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DRAFT

Title:

“It was the funnest week in the whole history of funnest weeks” Measuring challenge, fun and sterility on a ‘Phunometre’ scale: A case study evaluating creative teaching and learning in a sample of primary schools.

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Abstract Is ‘creative teaching and learning’ simply good practice? How do Higher Education Institutions and schools work effectively together to provide suitable contexts for student teachers to engage in creative and effective teaching and learning with primary children? Our case study evaluates the successes and limitations of a module “The Creative and Effective Curriculum” for PGCE primary student teachers. Perspectives of teachers, student teachers and children were drawn on to identify factors perceived as necessary for effective and creative teaching and learning. These included learning which is ‘fun’, achievement through intrinsic motivation, willingness to take risks and learn from mistakes, children’s ownership of learning and the teacher’s role as facilitator. Our findings enabled us to formulate the ‘Phunometre scale’ which can be used to assess both the organization of learning areas and also planned activities in terms of their capacity for both challenge and fun.

Introduction

Learning which is enjoyable (fun) can be more effective than sterile (boring) learning is one of the main conclusions drawn from our research project which evaluated the efficacy of creative teaching and learning in several primary schools in the North West of England. This would seem obvious given that both academic and policy documents have recognized that creative approaches to teaching and learning (whatever that might mean) often result in deeper and more meaningful learning, (see for example the Excellence and Enjoyment initiative (Dfee 2003) and scholars such as Craft 2003, Fisher 2006a and 2006b, Cullingford 2007, Hayes 2009). An initial appraisal of the benefits of such an approach are available in the case studies web resource found on the TEAN (teacher education advancement network) website (Elton-Chalcraft, Hansen, McCreery and Morris 2010). In this paper we evidence the efficacy of creative teaching and learning from the perspectives of a sample of children, student teachers, tutors and school based staff; and we consider the conditions required to facilitate learning which is both challenging and fun.

Each year, at the HEI in this research, over 300 Postgraduate students on three campuses undertake a module at Masters level “the Creative and Effective
curriculum” assessed by an individual 3000 word rationale and a group 2000 word annotated plan. Emphasising reflection on the link between theory and practice this module is delivered through a series of keynote lectures, interactive seminars and directed activities (at each of the three campuses) culminating in week long experiential placement in 12 local primary schools. Each of the schools is ‘saturated’ with a large tutor group (between 20 and 30 students) working in teams (between 2 and 5 in each class). A post placement final session offers students an opportunity to reflect as a group on their practice and produce an annotated plan from the week. Schools were hand picked for their commitment to the venture and senior staff attended sessions at the university prior to commencement of the module. Tutors drew on support from Creative Partnerships (2005) in the initial stages of module design.

The module requires student teachers to interrogate a series of curriculum design models (eg Fogarty 1991, Alexander 2010) and work with tutors and school based staff and children to implement a week long curriculum for their group of children. Students considered the strengths and limitations of both discrete subject and integrated approaches for curriculum design (Hayes 2010, Copping 2011), they trialed thinking skills, problem solving activities, possibility thinking and considered definitions of creativity (Fisher 2006, Craft 2000 Cremin et al 2011). Children were given opportunities to take more ownership of the learning outcomes through carefully constructed approaches developing their creative thinking (Heilmann 2005). Students were offered a ‘safe’ environment to ‘take risks’ with their teaching and the children’s learning (the 1 week placement is not assessed but the individual written reflective evaluation and group annotated plan are assessed.)

The focus of the original research was an evaluation of the efficacy of the creative teaching and learning approach and model of partnership adopted. After further analysis we discovered that the data from the HEI discussed here pointed to links between challenge, enjoyment and ‘fun’. So in this paper we explore what is meant by ‘fun’, creative teaching, learning for creativity, and we consider the implications for curriculum design with reference to our creation of a ‘phunometre’ scale (figure 1).

**Literature**

The focus on the inclusion of creativity in education has undoubtedly increased over the last twenty years. Arguably creativity is ‘no longer seen as an optional extra, it is seen as [a tool to aid] generative problem-identification and problem-solving, across life’ (Craft, 2005 p. 7, and Robinson, 2001, 2010). There is an abundance of research, debate and discussion which has taken place throughout the 20th Century: these inform and develop a rekindling of creativity in educational contexts.

