Is design and technology education really real?

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Abstract
What follows is a philosophical argument that will attempt to explore the notion of school based design and technology as vocational education. This is, for some reason, commonly attributed to its qualities which are regarded as different from other types of education – normally referred to as 'academic education'. I am mindful that this quest is full of dangers and pitfalls and I expect, as a result, to be challenged in my thoughts, and rightly so for is this not what a conference sets out to accomplish? In my arguments I will give an interpretation that seeks to "correlate things which often are not on the surface connected" (Lovejoy, 2001: 21). Things like philosophy and its necessary, but often neglected relationship, with design and technology serves as an example which, as in Plato’s allegory of the cave can help liberate the learner from the false, pre-determined images presented in the shadowy depths of the cave, and lead her up into the sunlight, thereby revealing a reality which is no longer constructed for her, but rather, by her.

I will consider, as my thesis, the concept of vocational education as being what Coffey (1992) describes as the “passing on of manual skills from one generation to the next. [Where] most people were educated ‘on the job’ in particular by experiencing some sort of formal or informal apprenticeship” (11) Moreover, they are “…traditionally [ ] viewed in class terms” (Lewis, 1991: 96-97). By mapping this perception of vocational education onto school based design and technology education, I will present an argument that demonstrates, to those that support the notion of design and technology education as vocational, that this is a false representation of design and technology education. This vocational view I will liken, in some sense, to seeing the world from the depths of Plato’s cave. I will, by way of argument, attempt to bring those who hold these views into the sunlight, so to speak, where they might (or might not), (re)construct their views. I will attempt to offer an antithesis to these contrary views by using Baudrillard’s notion of hyperreality as a means of explication.

Introduction
Arguments relating to the efficacy of design and technology education as vocational are by no means new. Smithers (2002) for example, makes a compelling argument as to why the present paradigm for school based design and technology education as vocational is flawed. He cites several examples from other countries which, he argues, demonstrate better models. He concludes by offering suggestions for a more clearly defined model for school based vocational education in the UK by attempting a synthesis of the better aspects of the various models. Carr (2003) argues that there is a distinct and clear need for vocational education set within the school curriculum. He claims that state funded schooling is accountable and as such has a duty to introduce the less academically gifted children to subject areas which are more vocational in nature, thereby serving the wider economic needs of the country. He does not, however, expect that school children should engage in vocational education to anywhere near the same extent as an adult participating in some designated trade such as plumbing for example, but that they should be introduced to some of the skills associated with these various trades. Virtually all arguments surrounding the school based vocational education debates since state funded schooling began have, like the two mentioned above, orientated toward a paradigm of reform. In other words, the current system of school based vocational education is not working – here is why – and here is how we can fix it. This paper follows a completely new trajectory in this debate. I do not argue that it is not working. I argue that school based design and technology education as vocational is an impossible construct. I will set this argument in motion by considering a recent case study which explored the vocational aspects of design and technology education from the students’ perception.

Thomas and Denton (2006) recently carried out a case study investigating the relevance of the subject of design and technology to disaffected pupils. Put another way,
they explored the perceptions the students had of design and technology? The study concluded that there were actually two relevancies emerging from the students’ perspectives. One was that design and technology education was perceived to have relevance or value only when it was “connected to the present, situational” (56). In other words, the students enjoyed ‘doing’ design and technology, in and for itself. They valued the fact that the subject enabled them to be physically active, (using tools and the like) as distinct from more cognitively orientated activities such as mathematics. The other relevance or value which emerged from the study, was that of the subject being perceived to be vocational or as career preparation. Thomas and Denton concluded that whilst the pupils understood this second definition, they “favoured the first definition” (57), or in the words of the pupils: “It’s [design and technology] like having a proper job – using tools and machines and stuff. In some subjects like history all you do is talk and write” (55). This particular study also cited Atkinson (1993), Brochocka et al (2001) and Growney (1996), all of whom found very similar results in their own related studies.

