Creativity in crisis in D&T: Are classroom climates conducive for creativity in English secondary schools?

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Abstract

Creativity is acknowledged to be important in education both for economic growth and as an everyday life-skill. The National Curriculum for Design & Technology (D&T) stipulates that students should ‘think and intervene creatively’ but this hasn’t been seen in practice or in student work leading commentators to suggest that creativity is in ‘crisis’ within the subject. Research has indicated that organisational climate, defined as ‘the recurring patterns of behaviour, attitudes and feelings that characterise life in the organisation’, can help or hinder creativity. Hence ‘climate’ is a potential explanatory factor for the lack of creativity documented in student outcomes. This paper, therefore, explores whether the classroom climate experienced by secondary students (aged 11-16 years) in D&T lessons is conducive for creativity. Data are drawn from a number of sources including student (N=126) and teacher (N=14) interviews and student (N=4996) and teacher (N=69) questionnaires gathered across a total of 15 schools, as part of an ongoing Gatsby-funded research and intervention project. Coded data and survey questions relating to the nine climate dimensions outlined in Ekvall and Isaksen’s climate model were identified. The paper focuses on three of these dimensions; challenge, freedom and idea support. The analysis revealed that students felt much of the work they do lacks challenge and freedom. They also perceived a lack of support for their design ideas. Hence students do not perceive the climate in their classrooms as conducive for creativity. Teachers’ perceptions differed somewhat and this is discussed with reference to the performativity culture in which they are located. Whilst acknowledging the difficulties this poses, it is argued that, as the literature indicates climate is ‘in the hands of the manager’, teachers can change their practice to enable creativity to flourish. Tentative suggestions for ways forward are suggested.

1. Introduction

Creativity is acknowledged to be important in education (Craft, 2005; Robinson, 1999) both for economic growth (Creative Economy Programme, 2006) and as an everyday life-skill (Sternberg, Lubart, Kaufman, & Pretz, 2005). In the UK, interest in creativity has increased with the publication of several reports (Cox, 2005; Roberts, 2006), which have suggested that education could do more to harness creative talent, suggesting educators need to critically examine what schools actually do at present to nurture creativity. In this paper we focus on the subject area of Design & Technology (D&T) in the English secondary school context (students aged 11-16 years).

In principle D&T educators should be ideally placed to help to deliver the Government’s aim to make the UK the world’s creative hub (Department for Culture Media and Sport, 2006), as the National Curriculum for D&T stipulates that students should ‘think and intervene creatively’ (DfEE & QCA, 1999:15). However, research (Nicholl, 2002, 2004; Nicholl & McLellan, 2007c) and government inspection reports in D&T (Office for Standards in Education, 2001/2) have pointed to a dearth of creativity in student outcomes, leading some commentators in the field to suggest that creativity is in ‘crisis’ within the subject (Barlex, 2003; Kimbell, 2000a, 2000b). Clearly this is a matter of concern.
Before examining any of the explanations that have begun to be put forward for this situation, it is necessary to define what is meant by ‘creativity’.

In western cultures there appears to be a general consensus that creativity is an ‘imaginative activity fashioned so as to produce outcomes that are both original and of value’ (Robinson, 1999:29). Rather than assuming this is a characteristic of an individual in isolation, it can more usefully be conceptualised in terms of a socio-cultural system dependent on the confluence of three factors (Csikszentmihalyi, 1999): the individual, the domain and the field. Hence creativity occurs when an individual (student) interacts with a socio-cultural setting within the domain (D&T) and the outcomes created are judged by members of the field (at classroom level, arguably the teacher). Applying this model, it is clear that because creativity is dependent on all three of these factors, the lack of creativity in D&T might be accounted for by any one (or more than one) of these factors.

The suggestions that have begun to be put forward for the crisis in creativity in D&T can now be interpreted using Csikszentmihalyi’s model. At the level of the individual; researchers have started to examine the influence of normative cognitive processes on the generation of design ideas (Howard-Jones, 2002; Middleton, 2005; Nicholl & McLellan, 2007c) within the domain of D&T and how this relates to the generation of creative design ideas. How particular aspects of teacher practice (the field) impact on these processes is also beginning to be explored (Nicholl & McLellan, 2007a). Other work has focused specifically on the field, for instance examining how teacher belief systems within the current context of performativity (Nicholl & McLellan, 2008) might be a barrier to creativity. This paper aims to add to existing knowledge of the impact of teacher practice on the individual by focusing on the dimension of classroom climate. The latter, it will be argued, is under the control of the teacher and can therefore be regarded as a facet of teacher practice.

