

A Passion for Designing

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Abstract

“Passion is the energy that comes from bringing more of you into what you do” (Rosengren, 2004)

In the school based subject of design and technology (D&T) a fundamental element is designing and making functional products using critical and creative thinking whilst developing skills in the use of a variety of processes and materials. The links between creativity, intrinsic motivation and passion have been well researched (e.g. Amabile, 1997; Leonard and Swap, 1999; Polanyi 1966). Goleman et al (1992) speak of creativity and intrinsic motivation as the urge to do something for the sheer pleasure of doing it rather than for a prize, and refer to passion's importance in the mix as “...the element that really cooks the creative stew is passion” (p.30).

Teachers of the subject need to be more than just ‘enthusiastic’ about the process if they are to develop enthusiasm in their pupils that will sustain them through the exciting but sometimes arduous and difficult process required to achieve outcomes of which they and their teachers can be proud. The polemic work of Polanyi (1958) and that of the psychologist Frijda (2000), closely link joy with intellectual passion, supporting the assertion that positive passions affirm that something is precious and that passion can be used as a determinant of what is of higher interest and great.

The intention of this research project, using an initial sample of forty-nine students and a non-probability purposive sample of ten students studying to become D&T teachers was to tease out the factors which appear to enable some students to be passionate about creating a product to a given brief; described by Csikszentmihalyi (1990, p.4) as “the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” whilst others from similar backgrounds and expectations, given the same brief, and in the same learning situation, do not reach this level of enthusiasm.

The data collection method used was an attitude scale and semi-structured interviews which were qualitatively analysed using HyperResearch software in order to identify factors involved, with the intention of informing and improving the way we teach our students, to design, and about design, with the additional aim of improving their teaching of that activity once they become D&T teachers. Within the full paper results are discussed and tentative conclusions drawn.

Introduction

The intention of this research project concerning a design-and-make task carried out by students training to become design and technology (D&T) teachers was to try to identify some of the factors that enabled some students to be passionate about creating a product to a given brief whilst others from similar backgrounds and expectations, given the same brief, and in the same learning situation, do not reach this level of enthusiasm.

An initial cohort of forty-nine D&T students studying on an Initial Teacher Training (ITT) programme was identified for data collection purposes. After some preliminary data analysis a non-probability purposive sample of ten students was chosen from the original sample to complete an attitude scale and be interviewed about their design-and-make activity carried out during a thirteen-week Product Development module. Quantitative and qualitative analysis of the data collected allowed tentative conclusions to be drawn with the intention of informing and improving the way D&T ITT students could be taught, to design, and about designing, with the additional important aim of improving the students' teaching of that activity once they became D&T teachers.

Background

The primary purpose of designing is the development of quality outcomes in various forms. The reasons for the inclusion of designing and making within the school curriculum and therefore the reason for training teachers to teach design within D&T was originally the recognition that *'the capability to investigate, design, make and appraise is as important as the acquisition of knowledge'* (DfE, 1989, p.1) and the acknowledgement that D&T was an area of the curriculum which could develop such capability. Designing and making using critical and creative thinking whilst developing skills in the use of a variety of processes and materials are still considered fundamental aspects of D&T in schools today. Therefore it is important that those training to become teachers of D&T must understand (Atkinson, 2009; Miller, 2012) and preferably be passionate about the activities involved. Teachers of the subject need to be more than just 'enthusiastic' about the process if they are to develop enthusiasm in their pupils that will sustain them through the exciting but sometime arduous and difficult process required to achieve outcomes of which they and their teachers can be proud.

Passion is an emotion that can be externally observed, or a feeling that is internally observed. It is a biologically determined process that may be conscious or subconscious and one that can be induced by external events and circumstances. Although passion can have negative connotations, it is the positive power of passion that is the focus of this research. Much has been written about the links between the joy of discovery and intellectual passion (e.g. Fridjda, 2000; Polanyi, 1958) and the importance of passion linked to *'...stretching ones mind to its limits in a voluntary effort to accomplish something difficult and worthwhile'* (Csikszentmihalyi, 1991, p.3). The direct links between passion and creativity as the *'...intense drive to break through to something new'* (Belitz & Lundstrom, 1998, p.57), the belief that *'without passion we soon lose interest in a difficult task'* (Leonard & Swap, 1999, p.78) and the idea that *"passion is the energy that comes from bringing more of you into what you do"* (Rosengren, 2004) are all pertinent thoughts in understanding why the researchers believe that being passionate about designing is an important issue.