It appears then that these pupils have a somewhat confused set of perceptions about what the subject actually is. On the one hand they relate it to what they regard as a proper job where you use “tools and machines and stuff” (Thomas and Denton, 2006: 57). This, in concert with the findings of Growney (1996), emphasises a student perspective of design and technology as serving specific trade careers which relates to the descriptions given by Coffey and Lewis above. This is clearly vocational in those terms. However, the students see what most would describe as ‘academic’ subjects like history as being subjects where “all you do is talk and write.” Design and technology, on the other hand, serves their need for immediate gratification. It is a subject which encapsulates the consumeristic values of contemporary youth culture, “keen to indulge themselves, to have fun” (Thomas and Denton, 2006: 51). Given these confusing realities, what then is the student perception of design and technology as vocational education? It is clearly different from their perception of what constitutes ‘academic’ education. Perception for these students appears to be justified by appeal to limited experience and tends to be more sensorial in nature (it may be that their fathers or uncles etc., belong to trades which may be why they see the use of tools as “like having a proper job” (ibid)). This leads them towards a narrow focus situated within there own limited experience. Their perceptions about vocations are thus limited to the confines of their immediate surroundings and thus limited to wider interpretation.

Defining perception
Drawing on Ihde (1990), perception has two facets, each of which are constituted in the other, in other words, one cannot exist without the other: micro-perception and meta-perception. Micro-perception involves hermeneutics: how we interpret and make meaning out of what these sense perceptions signify to us. The students mentioned before, I will argue, are weak in this latter definition.

By using my optical senses – my eyes, I am able read French words. I am unable, however, to understand them, because I have not yet learned to interpret what the collective arrangement of the letters into words and phrases signify, even although the individual letters are actually familiar to me. (French and English alphabets are almost identical). In other words, I have not learned the French language. The combinations of letters that form French words are essentially meaningless to me. For more or less the same reasons, I am also unable to interpret the meaning sensed by my cochlear apparatus – my ears, when listening to someone speaking French. When any attempt is made by me to conceive it as a whole, it presents to me nothing but incoherence. It is ‘real’ in that I can sense it, (read it, hear it or ever see the person speaking it), but it signifies nothing to me because I lack the necessary tools to interpret it. The students mentioned earlier likewise enjoy design and technology sensorially, they sense and enjoy what is happening in the design and technology classroom at the time, they even liken the experience to their conception of what constitutes “proper jobs”. However, they see it as meaningless in terms of career preparation because it is more, for them, about instant gratification, about enjoyment, about not being history! They lack the necessary intellectual tools that enable them to make the links between design and technology education as satisfying an immediate need (sensorial), and as the “enterprise of supplying the conditions which ensure

And it is these interpretative 'tools' that determine the way that I will perceive meaning in French for example. It is not a case of simply rote learning French words and phrases outwith the context of the culture. That would be impossible (see for example Gavin and Phipps, 2005). I cannot simply map my first language onto another without, as part of the same process, developing an understanding of the culture (in this case French), which is always formed in association with language. Modern language students at universities are required to spend a considerable period of time living in the culture in order to better understand the language. Equally, students cannot simply rote learn a vocation without being in and experiencing the culture of the particular vocation. The inability to derive any meaning from simply learning a language, as likened to the rote learning of arithmetical tables outwith any context, is very well demonstrated in Searle's (1984) Chinese room argument. Whilst this argument is specifically related to Artificial Intelligence, one aspect of it nevertheless helps to further elucidate my argument.

A room with an input letterbox from an adjoining room on one side and an output letterbox to another adjoining room on the other side is a necessary construct for this mind experiment. In the middle room is a person who can read English but not Chinese. The person has at her disposal a book containing all the individual Chinese characters together with their English translations – character by character. A Chinese text is posted from the room with the input letterbox which is occupied by Chinese speakers. The text is in turn, translated by the person in the room, who, by referring to the book, finds the matching symbols in Chinese and translates them, one by one, into English. Upon completion the person in the room then posts the translation out to the opposite room in which the occupants speak English. The person in the room is translating the text purely on a sensorial basis (using her eyes to compare similar symbols). There is no interpretation – not unlike my ability to read but not understand French. My argument at this stage in the paper, is that the design and technology students mentioned above are in the equivalent to Searle’s Chinese room. Their notion of the vocational aspects of design and technology are based upon their ability to translate the input given them – design and technology education is vocational, given in a language that they do not understand (what does vocational mean?), using only a crude guide – the vocationally decontextualised school based design and technology curriculum – which they are then expected to translate into a chosen occupation following school. I will argue this point in more detail later.

It becomes evident then, I argue, that perception cannot be purely sensorial, devoid of any interpretation. Moreover, it becomes further evident that in order to interpret, the student needs a meaningful context, without which the meaning of vocational is rendered amorphous.

In a school based design and technology education scenario, what then are the various stakeholders’ perceptions of what constitutes vocational education? Let us consider the student as an example.

