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The introduction of Practical Craft Skills into the Scottish Technology Curriculum: A new beginning or the beginning of the end
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Abstract
A new subject has entered the technology curriculum in Scotland in the form of 'Practical Craft Skills'. This has been greeted with a large degree of satisfaction from the majority of technology teachers in Scotland who have expressed a growing concern about the ability of certain pupils to deal with the design element in craft and design.

The ‘arranged marriage’ of craft to design has not been without its tensions as the long established craft tradition had to make accommodations to its new, more creative partner. The teaching of design, its assessment and its integration with craft skills has not as yet found an optimum balance in technical education in Scotland and this has left a proportion of students not entirely convinced of the benefits of the design dimension. Courses in Practical Craft Skills, on the other hand, have no design element, are continually assessed and are inherently skills-based. This ‘skills by prescription’ approach is becoming entrenched in policy.

This particular curriculum reform could therefore be interpreted as a retrospective dilution and re-vocationalisation, of the curriculum, or conversely, as a broadening out of provision which allows teachers greater scope to respond to the educational needs and preferences of diverse groups of pupils. Whilst the risks of forecasting curricular futures must be acknowledged, the trend of departments offering Practical Craft Skills alongside craft and design, or indeed in place of craft and design, looks set to continue at the expense of design education in Scotland (Dakers and Doherty, 2003).

This paper will seek to argue that the teaching of Practical Craft Skills as a hands-on practical activity, with no involvement in the design process, is problematic. The paper is limited to some key topics and seeks to promote discussion.

Keywords
skill, design, reason, performance, learning

Practical Craft Skills: its place in the curriculum
In 1999 a new course, Practical Craft Skills, was introduced into the Scottish curriculum as one of the new Higher Still courses. The current structure of Higher Still allows all post middle school students entry to subjects at a suitable level ranging from access level courses, on to Intermediate 1, Intermediate 2, then Higher and finally Advanced Higher. These courses are presently offered at the upper secondary stages (ages 16 to 18) whilst Standard Grade is still offered at middle secondary (ages 14 to 16). There is now evidence, however, that Standard Grade is likely to be completely superseded by Higher Still. This will allow the primary and early secondary (aged 5–14) courses to articulate more closely with the appropriate stage in the Higher Still programme. Some Local Authorities have already gone down this path and have removed Standard Grade altogether. Others are starting to offer Practical Craft Skills as an alternative to Standard Grade craft and design.

Practical Craft Skills is offered as part of the technology curriculum and covers two areas; woodworking skills and engineering skills. Both are offered at Intermediate 1 and Intermediate 2 levels and have no external examination, although consideration is being given to offering a Higher which would be externally assessed. All assessment is internal and is based upon the successful completion of the various components as set out in the course arrangements. The assessment process is subject to external moderation.

For the purposes of this paper, woodworking skills at Intermediate 1 will be discussed, although the same fundamentals apply to the other components. Interestingly, since 1999 the uptake in woodworking skills has been exceptional. Presentations for Intermediate 1 and 2 from 2000 to 2002 are shown in the table below. It is thought that over 3,000 presentations will be made for 2003.

Table 1: Presentations for Practical Craft Skills

<table>
<thead>
<tr>
<th>Year</th>
<th>Middle School (15/16)</th>
<th>Upper School (17/18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>22</td>
<td>1051</td>
</tr>
<tr>
<td>2001</td>
<td>33</td>
<td>1908</td>
</tr>
<tr>
<td>2002</td>
<td>168</td>
<td>2237</td>
</tr>
</tbody>
</table>

(SEED, 2003)
Significantly, however, presentations in craft and design have not fallen. Anecdotal evidence would suggest that Practical Craft Skills is perceived as filling a niche market for disaffected pupils, along with pupils who are regarded as less academically able; the children who would perhaps have left school in the past without any Standard Grade qualifications. It is the experience of the author that a substantial number of technology teachers in Scotland feel that children are not able to deal with the design, i.e. academic, element of craft and design, (which is similar to resistant materials in design and technology in England) and are, as a consequence, not taking up the subject.