Many writers have identified internal and external factors that, to a greater or lesser extent, affect passion and enthusiasm in a learning situation. Much evidence (e.g. Amabile, 1997; Leonard and Swap, 1999; Polanyi, 1966) has supported the relationship that exists between passion, performance and the attributes that a learner brings with them. These variables can include: a learners' general ability, intrinsic motivation, personal goal orientation, creative ability, ways of thinking and working, knowledge base, past learning experiences and the attributes of the task itself: its contextual location, its structure, its likely demands upon the learner. Added to this, as many of the learners in this research project were mature students, were the multifaceted outside commitments such as families, mortgages and part-time jobs. To identify which factor caused, affected or prevented passion in a specific learner is a difficult task and one that would require a longer research project than the time available for this small scale study, however the researchers believed

that an in-depth semi-structured interview with a selected sample of students might help them develop a better understanding of some of the factors involved and so enable them to improve their teaching of design activity in the future.

Method

The Sample

The size of the sample is problematic for the small-scale researcher with a conflict between validity and manageability. The researchers were all too aware that a sample needed to be as large as possible and yet in order that the study could be resourced, particularly in terms of time, once some initial data analysis was complete, a small non-probability purposive sample of ten students was selected for further data collection purposes from the original sample of forty-nine students who studied on a thirteen-week Product Development (PD) module during 2011. The researchers used three criteria in order to identify appropriate students for the sub-sample.

The Three Sampling Criteria:

1. Marks awarded: Only students who had been successful in terms of the mark they were awarded for their design-and-make activity in the PD Module were considered for the sub-sample. It was felt that by doing this the data would not be clouded with extra variables such as students who were not motivated in general or did not have the skills required to achieve high marks in the PD module.
2. The two D&T specialisms studied: The full cohort had students studying in each of the four subject areas associated with D&T. Those being: Materials Technology (MT), Textile Technology (TT), Food Technology (FT) and Electronic Communication Technology (ECT), with each student specializing in two areas and choosing a design brief which required both specialisms to be evident in their design activity and solution. The proportion of students studying each specialism in the sample of ten matched the proportion of students studying each specialism in the total sample.
3. Level of Passion shown: The final criterion used to identify the sub-sample was the level of passion that had been shown by the students during their PD module. As the two researchers had taught all the students in their subject studies modules throughout the academic year and in particular during the PD module they believed that they could categorize each student as belonging to one of the following three groups:

Group A: Those who were extremely passionate about their project. This was evidenced in: the project itself; the processes that they had used; how they had dealt with the ups-and-downs associated with project work; how they had spoken about their activity throughout the module.

Group B: Those who were competent designers and makers but lacked the type of evidence of passion shown by students in Group A.

Group C: Those who had succeeded in terms of marks awarded but who lacked design flair and confidence in their project work and in the way that they were able to speak about their activity.

Each researcher in isolation carried out this categorization of the total sample. This was then followed by a comparison of the results that indicated a significantly high level of agreement.

Using the three criteria matrix the researchers discussed and agreed upon the final selection of ten students for the sample (see Table 1).

Group A (n = 12)		Group B (n = 12)		Group C (n = 25)	
Student	Specialism & Mark	Student	Specialism & Mark	Student	Specialism & Mark
Student Z	TT/MT 88%	Student W	ECT/MT 79%	Student S	TT/MT 70%
Student Y	MT/TT 80%	Student V	MT/FT 76%	Student R	MT/FT 68%
Student X	TT/FT 77%	Student U	FT/TT 74%	Student Q	FT/TT 62%
		Student T	MT/FT 72%		

Table 1: The matrix indicating the specialism and achievement of each member of the subsample split by Levels of Passion

The following materials and research instruments were used in the data analysis:

1. Marks awarded: The cross-moderated marks awarded for the PD Module were used for data analysis purposes and as one of the criteria for selecting the sub-sample.
2. Attitudinal Scale: The ten students completed an attitudinal scale to check whether the chosen students did represent the levels of passion to which they had been allocated. The design of the scale was based on research and experience of designing such scales in the past (Atkinson, 1997; 2000, 2003; 2007). The scale used twenty-six statements about how positive they believed they were in various life-situations and during the product development module. A two-dimensional grid classification was designed for student replies. This was based on the Likert system (Likert, 1932). The students were asked to tick one of four boxes which indicated how much they agreed or disagreed with the statements. The scale was given to the student immediately before they were interviewed and took approximately four minutes to complete.
3. Interview data: A semi-structured interview was then carried out with members of the sample separately in order to tease out further the attitudes of the students to designing and making their solution in the PD Module, the processes they had used, what had caused them to become interested, frustrated or disillusioned, what type of thinking they had used, the problems and constraints they had encountered, whether they had coped or thrived, and whether they had found the activity rewarding. An interview schedule of the questions to be asked and the order for delivery was designed, discussed and modified by the two researchers in order that the same understanding of the questions was established. This enabled consistency to be achieved even though the two researchers carried out the interviews separately. The interviews were recorded and then transcribed using voice recognition software (Dragon Dictate). HyperRESEARCH software was then used for qualitative analysis purposes.