The justification for the re emergence of this as an aspect of the curriculum can be linked to the development of the country both socially and economically. The idea of creativity as a vehicle for renewing and sustaining communities raises the goals of teaching (Startko 210) The notion of creative people is a powerful ideal according to Sarsani (2005:vii): these creative individuals will be a valuable resource in the increasingly complex and demanding environment of technological change which has taken over in the world. As a result it could be suggested that the traditional response to education that is essentially quantitative and knowledge based might be regarded as no longer appropriate. It is not enough to equip each child early in life
with a repository of knowledge, each individual must be equipped to identify and seize learning opportunities throughout life both to broaden knowledge, skills and attitudes to succeed in a challenging, complex and interdependent world. (Unesco 1996:85)

In employment the demand for skills and knowledge in a wider range of problem solving capacities mean that there is a greater need for creative teaching for our children as employees of the futures Woods and Jeffrey (1996) suggest that a principle goal of education it to create a potential workforce that is capable of taking the initiative and doing new things, moving away from a basic repetition of what previous generations have done. The global market has become unpredictable and rapidly changing and for many, employment in any one organisation is not for life. Additionally manufacturing is no longer the driving force of the economy being replaced with more innovative and imaginative based employment. (NACCCE 1999, Robinson 2001, Craft 2005). Children need to be equipped with the skills and knowledge to find solutions to the problems that they ‘inherit from us and grow beyond the restrictions we have placed upon our own world’ (Craft date p13 in Wilson). Horng et al (2005) posit that creative thinking is crucial for the knowledge economy and if this is accepted in principle it must be argued that education must provide for and support this in practice. Once the principle of the value of creativity and its potential to contribute to personal effectiveness, culture and economy is accepted tensions will undoubtedly arise in that this principle must then in part be supported by policy. So it is no surprise that policy has now developed to include this principle, according to NACCCE, 1999; Ofsted, 2003; DFES, 2003 teachers in the UK are clearly expected to foster creativity in young children.

A House of Commons report (2006-7) suggested that since the establishment of the National Curriculum in 1988 and following this introduction of the national literacy and numeracy strategies in 1999, concerns had been expressed that creativity and innovative approach to teaching may have unintentionally been constrained; however why this situation was allowed to develop is controversial. It could be suggested that the relentless drive to raise standards in both numeracy and literacy resulted in teaching style becoming inhibited and teachers who had little ownership of the curriculum. The rapid rate of change in both the content and perceived restrictions in the delivery of this coupled with the introduction of the national testing left teachers feeling de skilled, overwhelmed and at the mercy of an excessive workload (Wyse 2008). Little wonder that creative approaches were often seen to be shelved in this new era of curriculum and pedagogy.

It must be stated and acknowledged that this notion of creativity in the curriculum is by no means a new phenomena. This was initially attributed to Plowden (CACE, 1967) the report which received a mixed reception due to its emphasis on discovery based learning and child centred pedagogy. The central component of play as part of this approach led to scepticism that children were playing not learning. The perceived lack of structure and context in some cases did little to positively advertise this approach and the moving from a subject based curriculum to one in which children were helped to move across the boundaries of subjects which mirrored a constructivist approach to learning was challenging (Alexander 2009). In 1999 NACCE ‘All our Futures Report’ aimed to re address the myths and negative perceptions of this philosophy and approach to teaching and learning. This report which was initiated by leading educationalists and others who shared a concern about the lack of creativity in education was published in May 1999 and offered an alternative definition of creativity: ‘Imaginative activity fashioned so as to produce outcomes that are both original and of value’ (NACCE 1999House of Commons 2007) Current views of creativity in education are primarily based on the findings of the NACCCE (1999) led by Sir Ken Robinson. The Rose Report (2009) and the
Cambridge review (Alexander 2010) both referred to the issues of creativity in primary education and addressed these in different ways. However despite these developments in policy and a renewed drive towards creativity, there are still tensions about what creativity, creative teaching and teaching for creativity actually is. Craft et al (2001) and Downing (1997) comment that creative teaching, and teaching for creativity is an art; it cannot be taught didactically to teachers. Teachers need to develop a range of skills and strategies that promote creative thinking in their pupils and in developing this repertoire of skills they can adapt and apply these to different situations. Creative teachers are flexible in the way they can select the appropriate skills and then apply these to the complex situations they meet in the classrooms (Woods 1999). The teacher must provide an enabling environment in which their pupils feel confident in trying out, engaging with ideas and hypothesising and feeling confident in making mistakes and learning from these. However Westby and Dawson (1995) argue that the culture of many classrooms is essentially an environment where knowledge is imparted as opposed to a creative approach to teaching and learning. They describe schools as ‘inhospitable environments’ for creative students (Westby and Dawson 1995:8) and they suggest that the kinds of pupils teachers crave are conformist and uncreative because such they keep quiet and are not obnoxious! Children must be enabled to experience the process of creativity: it is this process through which discoveries are made, (Tan 2007). Children need to experience an approach to learning where possibilities are made into realities (Cremin et al 2011).

