

# I don't enjoy making the folder: secondary students' views of portfolios in technology education

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## Abstract

*This paper will describe a research study that investigated students' experiences with the use of design portfolios in their technology education. The research builds on previous work by the first two authors that investigated the use of portfolios by professional designers, teacher educators and secondary school teachers working in England and Canada.*

*Separate focus group interviews were conducted in England with one group of Year 10 boys in a technology college and one group of Year 10 girls in a technology college. Questions asked of participants focused on definitions and the advantages and disadvantages of using a portfolio, as well as students understanding of the purposes of a portfolio. Audiotapes of the interviews were transcribed verbatim. Analysis of the data involved thematic analysis and concept analysis.*

*Analysis of the data has revealed that secondary school students participating in this study regard the portfolio as a burden requiring the production of materials that do little to enable the generation and development of ideas, and is driven by the assessment needs of the teacher rather than the learning needs of the student. Of particular interest is the view of those students who experience difficulty sketching and writing, for whom the design portfolio is seen as counterproductive in terms of enhancing their confidence and creativity. The paper will end with suggestions for using various types of portfolios to enable students to be creative through designing.*

**Keywords:** design education, portfolios, teaching and learning, assessment

## Introduction

It is generally accepted that most, if not all, designers always maintain a record of their work as it progresses. At one level this record can be seen as a product development tool, helping the designer externalise ideas in order to work on and discuss them with others. At a second level the record makes it possible to track back and trace the lines of thought that have taken place and to identify critical decision-making moments. Hence in technology education it should be possible to use such a record to enhance students' learning and assess progress. However, the ritualisation of designing, the conversion of this record into a product (a design portfolio), the constraints imposed by examining bodies, and the inflexible, narrow interpretation of what constitutes design have become significant problems in technology education.

This paper will be in four parts. First, it will review the literature describing how new theories of learning and new assessment practices support the use of a portfolio as a teaching, learning and assessment tool. Second, the paper will describe a research study that investigated secondary school students' experiences with and perspectives on the use of portfolios in their design and technology education. Three research questions drove the study:

- In what ways do secondary students perceive that portfolios enhance their designerly thinking and creativity?
- To what extent does secondary students' use of portfolios provide a record of the designing as it is taking place, and which can be used for future reference?
- To what extent does secondary students' use of portfolios serve as a tool for assessment? The third section of the paper will report the results of analysis of the data. Finally the paper will suggest using various types of portfolios for teaching, learning and



assessment in the context of enabling students to be creative through designing.

### Review of literature

In recent years, a number of theoretical and practical reasons have emerged to support the use of portfolios in a range of educational contexts and for a variety of purposes. For example, contemporary views of learning stress that it is an interactive process (Klenowski, 2002) involving reflection, evaluation and the extraction of meaning (Dennison & Kirk, 1990; Shepard, 2000). A new assessment paradigm to support improved learning emphasises the active involvement of students in their own learning, the importance of self- and peer-assessment, and the provision of feedback to the learner (Assessment Reform Group, 1999). Assessment approaches derived from a quantitative tradition, that is, *Assessment of Learning*, have given way to authentic assessment, *Assessment for Learning*, in which a student's ability to use knowledge to perform a task that is similar to or reflects those encountered in life outside school is assessed (Black & Wiliam, 1998; Klenowski, 2002). Burke and Rainbow (1998) describe how a portfolio can be used to provide an evolving picture of students' learning and progress in a variety of areas, including technical skills, self-learning, metacognition, improvement over time and establishing next targets.

The use of portfolios is not a new idea for practitioners of design, or for secondary school students preparing for external examinations in design and technology education. Yet the portfolio as a tool for learning, teaching and assessment in schools appears to be increasingly in serious disrepute. Atkinson (2000) has been highly critical of the way teachers use portfolios and the assessment schemes associated with portfolio production for the General Certificate of Secondary Education design and technology school leaving examinations in England. As Klenowski (2002) suggests, "in the promotion of the portfolio for assessment and learning purposes there is the possibility that too much will be promised and in practice a lot less will be accomplished" (p. 9).

### Method

The research method employed in this study used a case study design (McMillan & Schumacher, 2001). Participating Year 10 students attend a small (800 students) 11 to 16 comprehensive, which had recently become a specialist technology college. Students live largely but not

exclusively in less affluent homes. Two purposefully sampled, that is "information-rich cases for study in-depth" (Patton, 2002, p. 46) groups participated in two separate focus group interviews: one group of three girls and one group of four boys. Participating students were identified by their teachers as (a) interested in design and technology, (b) highly motivated, and (c) likely to obtain very good GCSE results. According to Heary & Hennessy (2002) focus groups encourage students to provide diverse responses, express their own views and genuinely engage in good quality discussion. According to Yin (1989) small sample size (as in this study) is not a barrier to external validity provided that each case study is detailed and analysis of data reveals elements of practice relevant to the study at hand.