Table 2 demonstrates, however, that the number presenting at Standard Grade has in fact risen. The concern therefore focuses on the significant fall in numbers from Standard Grade who go on to present at Higher. The numbers presenting at Intermediate 2, which can be regarded as an equivalent to Standard Grade, may account for students upgrading their Standard Grade from the year before, or upper school pupils electing to take the subject for the first time in Year 5.

**Table 2: Presentations for Craft and Design**

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Grade</th>
<th>Higher</th>
<th>Intermediate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>13,781</td>
<td>3064</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>14,034</td>
<td>2784</td>
<td>513</td>
</tr>
<tr>
<td>2001</td>
<td>15,148</td>
<td>2551</td>
<td>648</td>
</tr>
<tr>
<td>2002</td>
<td>15,216</td>
<td>2639</td>
<td>780</td>
</tr>
</tbody>
</table>

(SEED, 2003)

As the Higher in craft and design has a very strong emphasis on design and a much reduced craft content, compared to the Standard Grade, this is likely to be a significant factor in directing pupil choice.

The rationale for the woodworking component of the Practical Craft Skills course comprises the following:

**Woodworking Skills Intermediate 2: Course outline**

The course is allocated 160 hours and the National Course Specification requires that three modules should be completed. These modules are:

**Bench Skills 1: Wood – flat frame construction**

Candidates will learn to use and maintain a range of common hand tools and be involved in setting out and making a range of basic joints that are commonly used in the production of flat-frame joinery fabrications and structures.

The candidate will use the skills and knowledge gained from the production of joints to manufacture a framed product from a working drawing.

**Bench Skills 2: Wood – carcass construction**

The candidates will learn how to set out and make a range of basic joints that could be used in a wide range of carcass joinery constructions. Candidates will manufacture a carcase or box product from a working drawing.

**Machining and Finishing - Wood**

Candidates will learn to set up and use a range of common machine and power tools in accordance with safe working practice.

Candidates will manufacture a machined component from a working drawing and will learn how to use various finishing techniques. This should include a range of surface preparations.

**The craft and design dichotomy**

Part of the rationale behind Practical Craft Skills is that it ‘...will contribute to the knowledge, understanding and practical experience of candidates whose aspirations and abilities are towards practical work, or who are considering a career in an industry which involves practical activity in any capacity.’ (SQA, 1999: 3)

The argument that Practical Craft Skills is desirable in an occupational sense is problematic. Given the rapid technological change in our society, specific skills, especially the skills involved in Practical Craft Skills, are quickly rendered redundant in this respect. Furthermore, there is evidence that specific skills and generic skills are best acquired within authentic practice contexts (Hager and Hyland, 2003). Perhaps in recognition of this, the Construction Industry Training Board (CITB) does not ask for Practical Craft Skills as a requirement for entry into a construction apprenticeship. The qualities they seek are more interpersonal (Dakers, 2003).

The rationale for the Practical Craft Skills course further states that ‘Practical creativity exemplifies mankind’s need to be able to control and utilise tools and materials.’ (SQA,1999: 3)

Despite this focus on ‘creativity’ however, it quickly becomes evident that the course is clearly designed to be prescriptive in this respect. Indeed the need for prescription and conformity is made clear in the comments from the moderator

‘In a very small number of centres candidates have been allowed to adopt a ‘Craft and Design’ approach to the Woodworking Skills course.
Having a practical end, the single subject of craft and design, or in a kinaesthetic sense, drama or sport. The tension between practical and creative highlights an important issue.