Both the beginning and the experienced teacher might well find this yet another pedagogical challenge to aspire to given that this approach to teaching and learning is emerging out of a culture of restricted policy and practice of the late 1980s and early 90s. Alternatively a starting point to being able to deliver this lies not in the pedagogy but in understating what creativity is.

This understanding is a complex area however. Treffinger, Young, Selby and Shepardson (2002) suggest over one hundred possible definitions for the meaning of creativity which clearly demonstrate the difficulties faced when attempting to successfully identify a cohesive view of creativity that can be understood and used by all. It may be more practical to identify essential elements required in order for creativity to be able to occur. In the field of psychology these elements are commonly agreed as being; originality (novelty) and appropriateness, (Bruner, 1962; Cropley, 1999; Craft 2005). The challenge is that the ability to assess what is ‘original’ and ‘appropriate’ is subjective and so the concept of what creativity actually is and what it should consist of remains difficult to grasp.

It is this idea of being subjective which is critical here. Hope (2010) suggests that the process of creativity is cognitively constructed by each individual and this construct becomes internalised. This in itself makes defining it problematic as it is always distinctively perceived by the individual. Learning theory offers further support to the notion that creativity is individually constructed. The work of Piaget, Vygotsky and Bruner ostensibly, in defining a constructivist approach to learning, established that the acquisition of knowledge is no longer about filling empty vessels, (ie childrens’ brains) with facts. Learners are viewed as constructors or partners in their own learning as opposed to a passive vessel; and learning is an interactive process whereby the learner interacts and responds to the world around them, constructing knowledge and adapting accordingly, (Piaget, 1971; Earl and Katz, 2000; Ya-Hui, 2009). In engaging in this active construction and developing their schemas learners’ are themselves creators of their world and experiences, (Piaget, 1971).
This personal ownership of constructed learning is an important consideration in establishing creative teaching as a critical component of education. If this holds true, Edwards and Usher (2000) and Jarvis et al (2003) argue it is essential that the learner be an active agent in their learning, as it is their autonomy that decides how and what learning to construct.

Claxton (1997) refines this by referring to this process of constructing knowledge as ‘d-mode’. This is ‘the sort of intelligence which involve[s] figuring matters out, constructing arguments and solving problems (Claxton, 1997, p. 2). This is described as a process which is slower, more contemplative and often fragmented in patterns of thought and introduces the notion of divergent and convergent thinking into creativity.

Divergent thinking has widely been recognised as an important element of creativity (Bruner, 1962; Hudson, 1967; Cropley 2006), however it is acknowledged that the creative process does not derive from divergent thinking alone. In school based learning the teacher must ensure that children are maximising their creative potential by thinking divergently and convergently. Divergent thinking creates novelty and originality (Hudson, 1967; Claxton, 1997; Cropley, 1999) a key component of the criteria for creative processes, however as Cropley (2006) notes ‘novelty’ will be limited in its application without the foundations of knowledge that convergent thinking provides. The teacher must also enable the learner to use the knowledge and skills that they have to consolidate their experiences, and this is hard work (Cullingford 2007). Glaveanu (2011) also argues that creativity is not easy - children are not necessarily naturally more creative than adults. In our case study we wanted to investigate the factors which contributed to creative teaching and learning and assess whether Dobbins (2009) is correct in viewing the current curriculum as not conducive to creativity given the counter productive nature of ‘performativity discourse. We also wanted to explore ways of measuring creativity – by whose standards is a process/activity/thought etc deemed creative (Csikszentmihalyi 1990).