In particular, this paper addresses the question of whether the classroom climate experienced by secondary students (aged 11-16 years) in D&T lessons is conducive for creativity.

To address this question the following section will explore the concept of classroom climate and consider why this might account for the lack of creativity documented. This is followed by details of the research programme from which the data discussed in this paper are drawn, and the data collection methods employed. The classroom climate experienced by students in D&T lessons will then be presented. The paper concludes by discussing implications for practitioners and making tentative suggestions for ways forward.

2. Classroom climate

The significance of the concept of ‘climate’ for understanding and, importantly, distinguishing between effective and less effective organisations has been recognised by organisational psychologists since the 1960s (see for instance Litwin & Stringer, 1968). Neither is the notion of climate new in educational contexts, having been applied to descriptions of school settings since the 1970s (Finlaysen, 1970 cited in Prosser, 1999a; Siegel & Kaemmerer, 1978). This appears to have spawned a plethora of terms in the educational literature and common parlance apparently loosely describing the same phenomenon. For instance, ‘culture’, ‘atmosphere’, ‘character’, ‘ethos’, and ‘tone’ have all been used to describe schools, often interchangeably (Prosser, 1999a).

‘Climate’ has continued to be actively researched in organisational settings and considerable work has been done in recent years to differentiate between workplace climates that support or facilitate creativity and those that do not (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Ekvall, 1996; Hunter, Bedell, & Mumford, 2007; Isaksen, Lauer, Ekvall, & Britz, 2001; West, 2002). Applying this research to the D&T classroom, it would appear that the climate construct has the potential to explain the lack of creativity noted in D&T outcomes discussed above as unsuitable climates will hinder whilst suitable climates will facilitate student creativity.

However, climate appears to have fallen out of favour as a term in the more recent educational literature and indeed it has been suggested that it tends only to be used in conjunction with quantitative assessments related to school effectiveness research (Black-Hawkins, 2002) and so would appear to have a limited remit. Much of the recent school improvement and school effectiveness literature appears to have adopted the term ‘culture’, rather than climate, and has found this to be a key construct in differentiating improving and effective schools from those that are static or
in decline and ineffective (Ainscow, Hopkins, Southworth, & West, 1994; MacBeath & Mortimore, 2001; Prosser, 1999b; Stoll & Fink, 1996). Given this demonstrated link between culture and effectiveness it is worth examining whether culture and climate are distinct. If they are synonymous, as Prosser (1999a) suggests, it would make more sense to use the more widely used term of culture rather than climate and draw on findings associated with research in school effectiveness and improvement relating to culture.

Although the educational literature generally fails to differentiate climate from culture (Prosser, 1999a) and indeed would appear to fail to provide any firm definitions of these terms, organisational psychologists argue that climate is distinct from culture. The former relates to perceptions individuals have of the given setting and can be regarded in terms of an experienced psychological state, whilst the latter refers to the values, norms and beliefs that underlie a social setting (Burke & Litwin, 1992; Ekvall, 1996; Schein, 1985). Thus organisational culture will have some bearing on the climate experienced and can be viewed as an antecedent for climate. The significance of this will be made clear in the discussion section, as the culture schools operate within will have an influence on the climate experienced by students in D&T classrooms. Given the fact that the organisational literature has examined creative climates (Amabile et al., 1996; Ekvall, 1996; Hunter et al., 2007; Isaksen et al., 2001; West, 2002), rather than creative cultures, this paper will focus on climate.

Climate has been defined as ‘the recurring patterns of behaviour, attitudes and feelings that characterise life in the organisation’ (Isaksen et al., 2001:172) and refers to the perceptions individual members of an organisation share. Work in schools, however, has suggested that different classrooms within the same school can have different learning environments or climates (Anderman & Young, 1994; Maehr & Midgley, 1996; Midgley, 2002; Turner, Midgley, Meyer, & Patrick, 2003), hence it is necessary to analyse at classroom rather than whole school level. The paper therefore explores the perceptions students and teachers have of the climate in the D&T classroom.