The students were not informed about the exact nature of the scale or the interview before hand. They were told that the researchers were interested in hearing how they had each approached the PD module, which they had completed at the end of the previous academic year.

Results from the whole cohort of 49 students

The relationship between achievement and level of passion

Level of Passion	Mean marks
Group A	74.42%
Group B	65.09%
Group C	56.04%

Table 2: The relationship between Level of Passion and achievement for the total sample (n=49)

The results in Table 2 indicate a positive relationship between levels of passion and levels of achievement in the total sample.

Results for the sub-sample of ten students

The relationship between achievement and level of passion

Level of Passion	Mean marks
Group A	81.67%
Group B	75.25%
Group C	66.67%

Table 3: The relationship between achievement and Levels of Passion of the sub-sample (n=10)

As explained earlier as well as the level of passion one of the other criteria that the researchers used to select the sub-sample was that they had been successful in their projects. However as can be seen from Table 3 there still remained a positive relationship between levels of passion and levels of achievement. Supporting the belief of the researchers and others (Belitz & Lundstrom, 1998; Csikszentmihalyi, 1991; Leonard & Swap, 1999) that passion is an important factor in successful creative activity “...the element that really cooks the creative stew is passion” (Goleman et al, 1992. p.30).

Results from the Attitude Scale

The attitude scale was pre-coded by the researchers. A sliding scale of score corresponding to a student’s level of agreement or disagreement with each statement was recorded. The highest score was given to students who indicated strong agreement with the statement, whilst the lowest score was given to students who strongly disagreed with the statement. This enabled calculations of the mean score for each statement, each student and therefore each ‘level of passion’ group.

The results from the attitude scale confirmed the researchers’ allocation of each student in the sub-sample to a specific ‘level of passion’ group. Group A, those passionate about their project achieved the highest mean score for attitude and those who lacked design flair and confidence in their project work gained the lowest mean score for attitude (see Table 4).

Level of Passion	Mean Attitude Score (max score 4; min score 1)
Group A	3.154
Group B	3.105
Group C	2.679

Table 4: The relationship between Levels of Passion and mean attitude scores of the sub-sample (n = 10)

In twenty-four out of the twenty-six statements the mean scores for each of the three groups indicated that Group A achieved higher mean scores than Group C. The two statements in which the

least passionate students achieved the highest rather than lowest mean score were 'I have drive in most of the things I do' and "I find it easy to be purposeful'. This would support the researchers' belief that the chosen sample in group C were indeed motivated to succeed in general and that even though they lacked 'passion' and designerly flair they were able to persevere and achieve outcomes that more than adequately met the assessment criteria for the module.

It was also interesting to note that Group B, those who were competent designers and makers but lacked evidence of passion, had higher mean scores than the students who designed with passion in reply to a number of the statements. However once again these concerned general motivation rather than being design specific. For example: being happy and not pessimistic, being stubborn and persistent. Group B also achieved the highest mean score for the statement regarding not feeling the need to seek approval before making decisions. However the researchers would not necessarily see this as a positive attribute. For they believed that a willingness to share incomplete or untested thoughts and ideas with others indicated a certain level of design confidence, which was evidenced in the work and attitude of those considered passionate about designing. Group A the 'passionate group' achieved the highest mean attitude scores for the following statements: being optimistic, non-conformist, single minded, intuitive when dealing with new situations, happy to set their own standards and values, enjoying most challenges, persevering against all odds when confronted with problems, displaying creative spontaneity and being proud of their outcome in the PD Module.