Methodology

The original research was a ‘collective case study’ (Punch 2009:119) where models of partnership conducive for creative teaching and learning were evaluated from four HEIs (an illustrative web resource on the TEAN website: Elton-Chalcraft, Hansen, A., McCreery, E. and Morris D. 2010). The case study discussed here is more of an ‘instrumental case study’ (Punch 2009) where we drew solely from one institution’s data made up of a number of sources: questionnaires and observations in four schools (during the one week placement), together with students interviews and scrutiny of student essays (post placement), to provide an insight into the ‘holistic focus’ (Punch 2009:120) ie creative teaching and learning which took place during the one week placement. The sample schools were chosen because of their reputation for being innovative in curriculum design and thus would provide ideal settings for students to try out creative teaching and learning strategies.

Our project design and data collection methods were scrutinised and approved by the ethics committee at the HEI and robust ethical procedures were adopted throughout the project (Macpherson and Tyson 2008, BERA 2004). Data was collected by four tutors in four schools. Triangulation (Robson 2002) is evident in the number of data collection tools and variety of data collected- questionnaires for children, teachers, and student teachers, tutor observation and video of samples of school based learning, interviews with sample of student teachers and analysis of
sample student's essays. Participant information sheets were given out and consent forms were completed by teachers and student teachers. Parents / those with parental responsibility and the children gave permission for observations and completion of questionnaires (Macpherson and Tyson 2008). While anonymity of individuals, schools and the HEI has been maintained in this article by use of pseudonyms, nevertheless because of the perceived success of the original project the schools were keen to be named (together with those involved in the other HEI studies) in the published material available on the TEAN website (Elton-Chalcraft, Hansen, McCreery and Morris 2010).

We chose to use a questionnaire given the timescale of the project and the need to gather comparable data from four schools in an economical manner (Robson 2002). The children were asked to describe their feelings of the week (Which activities were their favourite? Which they didn’t like?) The student teachers and teachers were asked how well they felt the children were engaged during the week; and to give us an example of a positive effect that the week had on children's learning. A sample of lessons were observed by the researchers who adopted a ‘narrative account’ approach (Robson 2002:312). Strangers making notes was a familiar occurrence in the majority of classrooms and so this was considered an appropriate data collection tool. We adopted a ‘marginal participant’ observer role to minimise the effect our presence may have had on the data (Robson 2002:318). We met as a research team to discuss possible bias of subjective interpretations of observations and engage in data reduction to evaluate factors contributing to successful curriculum design from the perspectives of children, student teachers school based staff and tutors. The observational data was used alongside the questionnaire data and the interview and scrutiny of essays data. We would argue that these multiple approaches, and analysis and interpretation of the data by the research team strengthen the internal validity and reliability of the results (Lawson and Philpott 2008, Robson 2002).

Findings and discussion

Despite recognizing that between two and six adults in a classroom ought to improve children’s learning, nevertheless the student teachers, children and school staff in our sample agreed, on the whole, that the process and aims underpinning the organization and implementation of the curriculum for the ‘Creative and Effective Placement week’ engendered motivation and love of learning. This contrasted with the ‘normal’ working week at the schools, despite these schools already having a reputation for engaging children in a creative curriculum. The following list outlines the main feelings and attitudes of the children, teachers, tutors and student teachers about the model of learning in the one week placement and how it differed from the ‘normal’ teaching curriculum. The list identifies factors perceived as necessary for effective teaching and learning which were experienced during the week:

1. Children felt ‘liberated’, ownership of learning
2. Learning was ‘fun’ and challenging
3. Achievement was through intrinsic motivation
4. Teacher took on role of facilitator, rapport between teacher and children was crucial (trust, humour)

5. Engagement in practical activities and imaginative/problem solving scenarios both in a group and individually

6. Providing a safe environment to take risks and learn through mistakes

We formulated ‘phunometre’ scales (figures 1 and 2) which helped us to map the success or limitation of curriculum design. The word ‘phunometre’ was coined in the film inspired by Dr Seuss’s book *The Cat in the Hat* (Seuss 1957, 2010). We have created ‘phunometre scales’ to chart levels of challenge inherent in a particular learning environment or activity ranging from easy or doable through to difficult or challenging. The phunometre scale also charts the enjoyment/fulfillment factor of a particular activity or learning environment, ranging from fun or exciting through to mundane or sterile. So in the following sections we unpack each of the six issues above with reference to the phunometre scales in figures 1 and 2 below.