Several models have been developed that identify a number of factors or features that are characteristic of creative organisations (Amabile et al., 1996; Ekvall, 1996; Ford, 1996; Isaksen et al., 2001; Oldham & Cummings, 1996; West, 2002; Woodman, Sawyer, & Griffin, 1993) and whilst they share similar features, the framework this paper utilises is the model developed initially by Goran Ekvall after thirty years of research in industry in Europe and later developed by Scott Isaksen and colleagues in the States (see Isaksen et al., 2001, for details). This framework was chosen as the model includes culture (and hence could be linked to the research on school effectiveness and school culture) and explicitly identifies nine dimensions of experienced climate, whilst other models / approaches do not elaborate on this construct. The model, which outlines the factors that influence climate, including culture is shown in figure 1.

The nine climate dimensions, which have been validated in a number of quantitative studies (Ekvall, 1996; Ekvall & Ryhammar, 1999; Isaksen & Lauer, 2001; Isaksen et al., 2001), are outlined in terms of how they might manifest in a D&T classroom with a creative climate, in table 1.
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenge</td>
<td>Students are engaged by meaningful and demanding work (but are taught the necessary skills and knowledge to meet this challenge)</td>
</tr>
<tr>
<td>Freedom</td>
<td>Students are given the autonomy and resources to make decisions in their own learning</td>
</tr>
<tr>
<td>Trust / Openness</td>
<td>Students can be open and frank with other students and the teacher and there is mutual respect and support of each other.</td>
</tr>
<tr>
<td>Idea Time</td>
<td>Students are given time to generate, explore and develop design ideas and then to realise these ideas to produce quality well-made products. The teacher is flexible to student requirements and doesn’t insist on each student being at the same point at the end of each lesson</td>
</tr>
<tr>
<td>Playfulness / Humour</td>
<td>The atmosphere is purposeful yet easy-going and light-hearted. Students can experience ‘fun’</td>
</tr>
<tr>
<td>Risk-Taking</td>
<td>Students feel they can take risks and go out on a limb to try out an idea, with the support of their teacher</td>
</tr>
<tr>
<td>Idea Support</td>
<td>Students feel that creative design ideas are encouraged by other students and the teacher. Others, particularly the teacher, listen when suggestions are made and ideas will not be dismissed without proper consideration</td>
</tr>
<tr>
<td>Debate</td>
<td>Students are keen to put forth differing ideas and know these can be constructively discussed with others, including the teacher</td>
</tr>
<tr>
<td>Conflict</td>
<td>The level of emotional tension is low. Students and the teacher accept and deal effectively with diversity and there is an absence of power struggles.</td>
</tr>
</tbody>
</table>

Table 1: Ekvall & Isaksen’s creative climate dimensions adapted for D&T classrooms

These dimensions formed the basis of the analysis presented in section 4 to illuminate the nature of the D&T classroom climate in schools participating in the study and assess how conducive it is to creativity.

3. The study

Data presented in this paper were collected as part of an ongoing research and intervention project ‘Subject Leadership in Creativity in Design & Technology’ funded by the Gatsby foundation1, and includes data gathered during the preliminary phase which spanned the first nine months of the project (January to September 2005) and at the start of the intervention phase (February to March 2006). The aim of the preliminary phase of the research was to understand how current practice in secondary Design and Technology teaching (11-16 age range) influences student creativity, whilst the intervention phase aims to promote student creativity in the D&T classroom.

A number of different data sources are drawn on from the two phases of research. These are summarised in Table 2 and discussed below.

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Sample</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews with D&amp;T teachers</td>
<td>14 teachers across 6 schools</td>
<td>Preliminary</td>
</tr>
<tr>
<td>Interviews with students</td>
<td>126 students across 6 schools</td>
<td>Preliminary</td>
</tr>
<tr>
<td>Teacher survey</td>
<td>69 teachers across 11 schools</td>
<td>Intervention</td>
</tr>
<tr>
<td>Student survey</td>
<td>4996 students across 11 schools</td>
<td>Intervention</td>
</tr>
</tbody>
</table>