**Vocational education as perceived by the student**

Is the student’s perception of the ‘vocational’ design and technology teacher, that of a demonstrator and/or facilitator of abstract, apparently generic ‘vocationally orientated’ skills, values and understandings, which have no clear and objective relationship to any specific external occupations, but are somehow revealed in the process of designing and fabricating various artefacts in a school setting? Or, is the teacher, again from the student’s perception, a simulation of (or a real) carpenter/plumber/baker/product designer, or all of these, or some other occupation altogether? The teacher may actually have been a carpenter formerly before becoming a teacher of design and technology, but does this make her a teacher of carpentry only? This latter, very narrowly focused definition is not generally what appears to be experienced in design and technology classrooms. Thus, from the student’s perception, under the remaining first definition, what constitutes an objective reality for vocational education? One which constitutes a reality that is representational, full of meaning, directional, transparent, obvious, under this first definition, has essentially disappeared. It has no overtly direct links with specific occupations. It transcends specific occupations and in so doing, loses sight of them. It has given way to the antithesis of any objective reality.
What I mean by objective reality is a reality that is perceived as having actual existence, based upon observable phenomena and/or sensorial activity in which the subject has agency. Sitting upon a chair, riding a bicycle, using hand tools or being a carpenter. All of these involve the active engagement of the subject. This is distinct from watching television which is passive in nature and the only active engagement the subject has, is to turn it on, change channels or turn it off (and a few other trivial things like altering the contrast etc). These objective artefacts or activities (the chair or occupation) are perceived by the subject (the person) as having some final purpose which is mutually constituted between them. For example, a person may decide to sit upon a chair because they are tired, or they may engage in the act of ‘being’ a carpenter in order to produce an artefact.

The antithesis of objective reality is what Baudrillard refers to as ‘Integral Reality’, a reality without limits in which everything is realised and technically materialised without reference to any principle or final purpose \([\text{destination}]\) whatever” (2005: 18) (Italics in original). Integral reality is constituted for the student by external agencies, as in the case of ‘reality’ television for example. Here, the viewer is subject to programme makers edited conception of what constitutes ‘reality’. ‘Real’ people acting out ‘real’ lives in socially engineered environments are integral to the programme which has no credible final purpose. Watching these programs is passive, voyeuristic and completely meaningless to the viewer. There is nothing tangible to be gained from the viewer’s perspective. It is, however, about ratings or advertising revenue on the part of the producers. The final purpose, the destination is pre-ordained for the viewer/student by others. It has no objective reality, the student/viewer has no agency.

Thus the objective reality for the students mentioned earlier is that design and technology is fun and enjoyable because it is not like ‘academic’ subjects, whereas the objective reality for many of those in power (teachers, policy makers, governments etc.), is that the subject is vocational, and they present it as such. However, this power imbalance causes students to keep their own notions of an objective reality for the subject – it is good fun and enjoyable – whilst simultaneously (non)-conforming to what they perceive to be the integral reality espoused by the power bases – it is vocational. This becomes an abstraction for the student. The various levels of student conformity set within this integral reality manifest themselves either as outright rejection or passive acceptance, or somewhere along this continuum depending upon the student’s objective reality.

It is important to note at this stage that integral reality is external to the subject (the student) but obvious upon close inspection. Most of us (I hope) are aware that reality television is a false construct, most of us know that the various ‘experts’ who tell us how to lead our lives are television personalities working under direction first and experts second. It when we reach the stage of what Baudrillard refers to as hyperreality that these signals are lost. I shall discuss this later.

Vocational education then, in a school based design and technology class has therefore no clear destination, no final purpose. The vocational, or occupational \([\text{destination}]\) has disappeared so to speak.

I am not arguing that occupations which exist outside the design and technology classroom have actually disappeared physically. I am arguing that they have disappeared metaphysically, in terms of the vocationalisation of school based design and technology. They have no clear and distinct relationship with school-based vocational education. They continue to exist, but their signification in terms of ‘vocational education’ has been lost. What then is the rationale for students to participate in vocational education, from their own perspective? Are they learning about what it is to be a(n) \([\text{insert occupation}]\) as they might learn what it was to be a Roman Centurion? Are they learning how to be a(n) \([\text{insert occupation}]\) as akin to being an apprentice in a situated ‘real’ context? Is vocational education denotative or connotative? Indeed, what is the rationale from the teacher’s perspective? Does it accord with the student? Does it accord with policy makers? Does it accord with industry? Is it really vocational? Is it really real?