Figure 1 Environment, organization of learning areas, displays, ethos etc
The majority of the children said they felt liberated and very positive about the week. Most students, by the end of the module, appreciated the power of translating theory into practice to maximise the children’s enjoyment in learning and also their achievement which some of the student teachers built on in their final block placement. All three groups – teachers, student teachers and children mentioned, the concept of fun or enjoyment and linked this with liberation and time / space to discover. One child said: ‘I felt free every day.’ This was mentioned in some form or another by several children suggesting that they felt liberated from a curriculum which was at least mundane and at worst a boring sterile one (figure 1). This is concerning given that the participating schools were handpicked with a reputation for their innovative provision and so if children at these schools consider the ‘normal’ curriculum to be confining then the assumption is that other schools are providing an even less exciting diet which is echoed by Westby and Dawson (1995) and Dobbins (2009). Our findings confirm Westby and Dawson’s (1995) argument because children said they felt ‘liberated’ and free to be creative as opposed to conformist and uncreative. One group of students noticed that when making musical instruments some of the children were innovative where others were conformist in their designs. Interestingly the more conformist children were those described by their teachers as more able, whereas the more creative designs were from the ‘less able’, this was quite a revelation for the students. Several children stated that they particularly liked
having ownership of their learning and the student teachers also commented that this was preferable as children were more engaged. Both children and student teachers found ‘incubation time’ and d-mode thinking (Claxton 1998) to be beneficial. Some students set an initial problem, for example how to create a propelled object, and then provided time for the children to ponder the issues before embarking on their designs.

2. Learning was ‘fun’ – ‘challenging enjoyable’ (pride in achievement after a struggle), not ‘easy enjoyable’ (instant shallow gratification)

The majority of children from each of the four schools said that they found the learning fun and exciting. Summed up in the following comment from a year 5 child: *It was the funnest week in the whole history of funnest weeks.*

Fun can be a derogatory term if understood as trivial and easily-gained pleasure seeking. However in this paper we take ‘fun’ to mean exciting and enjoyably challenging where there is pride in achievement after an initial struggle. This contrasts with ‘easy enjoyable’ characterized by instant shallow gratification. So in figure 1 children may be engaged in challenging tasks nevertheless they find these exciting and enjoyable as one child noted - ‘Year 6 child said ‘I remember being excited when we were about to make our inventions’ another child noted ‘It was an exciting week and nothing could replace it’.

Positive emotions were also expressed ‘I liked everything I felt happy’. A teacher commented ‘the children were enthusiastic and engaged’. Cullingford (2007) argues that children’s preferred method of learning is through engagement in puzzling questions where motivation is crucial. He contrasts the dull and meaningless understanding of phonemes and grahemes with the pleasurable activity of reading for enjoyment (Cullingford 2007:138). A group of 4 and 5 year old children in our study were excited because one of the student teachers dressed up as a green alien Zig. This created a ‘buzz’ in the classroom and Dobbins 2009 bemoans the current curriculum, evident in many schools which is not conducive to creativity and lacks ‘buzz’ (2009:100). Dobbin’s (2009) explains that the performativity discourse is counter productive and this is confirmed in our research children were considered to have learnt and achieved highly and at the same time enjoyed their learning, compared with schools where SATS scores and improvements on OFSTED scales drive the curriculum which may in fact lower achievement because the learning is not stimulating. In our study Zig, it turned out, knew nothing about planet earth and these young children worked hard to draw on appropriate language to explain to Zig the function of everyday objects. Thus the curriculum was fun and exciting but also challenging (figure 1). This ethos of a fun classroom is reminiscent of Hooray for Diffendoofer day another Dr Seuss inspired concept (Prelutsky and Smith 1998) see phonometre scale figures 1 and 2. Like the children in Diffendoofer many of the children in our study were motivated to learn which we discuss below.