Table 2: Overview of data sources

1 For further details refer to the project website at www.educ.cam.ac.uk/sldt
3.1 Teacher and student interviews

As it was felt it was important to elicit the views of D&T teachers and students (Rudduck & Flutter, 2004) to gain insight into current practice and its impact on students’ creativity, teachers and students were interviewed. Interviews were conducted at six English secondary schools that represented a heterogeneous sample in terms of socio-economic circumstances, ethnicity, performance in public examinations and range of practice in secondary D&T teaching. A semi-structured format was chosen to enable issues of interest to be addressed but which also afforded responsiveness to interviewees’ stories. A similar interview guide was used with teachers and students, and areas probed included views on creativity and practice in D&T. Teachers, which included Heads of Department, were interviewed individually for approximately an hour. Schools were asked to identify three girls and three boys in each year cohort (aged 11-16 years) that would give a reasonably representative sample of the school’s intake. Interviews were conducted in same sex, same-cohort groups for approximately half an hour. All interviews were taped and transcribed.

3.2 Teacher and student surveys

All D&T teachers and students in Key Stage 3 (the first three years of secondary school, students aged 11-14 years) in the eight schools participating in the intervention phase were surveyed about their views about current practice at the start of this phase and hence these data are pertinent to this paper. The questionnaires employed, which were piloted prior to use, were devised specifically for this study and items were developed to tap issues relating to practice that emerged from an analysis of the preliminary phase data and appropriate literature. Teachers were asked to respond to 79 items across 5 sections relating to teaching approach in the classroom, views on teaching and learning in D&T, views on creativity in D&T, how the D&T department operates, and perceived barriers to creativity. Response was assessed on a 6-point Likert scale (Likert, 1932) where 1 represented ‘strongly disagree’ and 6 ‘strongly agree’. Students responded to 69 questions on a 4-point Likert scale across 5 sections assessing perceptions of lessons, attitude to D&T, self-efficacy, motivation and beliefs about creativity. The project coordinator in each school (a teacher in the D&T department) oversaw completion and confidentiality of response was assured.

3.3 Analysis Procedures

Interview transcripts, were transferred to the QSR NVivo programme (Fraser, 2000). An initial set of descriptive codes (Miles & Huberman, 1994) was developed relating to the questions asked during the interviews, which subsequently evolved during the analysis. Check-coding between the two authors was undertaken to ensure consistency (Miles & Huberman, 1994). Coded segments pertaining to the nine dimensions encompassed in Ekvall and Isaksen’s creative climate model were identified and provide the focus of this paper. Questionnaire responses were entered into an SPSS data file, which was cleaned prior to analysis. Descriptive statistics were then calculated for each item and questions that map onto the creative climate model are focused on here.

4.0 Findings

Although the data illuminated all nine of the creative climate dimensions and presented a coherent story, due to space constraints only three dimensions are reported here; challenge, freedom and support for ideas.

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2 These have been purposively sampled to represent a heterogeneous sample and are located either in the greater London area or more locally within the Faculty’s partnership area in East Anglia. These include two schools that were involved in the preliminary phase. In addition three matched control schools completed the surveys.
4.1 Challenge

The vast majority of students enjoyed their D&T lessons (85% of those surveyed) and many in interview ranked D&T in their top three subjects. However, it was apparent that the work they were set was not always demanding, as these interview excerpts demonstrate:

‘You can’t be very inventive with a rectangular box really.’ 
(Y11G)³

‘The only difference was how [the colour] you painted it.’
(Y10B)

‘I think if you look at everyone’s folios and all the research is the same, you’ve got a specification and you’ve got an analysis and you’ve probably got a mood board. Everyone’s done that you know and it doesn’t take any talent to do that at all.’
(Y11G)

In fact one in six students (17%) disagreed that their teachers ‘encourage me to think for myself’, which is necessary to experience challenge.

In many cases students commented on the pointless nature of the work they were doing:

‘In metalwork we just drilled holes and then just put stuff on it. There wasn’t much point.’
(Y7 B)

‘Last lesson we copied joints out of a textbook. Then guess what we did next lesson? We made the joints! What’s the point of that?’
(Y9B)

Indeed, over a third of students surveyed (35%) agreed that ‘lots of things we do in D&T seem a waste of time’. Not surprisingly, the outcome of this was uncreative work reported previously (Nicholl & McLellan, 2007b, 2007c). It also had an impact on motivation, which this student sums up:

‘I’m not a slack student but when you have to do all this… product analysis, mood boards, and research that didn’t help me in the end. It puts me off D&T and I think that’s where people think it is boring.’
(Y11G)