Having a practical end, the single subject of craft and design may be regarded at best as a tertium quid. In other words, the perception of design is seen as one component, usually carried out by the engineer, whereas craft falls within the domain of the technician. The combination of craft with design is therefore perceived as problematic. This dichotomy between the two is institutionalised in many other domains of modern society; the architect and builder; the car designer and the assembly line worker; body and mind, hand and head, manual and mental, skills and knowledge. In addition, Plato and Aristotle certainly supported the idea that theoretical knowledge was superior to both practical and productive knowledge, the latter being concerned with the making of things out of contingent matter. This hierarchy of theory – practice – production was not only considered epistemological, but also social (Hager and Hyland, 2003). Society in the UK has not, it might be argued, moved much away from this worldview.

Significantly, the designer is often more associated with the term ‘art’, as distinct from the ‘mechanical execution of predetermined operational sequences. Where excellence in one field [design] is attributed to genius, in the other [craft] it is attributed to expertise’ (Ingold, 2000: 295).

Yet, given that a major goal of craft and design is said to ‘…make the most of your creative skills’ (Norris and Linton, 1998: 3)

the skills required must evolve through a synthesis of the ‘complex combination[s] of controlled and non-controlled elements, unconscious as well as conscious mental processes, non-directed as well as directed thought, intuitive as well as rational calculation’ (Barlex: 2003: 4), in conjunction with the many and varied constructive skills required. By separating the skills of conception and execution in craft and design, the practical domain of Practical Craft Skills is reduced to a mechanistic process, which, in this technologically evolving society, can be seen to ultimately aspire to work independently of human beings. Computer Aided Manufacture serves as a testimony to this view.

The concept of skill

In order to attain a grade ‘A’ in Practical Craft Skills the candidate is expected to demonstrate woodworking skills to a fairly good standard of craftsmanship with only occasional help from the teacher. Given that these skills apply only to execution, it is perhaps useful to investigate the concept of the term skill.

Arguments about the nature of skill have been around for a long time, and whilst it must be accepted that Aristotle was a co-conspirator in the instigation of the academic vocational divide argument, he nevertheless gives a detailed account of skill, in the Nicomachean Ethics. Aristotle regards skill as an essentially productive state that must involve reason. Crucially, he sees skill as connected with ‘bringing something into being’, where the skill is not in the product but is, instead, embedded within the process. For Aristotle then, the first principle of something coming into being lies in the producer and not in the product. Thus the exercise of bringing something into being is concerned with the production of things that do not have their own essence ruling them (Aristotle, 2000). Sartre (1997) sees the essence of something coming into being, as preceding its existence. In other words, the notion of what an artefact actually is, exists in the mind of the creator before it is ever produced. The essence, or first principle for example, of what a chair actually is, must be known prior to its coming into being. A chair is fundamentally a device for a human being to sit in. An absence of this basic concept of what a chair essentially is, would render it impossible for the designer to design one. Equally, if the designer had no concept of the purpose of a dining room, the design of a dining room chair would also be impossible. The skill of bringing a dining room chair into being then, requires the producer to have some experience of what chairs are and an understanding of the function of a dining room.

However, would it be possible for a person who had these concepts but who lacked the appropriate skill to produce a dining room chair under the instruction of another who had acquired the relevant experience? It is likely that the unskilled novice would require several attempts before the chair could be made to a
standard which would be deemed satisfactory, but eventually, and with enough practice, it seems highly likely that a such person could become efficient at producing the said dining room chair. Does this constitute skill?

Taking the argument further, would it be necessary for that same person to have knowledge of the function of a chair, or what the function of a dining room was, in order that they may ultimately produce a satisfactory chair? The answer here must be a qualified no. The process of manufacturing the chair under these conditions must be possible, but it would reduce the entire operation to a mechanical execution of the predetermined operational sequences of constructing the chair. This must then, reduce the process to that of an autonomous body acting, in effect, as a machine whose functions are accompanied, but not controlled by consciousness. This form of instrumental behaviour is conducted not for its own sake, but entirely for the sake of the end product, in this case the chair. This completely reverses Aristotle’s notion of the skill as belonging to the person rather than the product.