3. Achievement: through intrinsic motivation

Extrinsic motivation strategies have become more popular with the marble in a jar and other similar reward/punishment approaches (Cantell ref) and we would agree
with Cullingford (2007) that in some lessons children may find the curriculum boring or sterile and necessitating extrinsic rewards to motivate learners. However we observed intrinsic motivation in our study for example one class of year 4 children refused to go out to play because they were highly motivated to finish the assessment of their rocks and soils work. The student teacher had designed a creative assessment in a powerpoint presentation in the format of “Who wants to be a Millionnaire” (a television quiz show in which a celebrity presenter poses a general knowledge question to a contestant who is then required to choose from a multiple choice of answers). In the observed lesson the children were given four possible answers to a question about rocks and soils, which they had been investigating all week, and in teams they had to select the correct one. This assessment activity was fun and engaging whilst also being challenging (see phunometer scale figure 2). One child noted this on their questionnaire “I liked the quiz because I got 6 questions right”. These children did not want to be limited by the set timings of the day and preferred to stay in at playtime in order to finish the quiz. In some schools playtimes can be used as an incentive to get work finished thus implying that the learning is not intrinsically motivating.

In another class positive attitudes towards learning were voiced, one year 4 child commented on what they enjoyed during the week “the maths because I don't like maths”. Thus implying that the way maths was 'normally' taught was not appealing (figure 1). Half the teachers in one school commented that The children’s subject knowledge of the topic increased while many others commended the use of creative thinking techniques (for example De Bono and Mind mapping refs Buzan ?, Stankovic et al 2011) helped children access their imagination and keep focused.

There were however a minority of negative comments from the children. These usually related to the change in the normal routine and structure of the classroom ‘being in class when everything was different’; ‘unsure about trying new things’. One child was observed hiding under the table because they did not feel comfortable with the change to routine. However this challenge is perhaps necessary for this child to progress. When interpreting this data we postulate that whilst it is important to maintain some sense of order children can become too reliant on routine and unable to cope with change thus not giving them opportunities to learn how to become resilient. If a child does not cope well with change possibly the wrong course of action is always to shield her from change. But this can be risky – one teacher commented that ‘some [children ] took advantage in the routine to relax their efforts,[and] behaviour’. Similarly perhaps this teacher has a misconception about the aims of the creative placement, possibly preferring the ‘conformist’ child (Westby and Dawson (1995). Our findings showed that when children were ‘allowed’ freedom they became self motivated to learn.

Numerous teachers from all four schools stated that during the week the children’s subject knowledge increased. Boden (2001) argues that subject knowledge is at the heart of innovation. This it is not enough for learning to be fun and exciting it must also be challenging (figure 2) and increased knowledge will lead to a deeper understanding. This learning is achieved not through extrinsic rewards but rather
through the child’s desire to learn – they need to be stimulated and motivated by the teacher providing a rich context for learning (figure 1).

4. Role of the teacher - Rapport between teacher and children crucial (trust, humour etc), teacher as facilitator

We found that the role of the teacher and the rapport between teacher and children were important factors in the success of the week. Our findings support Hayes (2009) who says the teacher’s role is one of ‘facilitator and guide’ rather than ‘instigator and corrector’ (2009:120). Our findings show that where the student teachers acted as facilitator, gently nudging children by providing challenging scenarios, the children’s learning was enhanced.

This relationship is characterized by being a facilitator giving ownership for learning to the children, in some instances this manifested itself in a child led curriculum. Problem solving was the norm and curriculum design revolved around exploration of topics.

In his essay Chris discusses the efficacy of using a brainstorming wall in a child centred approach to learning. He and the other students in the group acted as facilitators:

The pupils appeared to gain knowledge and understanding of the topic rapidly; I believe that this was assisted by a working brainstorm wall. It appeared to capture the imaginative, progressive thoughts, perspectives and misconceptions held by pupils. I would argue that this was beneficial as it supported the pupil’s discovery of the topic as it gave support to playing with possible answers. Individual and relative originality evolved through this and pupils began to make predictions that they could later question and evaluate. At first I was concerned with ways in which some pupils would react upon discovery that their ideas were misplaced.

Chris goes on to explain that in fact the children were not devastated by realising their initial ideas about our solar system were incorrect – rather their learning was more secure because, through exploration of information from the internet and books, and making their own models of planets, they learned more about the current scientific understanding of the working of our solar system.