Teachers made few comments about the level of challenge posed by the work they set, in interview. Nevertheless, one in five of the teachers surveyed (19%) disagreed that they ‘let students try their own ways of solving problems as they emerge in a D&T project’, which would be necessary to allow students to feel challenged and one in six (17%) disagreed that ‘it is helpful for creativity if design briefs are related to real-life contexts’, which is necessary to make tasks meaningful. This suggests they do not necessarily recognise challenge as a potential difficulty. However, one practitioner, whom students identified in interview as a good teacher, did acknowledge that this was an issue:

‘I think a lot of work that we do and including what we do here is repetitive, it’s irrelevant, and it’s boring. It doesn’t fire the kids up.’
(Teacher)

It was certainly clear that students want to be challenged, as three quarters of those surveyed (76%) liked ‘to play with ideas in D&T and see how far they go’ and around two thirds of students (66%) agreed that ‘I like problems where I can try my own way of solving them’. Students in interview also expressed the view they would like to do more meaningful and demanding work, and when they got the opportunity to do so, this was relished:

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³ Indicates year group and gender. Y7 is the first year of secondary schooling (students aged 11-12 years), Y8 the second year etc. Girls are represented with a ‘G’ and boys with a ‘B’.
‘I think it [food tech] would be quite nice to do something a bit more adventurous because usually the things we do are a bit basic.’
(Y9B)

‘This [pointing to her portfolio] isn’t text book where that is fully just copy and paste it off the internet. But when your into your own project and your actually doing it and making it and thinking for yourself, it’s then that you can do the research that was relevant to it because you want to do it.’
(Y11G)

4.2 Freedom

Again, although students were generally positive about their work when asked specifically about the amount of freedom they had in terms of making choices and decisions they were somewhat less enthusiastic. Only 57% thought they really had a choice about the work they do. And whilst 77% agreed that their teachers ‘let me make my own decisions about my work’, when asked more specifically about the types of decisions they made within projects, the percentage of pupils indicating they could make choices dropped. Around half indicated that their teachers allowed them to decide which materials to use (53%) or research to undertake (48%). The interview data tell a similar story. Students talked about being told what to do:

‘In most of them [D&T lessons] you’re told what to do.’
(Y8B)

‘Yeah they give you a design and you’ve gotta do that exact design.’
(Y10B)

‘When we do make cakes we’re only allowed to put certain things in it... chocolate chips or something... ‘cos in food tech you’re not allowed to pick what you wanna make, you get told fruit salad and how....what fruit and all that stuff.’
(Y8G)

They also talked about doing the same things as others:

‘Cos you just have to make a box out of wood and follow instructions, all the same.’
(Y9B)

‘Because you are all doing the same thing [in electronics].’
(Y11B)

As with challenge, lack of freedom had a negative impact on students’ engagement, as this excerpt demonstrates:

‘Those projects were a bit tedious because there were a number of things that we weren’t allowed to do.’
(Y10B)

In contrast to the view expressed by students, most teachers felt they were offering students at least some degree of freedom. 93% of teachers agreed it was important to offer students choices about ways of working, whilst 71% agreed they give students a choice of materials / ingredients and 86% a variety of techniques / processes they can use within each project.

Furthermore the majority of teachers indicated that it was important for students to have ownership of their ideas. Several D&T teachers noted in interview that it was important for students to come up with their own ideas and in the survey only 10% disagreed with ‘it is important students generate their own design ideas’.

The discrepancy between teacher and student views about the amount of freedom students have in D&T lessons may, at least partly, be explained by differing perceptions about freedom in relation to responsibility for learning. For many students, some degree of freedom was necessary to be able to assume responsibility for their learning and they felt they would enjoy the subject more if this was forthcoming. For instance, the vast majority (89%) of students surveyed agreed that they felt ‘happiest
about tasks when I can make my own decisions’. In interviews, the comment made by this Y11 girl was typical:

‘I like when we get to design our own stuff. We get to make what we want sort of thing. I enjoyed developing it [project] like this. Because you are thinking about it and this is me and this is my work not Mr X’s.’

(Y11G)

When asked what they would most like to change about D&T lessons, the view most commonly expressed by students was increasing the amount of autonomy they had:

‘I would like to change the amount of freedom you get in tech lessons. In like electronics you get certain things to do and you make like little circuits and each one is basically the same apart from one or two components.’