The development of the questions for the focus group interviews and the analysis of data were informed by the work of Morgan (1998). General questions focused on definitions and perceived advantages and disadvantages of using a portfolio. Specific questions focused on the particular purposes of portfolios in the context of the design and technology work of each group as part of General Certificate of Secondary Education course work. Each focus group lasted a maximum of one hour.

A facilitator's guide was used to moderate the interviews (Munby, Lock, Hutchinson, Whitehead & Martin, 1999). Each focus group was audio taped. Tapes were transcribed verbatim. Assigning each student a code number ensured confidentiality. The unit of analysis used for coding the transcripts was the individual student's response. Content analysis, the search for recurring words or themes used by the participants (Patton, 2002), was used as the first step in the analysis of transcripts. This inductive analysis led to the derivation of categories or themes in the data, which allowed the researchers to compare data within and between the two focus groups.

### Results

#### The definition of a portfolio

Students described their portfolios as a collection of the materials used while they were designing and making a product:

It's a booklet ... of ideas, information and anything that might go towards your product ... such as first ideas and evaluations and the conclusion. (FS18)



[It] contains different ideas that you have collected ... to make your project. (FS17)

### The purposes of a portfolio

When asked why they thought it important to keep and use a portfolio, students reported that it served as:

- (a) a record of their ideas and
- (b) a reference to help them make the product:

It's a way of keeping your ideas, putting them on paper so you know what you are doing. (MS19)

It's [a place] where you can design ... [and] when you're making it, you can always go back and see how you designed it, and change it. (MS20)

At the start of every lesson I look through what I've done ... because then I can remember. (FS 16)

It helps you when you're making your actual product ... because it helps you connect everything together to actually know how it's going to work ... and [it's] there to help you say buy the materials. (FS18)

However, not all students were as clear about the purposes:

I still don't know what we use it for ... I think it's a waste of time ... I just want to get on with practical things because I really enjoy that. (MS21)

### The contents of the portfolio

As reported above, students used the portfolio as a repository for materials related to their designing and making. When asked what, if anything, they did not include in their portfolios, students reported:

[If] there's some things we don't think are good enough to [include] in our final project ... like little scribbles really to get you going ... [or] if you do loads you can't put them all in. (FS16)

I'll do little rough sketches and the ones I do like I'll put in, but some that I don't really like I won't. The one's I think won't be too hard and complicated to make [I'll include, but the one's I think are too hard] I put them ... in the back of my folder. (FS17)

Only one student reported that he did not pre-select the contents of his portfolio:

I include all the design work ... the design work is what you intend on doing, the actual project, what you want it to look like.... It's action words, drawings and sketches. (MS22)

### The utility of the portfolio

Several students used the portfolio as a place to develop ideas:

[The portfolio helps] you to see how you can change something to make it better, [because] if you're just thinking about it you can't see it, so you can't see it changing.... When you get it down on paper you can see what it is and then change it. (MS19)

I kind of always have the first idea in my head, and then when I get drawing them on paper ... [I change] little things that might make a big difference ... instead of straight corners make it rounded, or different colours and textures. (FS16)

Sharing ideas and receiving feedback from peers was seen as important by all female students, and is typified in the following quote:

Say you're having a problem with what size or colour, you can ask your friends for their opinion and they can put their input into your work. (FS18)

Males didn't share ideas unless they were working with another student on the same project or if another student in the class was working on a similar project. Males rarely asked peers for an opinion on their work:

Because work we're doing is so different ... it might not be worth it because it might not be relevant. (MS19)

However, male students did acknowledge that if they had to share ideas, then the portfolio was useful:

If you are going to share an idea it's easier to use your folder because you have it on paper, because if you have it in your head the person you're telling might not get the clear picture. (MS20)



**What students enjoyed most and least**

Female students reported that they most enjoyed recording their ideas on paper:

[I enjoy most] getting all your ideas down on the paper. (FS16)

I like drawing my ideas.... Sketches are useful because ... every time you start the lesson you have a reminder of which part you're doing. (FS17)

Male students did not enjoy keeping a portfolio:

There's not really anything about the design folder I enjoy most because I don't really like doing it. (MS22)

I actually don't have much in my folder. I just ... try to do as much ... or as little as I need to do. (MS19)

When asked why they did not enjoy keeping and using a portfolio, male students reported that it was because they found drawing difficult:

I find [drawing] difficult.... If I could draw I would, but I can't so I don't.... It looks like rubbish ... [if I could sketch] I'd enjoy it more and [I'd] feel better about [myself] and enjoy it more. (MS19)

I can't draw ... and it's hard to put [ideas] onto the paper. (MS20)

I can't draw and I [find] it really boring.... [Y]our design folder just gets in the way ... I'm not really good at drawing and my folder seems to let the project down. (MS21)