Many children stated they liked the teachers, however several students lamented the fact that they had limited time to build up a rapport. Nevertheless many students appreciated that having a positive relationship with the children is a necessary requisite for successful learning. This is noted by Adams in her chapter discussing the experiences of Sam an autistic child who did not progress in the class of a teacher who did not want him there, whereas he felt safe in the care of Sally a teacher who was keen to include him and knew how to deal with his outbursts (Adams 2011).

This research had a direct impact on the course design the following year at the HEI. This year students spend the previous term in the placement school during ‘embedded learning’ thus they are able to build up a rapport with the children. We
are engaging in another research project to evaluate this embedded learning approach and also assess the efficacy of using the phunometre scales (figures 1 and 2) to aid the students when planning.

5. Engagement in practical activities and imaginative/problem solving scenarios collaboratively and /or individually

Although engaging in practical activities can be an everyday occurrence in the primary classroom the children in the study made particular reference to ‘hands on making’ in their feedback. This ‘hands on making’ was not limited to traditional art (sculptures or paintings) but also encompassed design and technology, science and music. Our findings support Craft (2001) and Wilson (ref) who argue that Creative teaching and learning is all encompassing and should not be limited to the arts subjects alone. The children said they remembered making ‘a rap for a CD’, ‘making our inventions’ gardening, ‘making volcanoes because we got our hands all sticky’. Children in one school enjoyed showing friends and family what they had achieved during the week. For example one year 4 boy showed his younger sibling what he had made and acted as mentor to his brother who also had a go at making a toy with movable legs under the tutorage of his elder brother.

Students said that the number and range of practical activities expected exceeded the norm, as Jagdeep said ‘this made this week significantly different to a typical week in school.

A child in year 5/6 class disliked engaging in a fictitious scenario and expressed a negative attitude towards this activity ‘when someone had wrote a letter when they hadn’t’. This example demonstrates a child unable to suspend belief in order to engage in a learning activity.

Several students had some of their tightly held views about ability grouping challenged. For example in her essay Rena discusses the creativity of several children which contradicted the assumed ‘intelligence of the children:

Once the children commenced making their instruments it was clear that some children were much more original than their peers. What was extremely interesting was the finding that the children who in the main were deemed low ability in literacy and maths and the EAL child were the ones that excelled. Whilst two children who were high ability created unoriginal yet neat models based on instruments that already existed. However, as we had only known the children for a few days the validity of this conclusion is limited as we were unable to assess whether what they had created was original for them.

Emelia in her essay discusses the lack of opportunity in the current curriculum for development of the imagination:

Some of the pupils struggled with the concept of imagination, risk taking and originality; these pupils did ask for extra assistance and, at times, would appear frustrated with more independence. It can be argued that some pupils have become passive learners and thus the new teaching style may have
produced feelings of uncertainty, highlighting a lack in confidence to take risks and explore their imagination.

It is interesting to note that following the placement and submission of her essay Emelia trialled several strategies on final block placement and in her post placement interview she remarked that the placement had been an eye opener for her giving her the confidence to plan imaginative activities (ie not mundane and sterile figure 1) which then motivated the children to learn.

Another impact on the children’s learning was the social dimension- many children reported that they enjoyed working as a team, however others found this more challenging. Positive comments included “sharing ideas when we are writing about sea creatures”; some children reveled in working alongside others “when we made something it was good teamwork”. Whereas one child disagreed “I didn’t like working with some of the people I had to work with. While understanding that being able to work in a group is an important life skill nevertheless some of the greatest artists and scientists possess a morose personality inclined to moodiness and the madness of genius is mentioned by Heilmann (2005:119). Many primary schools subscribe to the SEAL (social and emotional aspects of learning) project which encourages children to think about the impact of their thoughts and behaviour on others. Whilst commendable as a community cohesion initiative there are those who have questioned the ‘dangerous rise in therapeutic education’ (Ecclestone and Hayes 2009 and Adams 2011). Nevertheless during the week placement community spirit was evident as one group of children said ‘we made loads of money for the Haiti earthquake appeal’ thus demonstrating an understanding of social justice during the week. Similarly a teacher commented children more aware of the wider issues outside their own locality’.