In this blurred conception, students cannot (nor can they be expected to) see a destination, a context, a meaning which articulates with the idea that ‘this is vocational education which is distinct from academic education
because [insert reason]'. Instead, they just see various images, various simulations provided variously by the teacher (and/or the curriculum, and/or the school, and/or policy makers etc.). Do these images, these simulations, constitute an agreed reality for vocational education, a consensus? Is it imbued with meaning and direction for the student (and the teacher and others)? Is it a manipulation, not of an original occupation (denotative), but rather, some synthetic symbolic order created by the teacher (and/or the others previously mentioned), that variously attempt to connote the vocationalisation of design and technology by simulating some homogenous representation of all forms of industry, whilst at the same time, relating to none. Design and technology education as vocational, in this respect, can only be an illusion, a fabricated representation presented to the students by someone or some others, under the influence of vocationalism.'

"Now that for which there is neither a meaning nor a definitive reason is an illusion… Hence the need to produce all the possible forms of a simulacrum of meaning, of trancendance – things which mask this original illusoriness and protect us from it" (Baudrillard, 2005: 32).

This illusionary vocationalism can only exist in hierarchies. Students can be given no agency. If they were, they would either choose a specific vocation that they wanted to follow, or simply prefer to ‘do’ design and technology, in and for itself, like the students mentioned earlier. The reason that we think design and technology education is vocational is because everyone believes it is. No one really questions this: it is simply taken as read. It is as if some invisible demiurge insists that it is so and we have no power to resist. Whilst it claims to align itself with industry, it does not do so in any definitive or obvious way. We all just seem to accept this. I know of very few people who argue that design and technology education is not vocational. Paradoxically, however, nobody can tell me what they mean by vocational. This forms the basis of Baudrillard’s third order of simulacra. (The first two orders of simulacra are not discussed in this paper due to space limitations). It claims to represent something which does not actually exist – a vocational education which is not vocational! A hyperreality.

"It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real for the real, that is to say of an operation of deterring every real process via its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and short-circuits all its vicissitudes… A hyperreal henceforth sheltered from the imaginary, and from any distinction between the real and the imaginary, leaving room only for the orbital recurrence of models and for the simulated generation of differences” Baudrillard, 1994: 2-3).

An example of this hyperreal, this substitution of the ‘signs of the real’ for the ‘real’ can be seen in an actual design and technology ‘vocational’ enterprise set in England.

**Baudrillard’s hyperreality**

DATA and Sainsbury (2003) collaborated on a new vocationally-orientated initiative called “Taste of Success.” If students visit the site they are offered several options, including one where they can observe, ‘virtually’, the various processes that the in-store bakery in a Sainsbury’s supermarket will go through in order to bake bread. Whilst it clearly represents a ‘real’ commercial bakery, it is not necessarily representative of bakers per se. (Independent bakers might specialise more and hand-produce less). The site has references to the term ‘vocational’ on most pages; it even has a page which looks at the career profiles of Sainsbury employees. Moreover, in the secondary school product development page (Sainsbury 2003b), reference is made to the concept of ‘real’ life in contradistinction to what is presumably considered to be ‘school’ life. (The substitution of the ‘sign of the real’ – Sainsbury’s world representing the ‘real’ – the school world representing the (un)real. Or is it the other way round?). Few would argue then, that vocational education in this respect is not orientated towards a particular industry, and in this example a particular career within a particular industry; in this case the bakery within the store. This is, however, a perfect example of Baudrillard’s third order of simulacra, his world of hyperreality.

The depictions on the website are representations of what actually happens in a Sainsbury in-store bakery. For Baudrillard, the world of the media, which includes the web, is formed around what he refers to as “the
metaphysics of the code” (1983: 103). Those who write the code (re)assemble information for us to consume in the way that they choose to represent it, much like the discussions about reality television earlier. What then is the reason that Sainsbury’s sponsor this initiative? The (real)real reason is masked by the (coded)real/hyperreal representation of a reason as being supportive of education.

“…a social control by anticipation, simulation and programming, and indeterminate mutation directed by the code. Instead of a process which is finalized according to its ideal development, we generalise from a model” (Baudrillard, 1983: 111).