(Y7G)

Teachers, however, clearly felt it was their responsibility to ensure their students progressed and controlled the learning environment to ensure this happened, as this teacher explains:

‘We try and give them some freedom but within that, you know lead them, we’ve got what we expect.’

(Teacher)

Ensuring students reached a particular point appeared to conflict with students’ desire for freedom to make their own choices. This is also apparent in the fact that one in four teachers (26%) agreed ‘it is a waste of time letting students work on design in D&T that ultimately might not work’. As has been reported elsewhere (Nicholl & McLellan, 2008) the current performativity culture that permeates education creates a real tension for teachers who recognise the importance of giving freedom, as noted in teachers’ survey responses, whilst at the same time are being held accountable for performance outcomes. In order to reduce the dissonance induced (Festinger, 1957) teachers may well believe they are giving students more freedom that they actually are.

4.3 Idea support

Whilst many students indicated that teachers supported them in their design work, a sizable minority felt this was not the case. 27% of students surveyed disagreed with the statement ‘I feel able to discuss my ideas with my teacher’ and 32% disagreed with ‘teachers listen to how I want to do things’. The interview data reveal that students felt that support would not be forthcoming for unusual or creative ideas in particular, as these extracts demonstrate:

‘A few people come up with whacky ideas all the time but their teachers yell at most of them. Then they are told to do something else.’ (Y7B)

‘If you do something whacky and it’s hard to make the teachers sort of get annoyed with you for thinking about something stupid and tell you to go with something a bit more simple.’

(Y7G)

‘I was going to put sugar frogs on this like pond on the top of my cake ‘cos I was giving it to my cousin who’s mad about frogs and.. my tech teacher said I couldn’t because it would be too wild for the class and it would like distract all the class.’

(Y8B)

The older students interviewed recognised, however, that they needed teacher support to realise their design ideas. The following extracts reveal the tension this creates between ownership of ideas and success:

‘He sort of said “do that one” [idea]. I didn’t really want to do it at first. But I thought if I didn’t do it then he wouldn’t give me the help that I needed to develop it.’

(Y11G)
‘Someone decided not to do something. They did it by themselves. He [teacher] wouldn’t give them any help and said “you’re on your own now”.’
(Y10G)

‘I’m scared the teacher won’t help me if I’m not choosing his idea.’
(Y11G)

Teachers were decidedly ambivalent about the support they give to students to realise their ideas. 84% agreed they ‘encourage students to play with ideas’. However, 45% were not ‘happy to let students spend time on problems even if they get behind’ and 42% indicated they were disinclined to ‘let students make a design even if it might not work’. Agreement with the latter two statements would be indicative of a real commitment to supporting student ideas. As discussed above, this ambivalence could at least be partly explained by teacher perceptions about accountability in the prevailing performativity culture.

However it may also indicate that some practitioners are unaware of the impact of their practice on students. Most teachers interviewed realised that students did not tend to pursue creative ideas but didn’t acknowledge their role in creating this situation. For instance, 77% agreed that ‘students find it hard to come up with lots of original ideas’ but 51% felt that ‘most students aren’t prepared to come up with unusual ideas because they will look different to their friends’ and nearly one in three teachers (29%) agreed that ‘you can teach students many things in D&T but you can’t really change their basic level of creativity’. Teachers therefore seemed inclined to believe that students rather than teachers lay at the root of the problem of lack of creativity. Indeed in interview several teachers alluded to the fact that students didn’t like to be outside their comfort zone. One teacher summed it up:

‘I think for some kids it [drawing borders] is a way of keeping their heads down and noses clean. They look like they’re busy. But all they’re doing... they haven’t made any progress from one hour to the next.’
(Teacher)

Only a small number of practitioners recognised that their interactions with students could be problematic:

‘I think with designing you’ve got to be very positive with children. It’s very easy to look at a design and say ‘that’s no good’ or ‘that won’t work’.. you know ‘this isn’t what I asked you to do’ and I think if you’re not careful that happens easily.’
(Teacher)

5.0 Discussion & conclusions

The findings indicate that there a number of tensions created by differing perceptions of teachers and students about the climate for creativity in D&T classrooms.