6. Providing a safe environment to take risks and learn through mistakes.

Many students mentioned risk taking in the questionnaires and the majority of students showed a synthesis of theory and practice concerning risk taking as the following example from Alan’s essay indicates:

Duffy (2006) also stresses the importance of errors and taking risks and argues that failures are crucial to the creative process. If children already know the result they are not engaging in creativity, it is not new to them. During the creative placement, an example of learning through errors and engaging in creativity was evident when a group stapled their rocket fins onto their plastic bottle. Due to the small holes this had created in the bottles, when it came to launching the rocket the pressure inside the rocket was unable to rise to a sufficient level to achieve a good take off due to the escaping air. The children whose rocket it was did not appear to be too down hearted by this and instead appeared to take some joy at identifying the problem and reason why. On reflecting upon their rocket they were then able to identify areas that they would change if they were to do it again.

During an observation one group of children seemed to cope well with learning from their mistakes when their space buggy would not move. Both here and in the
example from Alan’s essay the student teachers provided the children with the confidence to try out their ideas and then redesign their inventions if they were not completely successful. Cremin et al (2011) have noted that such risk-taking is more unusual in older primary aged children than the younger ones (2011) so the creative placement week was successfully offering opportunities.

Emma’s essay also shows a positive attitude.

The security felt was evident in the pupils’ ability to judge the value of each other’s and their own ideas without fear of ridicule thus helping them to develop the notion that it is acceptable to take risks and sometimes get things wrong. .....when faced with an incorrect answer most pupils appeared to accept this as part of the exploration and the level of motivation and engagement remained high. It appeared that the opportunity to investigate their thoughts created a personal reward, perhaps confirming Heilman’s (2005) notion of experiencing euphoria.

We would argue that the phunometre scale (figure 1) could be used to ensure that a challenging learning environment is a pre requisite for learning via mistakes and being resilient to cope when things did not turn out as planned. As the essays above show it was important for children to feel secure in a safe environment to try out ideas and learn from mistakes. This is an important characteristic as Claxton argues (2008).

**Conclusion**

Our findings show that it is very important for teachers to concentrate on ‘how’ as well as ‘what’ they teach. Sometimes curriculum design is reduced to a discussion of what subject areas should be included, or whether subjects should be integrated and in what way (Fogarty 1991) and what content should be taught. Our research has shown that when there is more emphasis on the process, ‘how’ children learn, then the whole experience is more fulfilling and arguably more effective. This does not mean we disregard the ‘what’. Throughout the module we did discuss how curriculum content is chosen by teachers, and particular values underpin the choices – no curriculum is value free; but word space prohibits more detailed discussion here. In the following essay Sean discusses the values underpinning the curriculum.

I believe at the very heart of creativity is a message of inclusion, of valuing different opinions and this is critical if all children are to realise their potential. From an ethical and a practitioner’s point of view though we have a responsibility to channel the creative energies of children towards topics that will positively impact their health and happiness as oppose to those of a more materialistic nature.

In suggesting that the phunometre scales can be drawn on to guide curriculum planning we are not implying the curriculum has to be ‘constantly all singing all dancing’ which many students admitted would be too exhausting for them as teachers but also too intense for the children. At times consolidation tasks are necessary – for the stability of a child’s self esteem, so sometimes easier tasks are required. Also it would be impossible for a teacher to plan activities and provide a learning environment which is both fun and challenging for every child in the class for every moment of every day. We found that some children in our study enjoyed maths activities where others were more engaged in geography based activities. What one child considers fun and exciting may not be so stimulating for another. Similarly the degree of challenge is dependant on the child’s interest, aptitude and achievement.
Many of the students had their assumptions of ‘ability levels’ challenged during the week as Sam noted in his essay

I have learnt how a creative curriculum can allow children of different abilities to shine where perhaps they wouldn’t in a curriculum where more defined targets are prevalent.

Our findings suggest that children, students and teachers all agreed learning is more effective when children had more ownership of their learning and when activities and the learning environment were both fun and challenging. But also the rapport between teacher and child was crucial to provide a safe environment to take risks and learn from mistakes both collaboratively and individually.

Our next task is to trial the phunometre scales as a planning framework with our new cohort of students; and also evaluate the efficacy of embedded learning of students in schools and the opportunity this affords for them to build up more of a rapport with their children.

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