Teaching and learning skills
In terms of effective learning, moreover, the type of Practical Craft Skills environment, dominated by performance over learning is according to Ames (1992) a poor one. Ames makes an important distinction between what she terms learning oriented goals and performance oriented goals. It is learning goals that foster the most deep and meaningful learning through intrinsic motivation ‘…a [learning] goal elicits a motivational pattern that is associated with quality of involvement likely to maintain achievement behaviour, whereas a performance goal fosters a failure-avoiding pattern of motivation.’ (1992: 262)

Where learning is product orientated, children will focus on the quality of their work and ‘the high visibility of these products orientates children away from the task of learning’ (Ames, 1992: 264).

This is where we must challenge the rationale for a practical subject which has as its central aim, the development of practical craft skills beyond any meaningful context. Skill development in this model is at a very basic level.

Dreyfus (2001) sees skill development as a gradual progression from novice to expert. He describes seven developmental levels which form a taxonomy. Beginning at novice level, tasks are broken down into smaller ‘bite sized’ components which involve clearly defined rules and procedures. In the psychomotor domain, skills such as sawing are honed through repetition, practice, drill and rote learning. However, using a saw or any tool, is more than ‘memorising the elements and the rules relating to them. The student needs not only the facts but also an understanding of the context in which that information makes sense’ (2001: 34).

At basic novice level in Practical Craft Skills, the pupil resembles the model suggested above where manufacture becomes a discrete set of meaningless, learned procedures which become automatic mechanism processes lacking any form of engagement. Pupils in this environment are more likely to adopt surface learning approaches at best, or simply lose interest.

Pupils are more likely to engage with a learning situation when they ‘perceive meaningful reasons for engaging in the activity; that is, when they are focused on developing an understanding of the activity, improving their skills, or gaining new skills and when the task presentations emphasise personal relevance and meaningfulness of the content’ (Ames, 1992: 263).

For the student to become more engaged in the process, and move from novice to proficiency level in the Dreyfus model, important changes in behaviour are required.

Proficiency, which is the fourth level, for example, requires the pupil to have an involvement and a sense of ownership in the process. Here, the ‘performer’s theory of the skill, as represented by rules and principles developed and refined from being a novice, will gradually be replaced by situational discriminations, accompanied by associated responses. Proficiency seems to develop if, and only if, experience is assimilated in this embodied, atheoretical way’ (Dreyfus, 2001: 40).

In order to reach proficiency, the performer, whilst still set within a situational framework, is now developing the requisite skills to enable him to work from analytical to intuitive. In Practical Craft Skills however, the situational framework does not allow a ‘breaking free’ or a ‘liberation into the creative process’. It nullifies the performer into routinised, non-contextualised behaviour. Students are reduced to performing the exact same tasks, for the exact same outcome. Performance is thus embedded within the novice level, unable to break free because the context is set within a very narrowly defined performance framework.

The case for practical work for its own sake can be argued. Benjamin Franklin argued that being a ‘tool-making animal’ was an essential component of being a
human being (Poser, 1998). The products of homo faber can be seen as a homeostatic mechanism which forms the biological conditions necessary for survival. Indeed the process of manufacturing can be seen as a method for developing organisational abilities as practical procedures are worked through from a drawing to an end product.

Children who feel ostracised from the existing curriculum find comfort and security in a subject area which tests skills that they feel more able to express. Gardner (1983) certainly highlights a psychomotor intelligence and Harrow (1972) in her seminal work on the psychomotor domain sees '[m]ovement as the key to life and exists in all areas of life. When man performs purposeful movement he is coordinating the cognitive, the psychomotor and the affective domains.’ (1972: 6)

There is perhaps a case for a prescriptive craft subject as part of the curriculum, indeed there may be, as is argued in Scotland, a sector of the school population which requires such a subject area.

This paper has not fully considered a number of other factors that may contribute to the debate. Issues relating to cognitive development resulting from practical work, or the fact that children seem to enjoy the subject, needs further investigation. However, the establishment of a prescriptive craft orientated subject within the technology curriculum, which is showing an exponential rise in numbers, should be subject to debate.

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