Although overall students were positive about D&T as a subject, a substantial number felt they weren’t being sufficiently challenged, were being asked to do meaningless work, did not have enough freedom to make choices and decisions about their work, were often told what to do and had to do the same as other people and on occasions did not have the support of their teachers in developing their design ideas, in terms of being able to discuss their ideas with their teacher or be secure in the knowledge they would get help to realise unusual or creative ideas. From the students’ perspective, therefore, a number of features that are required for creativity to flourish, are absent in D&T classrooms.

Furthermore it was clear that students wanted to experience challenge and freedom but at the same time feel supported in developing their design ideas. This should not be surprising, as student voice research has consistently shown that challenge and autonomy are two of the core conditions students identify that help them learn (Rudduck & Flutter, 2004). Practitioners therefore need to heed this message and attend to these dimensions when evaluating the climate students in their classes’ experience.

Challenge and autonomy have also been identified as two of three core needs that need to be met for healthy human functioning and are at the root of all motivated behaviour (Deci & Ryan, 1985, 2002). It
is clear, therefore, that the unchallenging work and lack of freedom students experienced undermines intrinsic motivation. Indeed several excerpts indicate this directly. However, whilst intrinsic motivation is undoubtedly a prerequisite for creativity (Amabile, 1996; Sternberg & Lubart, 1999), arguably the lack of motivation reported in this paper has wider implications for educational experience and outcomes (Anderman & Maehr, 1994; Fredricks, Blumenfeld, & Paris, 2004). It is therefore essential for the D&T community to address this issue.

However, the data presented indicate that teacher and student perceptions are not consistent. Nearly every teacher interviewed recognised that much student work was uncreative and agreed that design ideas were often stereotypical, as discussed in the literature (Nicholl, 2004; Nicholl & McLellan, 2007b, 2007c). However, few teachers explicitly acknowledged that the work they set was unchallenging and a sizeable minority didn’t see the necessity in setting real-life and meaningful work and allowing students to work problems out for themselves, which is crucial for authentic learning (Hill, 1998; Lave & Wenger, 1991; Murphy, Lunn, & Jones, 2006; Office for Standards in Education, 2003). Furthermore, few recognised the contradiction they expressed in indicating they granted students freedom to make choices and decisions about their work and letting them play with ideas, whilst also controlling learning outcomes lesson by lesson and not allowing students the time to explore and take risks. So, although not unequivocal, as there were a number of contradictions between teacher beliefs about practice and creativity, which have been highlighted above, it would appear that many teachers would not recognise that the climate in their classrooms could be less than supportive for creativity.

Given that student outcomes are the focus here, student perceptions of the climate are key; as it is their perceptions, rather than those of teachers, that determine whether they will feel able to be creative. An important message of this work, therefore, is for practitioners to recognise that although they may think they are helping to create a climate in their classrooms that is conducive to creativity this may not, in fact, be the case. They need to take a step back to become reflective practitioners (Schon, 1987). They can be helped to do this by being empowered by the model offered here to challenge their perceptions of the climate that is experienced by learners in their classrooms. One way this might be achieved is to consult students about the various dimensions identified in the model to gain an understanding of the climate for creativity in their classroom.

Furthermore, climate researchers indicate that ‘the climate to a fairly large extent is in the hands of the manager’ (Ekvall, 1996:122) and indeed leadership behaviour is clearly identified as an influence on climate in Isaksen et al’s (2001) model shown in figure 1. Hence, the position adopted in this paper is that D&T teachers can change the climates that operate in their classrooms to enable students to be creative. If teachers understand student perceptions and audit their practice using the dimensions identified in the climate model utilised here, they will be empowered to change their practice to meet the needs of students by setting challenging and meaningful work, giving students more freedom and supporting them in generating and realising creative designs.

However, it should be recognised that classrooms are not isolated communities and the climate experienced by students is influenced by a number of factors, shown in Isaksen et al’s model. In particular attention is drawn to the role of culture. Teacher beliefs and values are strongly influenced by the educational culture they are part of (Ball, 2003, 2004) and these strongly influence practice (Aguirre & Speer, 2000; Calderhead, 1996). The current educational culture of performativity sets up a tension between a desire for creativity and accountability about student outcomes (Nicholl & McLellan, 2008) and this would appear to provide the basis of some of the contradictory views expressed by teachers here. Hence, it is acknowledged that whilst teachers can change the classroom climate to encourage creativity, given the current climate of performativity, in practice this will be difficult to effect.

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