Despite these difficulties, male students showed the researchers up to four pages of sketches. When asked why they did so much sketching, given that they didn't enjoy it and had little skill, students responded in a similar way:

Because our teacher told us that we have to make a sketch.... If it wasn't to get marks I wouldn't [sketch] ... I'd just build it straight away. (MS21)

I've only got [these sketches] in there because the teacher told me to. (MS22)

Male students described how they preferred to write about their work rather than draw:

Writing is easier than drawing. (MS21)

I can write all the details that I can't put in my drawing. (MS20)

[I] can write very detailed of what it looks like, what it does, and how it works ... if you're looking at my pictures you can't see very much. (MS19)

I'm not very good at drawing so I'll just write down what's important. (MS22)

Several students, while not enjoying producing a portfolio, did acknowledge that it was useful:

I don't like keeping a folder ... but I do think it's a good idea, because it ... helps you keep track of where you're going so you know what you do next. (MS19)

Both female and male students reported that much of the work contained in the portfolios was, from their perspective, of little use and served only to meet the requirements of the teacher, the examining body or both:

There are certain topics that you need to put in the course work [to get the marks]. (FS18)

You get marks for doing it in different ways, like if you do a tally chart you'll get so many marks, and then present it in different ways, like spider diagrams, and just silly things ... that you think are really pointless, but they cost you like a few marks. (FS16)

**Discussion**

In technology education, the prime purpose of the portfolio should be as a tool for the student as a designer, empowering the student to generate, develop and communicate design ideas. It is the authors' contention that the use of such a portfolio for learning, teaching and assessment purposes will then flow naturally from its utility for the student.

Students in this study regarded their portfolio as a useful place to store ideas for later reference, as an aide-memoire for use in later lessons and, in the case of female students, as a way to share ideas and receive feedback from peers. Yet at the same time, a portfolio was not universally understood by students to be a product development tool, a place in which to develop ideas that would lead to more successful





designing. Perhaps this is a function of the inability on the part of many students to sketch ideas. A report in 2003 on the school attended by students in this study prepared by the *Office for Standards in Education*<sup>1</sup> noted that "designing is nearly all done using software. This is limiting the development of spontaneous creative drawing." Students in this study described the difficulties they encountered with sketching and, as a consequence, considered the design portfolio as counter-productive in terms of enhancing their confidence and creativity.

Of equal concern is the experience of those students who viewed portfolio production as a burden, as detracting from their enjoyment of designing and making. Perhaps this negative perception arises, in part, as a result of students feeling as though they have little autonomy over the content of their portfolio. They reported that often portfolio content was directed more by the teacher in order to "get marks" and to meet Examining Body requirements than their learning needs as a novice designer. This finding is to be heeded, for as Klenowski (2002) warned, "the intended processes of critical self-evaluation and reflection integral to the development of ... portfolios [has] given way to unintended outcomes such as using checklists to ensure that the requirements of a standardized structure are met" (p. 8). This is supported by the findings in a previous study (Welch & Barlex, 2004), in which teachers observed that the imposition by Examining Bodies of an inflexible portfolio assessment structure is detrimental to student learning.

Previous research by Welch & Barlex (2004) also suggested that using the portfolio as a product development tool could be achieved by using three types of folio: a sketchbook to enhance designerly thinking and creativity, a job bag to record designing as it is taking place and for future reference, and a showcase portfolio to present selected items of finished work. The use of these three types of folio, with their different but complimentary purposes, allows the student to use them for learning, both about the emerging design (Sim & Duffy, 2004) and how to design, and the teacher to use them for teaching and assessment.

### Conclusion

The secondary school chosen as the site of this research underwent an *Office for Standards in Education* inspection in 2003. Provision in design and technology was reported as "good, with many strengths." Year 10 GCSE design and technology results were reported as "well above average." Yet data collected from student interviews showed that the portfolios produced by current Year 10 students (a) were not universally understood as a tool to enable the generation, development and evaluation of ideas, (b) were sometimes regarded as "boring" and a burden that detracts from the enjoyment of designing and making, (c) are contrived to meet the assessment needs of the teacher, and (d) are, for some students, counterproductive in terms of enhancing confidence and creativity when students experience difficulty sketching their ideas.

These results give rise to a number of questions. What teaching and learning is required to overcome students' inability and reluctance to explore design ideas through the use of a portfolio? While the sample size in this study was small, thereby preventing significant discussion of gender differences, comments from the (unintentionally) gender-specific focus groups suggest the need to investigate the extent to which and in what ways male and female students differ in their perception and use of a portfolio. Given the issues identified by this study, to what extent would the adoption of the three types of folio described earlier resolve the conflict between the portfolio as a product development tool for the student and the portfolio as an essential part of Examining Body requirements?

<sup>1</sup>In order to maintain the confidentiality of participants in this research study, the reference for this Office for Standards in Education report cannot be provided.



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