evident that most student teachers felt able to take risks but were often focussed on the product, or final outcome rather than the underpinning process of planning. It was interesting when we explored the idea of creativity with the

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students and related it to Twiselton's (2006/07) categories of what it is to be a teacher. One student whom we could class a 'Curriculum deliverer' in response to a question about planning for creativity with their class said '*I taught the children how to do things then allowed them to make creative choices about what they wanted to do*'. It was often the case that student teachers felt that they had planned for creativity through the bringing together of a product and where this fitted the curriculum by giving the children choice. Another student stated '*the module has given me lots of ideas to use in the classroom that will engage children*'. When questioned further, the student talked about the success of children achieving a product at the end of a lesson ('Task manager'). All this helps to add weight to the view point that the students had gained an understanding of creativity as set out by the QCA (2008) but often failed to consider the skill sets and how to plan for these as highlighted in Grainger and Barnes' (2006) work. For example, in their assessment of the module students could articulate their understanding of creativity but responses from interviews frequently focussed on practical considerations of how to incorporate ICT tools into teaching.

We see that the students felt it necessary to have confidence in an activity or range of activities and they often adapted these to fit a themed area whilst on placement in schools. This appeared to develop the students' perception that they were developing the identity of being a teacher. They were in control and at the end the children had a product they could take away. So, it can be argued that the students were focussed on creating a product and developing pupil skills but often forgot to reflect on the educational pedagogy of the tasks set.

The final finding is based around the barriers that exist which prevent students from fully applying their learning from the module when in school on placement, this is despite the fact that students had found the module to have been valuable and tutors had allowed for a learner centric approach which embodied many

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multimodal learning experiences. Many of the activities which were carried out on the module made use of specific pieces of ICT hardware and software and were well resourced in terms of the numbers of pieces of equipment available. Students stated that the lack of adequate equipment in schools was a barrier which prevented them from carrying out creative activities involving digital media. It is likely that this is both a real and perceived barrier. Undoubtedly, there will be schools which do not hold adequate resources but it is possible that students perceived that schools with alternative resources or fewer resources would have been inadequate for them to replicate an activity undertaken on the module.

Perhaps the most significant barrier is that of not being given enough 'professional autonomy' (Cremin, 2009) to plan their own creative, digital media activities whilst on placement. This would also account for the comments that there was not enough time for them to embark on an in-depth project. As discussed earlier, Twiselton suggests that students develop in this respect and at this early stage in their career the students involved in this study are not yet in a position where they will be trusted by class teachers in school to make sophisticated decisions about their teaching nor are the students themselves ready to apply their learning from the module to the demands of a placement. However, there is evidence that students are resilient and willing to continue to attempt to apply their learning on placement as summarised by this comment: *'But next year I am going to use voice clips to narrate a story whilst on placement!'*

## **Conclusions and Recommendations**

Drawing on the main findings in relation to the paper's objective to look for ways to 'Make the Link' between university based work and placement practice the following conclusions and recommendations have been identified.

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Professional autonomy as highlighted by both Grainger & Barnes (2006) and Cremin (2009) draw on the key competencies or behaviours of a creative teacher. The explicit and continued modelling and verbalising of these behaviours throughout sessions was shown to have had impact on developing students own sense of 'becoming a teacher'. Further analysis shows the need for modelling of risk taking in taught sessions. There was clear evidence that guiding and enabling the students take to an active role in their learning process throughout sessions at university had led to greater likelihood that they would try things out in the classroom.

If tutors wish students to engage with concepts which are tricky to define, such as creativity, then it is important that they have plentiful opportunities to experience it within modules if they are to be able to successfully apply it to their practice in schools.

In order to minimise barriers it is important to be aware of where students are in their development as professionals. If they are at an early stage in this progression then it is unlikely that schools will grant them the freedom to plan activities which require a lot of creative freedom, nor are the students likely to have enough experience for these activities to be successful if they are granted the freedom to plan them by schools. Some of the activities in the module have been modified to make them smaller in scale and more appropriate for students to attempt to replicate when on placement.

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