Results from the interviews with the ten students

The only aspect that all students spoke of at some time during the interviews concerned finding the activity rewarding, whilst ninety percent indicated that they had shown passion in their final outcome, and that they had developed new practical skills during the module. Eighty percent did refer to having been hindered by a lack of time to complete the project, although within that cohort it was the 'least passionate' group who mainly mentioned problems associated with a lack of time, with one student mentioning it on six separate occasions, in comparison to the others who mentioned it only once or twice. A surprising result was that eighty percent of the sample spoke of being frustrated with designing, however when looking at what they were frustrated with it became apparent that 'passionate' students were frustrated by the process they were required to follow to meet the assessment criteria (producing such things as evidence of developing a specification and written explanations of their thinking) whereas the least passionate group were frustrated with their lack of knowledge and understanding of the processes required.

All those in the 'passionate' group and those who were competent but lacked evidence of passion, spoke about the fact that creative thinking was important; and that they had been interested from early on in the design process. They also believed that 'passion' as well as being found in their final product could be found in their design folios, whereas only one student in the least passionate group referred to these factors although she indicated that she was not entirely convinced about finding passion in her folio.

Three quarters of each group believed that the given outline briefs were interesting and enjoyable whereas it was only the 'passionate group' who then went on to make reference to the briefs enabling them to be creative and being able to achieve a unique outcome, which they thought was important. Seventy percent of the total sample suggested that their outcome must be practical and feasible. None of the least passionate group referred to the importance of the aesthetic form, in sharp contrast to all members of the passionate group who spoke at length about the importance of a balance between functionality and form.

Everyone in the passionate group used the words 'excited by' in describing their projects whereas only three students from Group B used those words and none of the 'least passionate' group used 'excited' at any time during their interview. The whole of the 'passionate' group indicated that they believed imaginative thought needed to come before rational thought and that there was a need for perseverance when things didn't go right. They also all indicated that they had used a de-

signer's method rather than a scientific method to come up with their solutions. They all believed that as well as passion being evident in their design folios; and in the product itself it could also be found in the manner in which they had spoken about their product and design activity throughout the project. All the students in this group were also proud of their product outcomes, one because she felt she had really portrayed Russian culture and the history of Russia in the cloak she had designed and made. She was especially proud, as Textile Technology was a new specialism for her. The other two talked about how their products were now being used. One student having designed a very unusual seat that was '*...loved and used*' by his whole family, and the other talked about being proud to use, within a school environment, the puppet theatre and puppets she had designed to teach about inclusivity.

In line with the students who were considered passionate, all those in Group B talked about the following: that they had been interested from the design stage; that they had developed new practical skills; that they thought creative thinking was important, and that they had provided evidence of passion in their design folios, however this group did not talk about 'passion' being found anywhere else. In support of the researchers belief that this group were as successful as they were because they had a good attitude to life in general, all spoke of being determined that all problems must be solved, rather than being negative and complaining about things that did not go according to plan as was evident in the interviews with the least passionate students.

The two positive points raised by everyone in the least passionate group were that they believed that the activity was rewarding and that they showed passion in their product outcome. The six negative issues that all of this group raised were that they recognized that they did not think outside the box, that they were frustrated and disillusioned by designing and all indicated that they needed support and direction before they could make decisions. In terms of their ideas all believed that the outcome must be practical and feasible, that they were hindered by a lack of knowledge about designing to support their idea generation and in particular a lack of manufacturing skills and know-how at the design stage. This was in marked contrast to the 'passionate group' who talked about the fact that being unsure about materials and processes did not worry them and that it was only once they had an idea they wished to use that they would then turn to ask experts to help them to understand how their ideas could be turned into reality if it was a process or materials that they had not used before.

In both the 'passionate' and 'competent but lacking evidence of passion' groups, students talked about enjoying the challenge however no one in the least passionate group mentioned enjoying the challenge. In fact two out of the three in the least passionate group complained on several occasions about how hard their project had been.

Conclusion

The research tools used were appropriate and gave the anticipated exploratory and explanatory information. The size of the total sample was large enough for basic descriptive analysis to take place. The sub-sample of ten students was, as anticipated, too small for any statistical analysis, although information gained provided an informed picture of the relationship that exists between 'level of passion' and design activity in the cases examined.

Factors identified so far would indicate that passionate designers use language that is full of positives, they are on the whole happy within themselves and relish challenging, unknown situations. Whereas students who are not passionate about their design activity tended to have a 'glass-half empty' and a 'can't do' attitude towards their activity that places a barrier, a resistance, preventing them from overcoming their fear of a lack of understanding of the processes involved.

Further studies in this area would seek to explore in greater depth the causal relationships that have begun to be teased out in this small-scale study. The importance of informing and improving the way D&T ITT students are taught, to design and about designing cannot be over-emphasized. Nor should the association between a students' own design activity and their success as teachers of design within D&T in the future be ignored.

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