Sainsbury’s representation of what it is to be-a-baker is codified (by Sainsbury’s and perhaps some significant others like DATA who collectively represent a power base), for school students to consume the concept of being-a-baker in some virtual sense. Teachers, who are likely to have little experience of being-a-baker, must defer to what Sainsbury’s power base signifies or codifies, what they constitute as representing the occupation and work of a baker to be. Given that Sainsbury themselves claim on their web site that between the years 2000 and 2003 “over 120,000 pupils throughout the UK received their own Taste of Success award” (2003a), we might well ask whether this overriding sign of altruism might indeed mask the presence of an underlying attempt by Sainsbury to market their brand subliminally. But this is only part of the hyperreality of this simulacrum. Whilst Sainsbury (and other supermarket chains) are representing what it is to be a ‘real’ baker, they are simultaneously complicit in the destruction of independent, or ‘real’ bakers in the high street who can no longer compete. Ironically, and perhaps as a result of some underlying public nostalgia, however, we can now enter the spaces created by supermarkets, only to be confronted by simulated high streets with simulated shop fronts simulating high street bakers and grocers and butchers etc. Signs of the real representing the real.

But what are the vocational aspects of this simulacra? For the students to simulate being a baker, as distinct from pretending, there would have to be no objective difference between the students feigning the occupation of the baker and it being done for ‘real.’ The signs would be the same. They would have to stay as close to the ‘truth’ as possible. In order to truly simulate this, the students would effectively have to convince others that they actually were bakers, otherwise they would not be perceived of as bakers but, rather, they would be perceived of as school pupils pretending to be bakers. The signs of the real would no longer be seen to be the real. A charade would be evident. The real would be unmasked.

However, and paradoxically, the closer that the students were able to get to achieving this simulation, the more the network of artificial signs, signs representing real bakers, would become inextricably mixed up with the real elements of being-a-baker and onlookers would simply lose sight of the difference. The students would find themselves, without having engineered it, actually in the real, actually being taken for real bakers (which they know they are not) as distinct from pretending to be-bakers. This is clearly not possible.

The students then, as school students and not bakers, cannot simulate being-a-baker, they can only pretend to be a baker. Pretending to be a baker is not vocational. It does not in any way represent being a baker any more than a child playing with a baby doll represents being a mother. The child may well be learning about motherhood through play, but no one would ever ascribe the term ‘vocational’ to the activity.

Thus, it becomes evident for Baudrillard, that to simulate an occupation means entering into the realms of hyperreality. We are unable to differentiate between the real and the simulation. The simulation becomes the real. For the students to simulate so closely, they become, in effect, ‘real’ bakers, which as we have seen is not possible. Vocational education outwith the context of an associated occupation, and set within a school setting, is thus rendered impossible because it cannot get close to the reality of being-a-baker. It can only consider the skills associated with being-a-student-in-a-school learning how to bake or to study the vocation of bakers. They can study what it is like to be a baker in much the same way as they can study what is was like to be a Roman centurion, but they can never be-a-baker any more than they can be-a-Roman-centurion.
Moreover, schools cannot simulate using commercial machinery by directing students to look at pictures on a web site; they cannot simulate working in a commercial bakery whilst situated in a school classroom; they cannot even simulate being commercial bakers by touring the supermarket and asking the public to taste their produce when the public are able to see that they are school students and not bakers.

School based design and technology education can only resource a rough equivalence of an occupation, not a representation or simulation. This puts the concept of vocational education in a school based design and technology department into the realms of hyperreality.

How do we resolve this? Simple: do not label, or even argue that design and technology education in schools is vocational. To do so only serves to confuse the participants who, for the most part, perceive vocational education in the terms cited earlier by Coffey and Lewis. Design and technology is a school subject like any other school subject. It has academic components, it has practical components, experiential components and, one other particular, and in some senses ironic (considering the arguments presented in this paper) advantage over most other subjects in the curriculum: it actually has a relationship with the ‘real’ world outside school, a relationship which serves to introduce young people to the world of commerce and industry, but it must do this from a critical perspective, not a subservient one. This resonates with Dewey’s notion of “Democracy in Education” (1916) where he distinguishes between education through the various industries as against education for the various industries. “For Dewey, the most important distinction to be drawn was not between liberal versus vocational education, but between liberating versus enslaving education” (Garrison. J. 1995). This is crucially important. Students cannot be critical when they are completely immersed in it under the guise of vocationalism. Here the code, like in the film ‘the Matrix’, is already written. In order to truly engage with it, they need to experience it from both inside and outside – like the Matrix – and be encouraged to critique it. Only then can design and technology education be really real, and consequently really meaningful.

Notes
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References


