Being Irrelevant: A model for developing interdisciplinary teaching and learning

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Abstract The issue of relevance in the curriculum tends to focus on perceived gaps between academic and industrial views of a discipline.

However a second gap is also present: between the discipline (whether industrial or academic) and the students' own social context. Addressing a subject from a student's own context may help to develop a deeper engagement with a topic that meets both "real world" and "academic" requirements. This could be viewed as "deliberate irrelevance".

At the University of Dundee the traditional undergraduate historical and theoretical modules were developed to approach the study of design from a social context and resulted in students embarking on self-directed research often outside their own disciplines, but developing high-level skills that were then taken back in to the studio.

This paper presents an overview of the theoretical underpinnings of the model and suggests a method for developing interdisciplinary modules.

Industrial conceptions of relevance

On-going debates in design education have focussed on a perceived gap between the curriculum and "real world" relevance. This in turn highlights a lack of agreement about the type of skills sought by employers: strategic thinking and leadership("high-level skills"), or technical skill. Depending on whom you listen to, the notion of "relevance" differs greatly.

There seems, however, to be a certain consensus that the typical design curriculum can be (and needs to be) fixed: there are certain things that "must" be covered and certain things that "must" be preserved, including traditional skills rarely practiced in modern business. However, things move on and new technologies and techniques develop, and these need to be covered too. The result is an increasingly crowded linear curriculum progressing from novice to expert that makes perfect sense to the people who created it, but little sense to those who are studying it.

Attempts to write down the ideal curriculum often result in lengthy "tick box" lists for courses to follow. The National Occupational Standards for are a good example of this. "National Occupational Standards (NOS) are statements of the standards of performance individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding." (National Occupation Standards, 2012). NOS exist for many areas, including textile and materials design:

> *"The Textiles and Materials Standards […] provide a* ***clear, up to date*** *description of what an individual* ***needs to be able do in order to perform a job successfully.*** *The Standards have been developed over a number of years by both people who work in the* ***industry*** *and experts from each occupational area through a process of investigation, analysis and consultation with a wide range of people." (Emphasis in the original) (www.skillset.org/standards/standards/TextileDesign/)*

The purpose of this paper is not to discuss the appropriateness of such "standards" but to question their effect on curriculum innovation. If such standards are used as checklists to develop curricula, there is a danger that anything that does not appear on the list will not be taught (by definition, it is "irrelevant" and not what industry wants). This creates an

immediate tension between such curriculum-led approaches to teaching (creating a list of topics and working through them) and alternative research-led approaches to teaching (guided by current developments in the discipline). Similarly, there is a potential effect on innovative approaches to teaching, as any approach that does not appear immediately relevant to the list will be halted. Research in to surface and deep learning tells us that the more closely we stick to such lists ("box ticking" as it is known) the less likely it is that students will learn to connect or, worse, create knowledge and skills through experimentation, adopting a unistructural approach to learning that is rooted firmly in the context of the situation. The knock-on effects on employability suggest this approach is likely to have the opposite effect to the one intended.

The limited, but "relevant", curriculum

The curriculum suggested by schemas such as the NOS appears to be extensive. However, there is much missing. The textile and materials design NOS has no mention of electronics, and only two mentions of "digital", albeit in rather limiting terms. Any course covering such things as programming languages or wearable technology is venturing in to the "irrelevant".

National Occupational Standards reflect a rigid view of the current realities of employment in predefined roles. Other areas are missing too: foreign languages (though the phrases "Awareness of relevant national and international legal and regulatory requirements and constraints" and "Awareness of international product differentiation" appear eleven times each in the documents); Cultural studies (the only time the word "culture" appears is in *Unit D8 - Undertake textile and material freelance work* where it is in the decidedly non-international context of "Organisational cultures and ways of working". Yet these areas (international contexts, languages and understanding of culture) are mentioned in the Design Council/Creative and Cultural Skills document *High-Level Skills for Higher Value* (Creative and Cultural Skills/Design Council, 2006). Clearly these competing yet supposedly "industrial" views are incompatible when designing curricula. Which to listen to?

Why this approach is wrong

At a fundamental level it is clear that the authors of the NOS believe that textile design is simply a matter of following routines that can be reduced to simple lists of skills and processes. Design is seen as a technical profession rather than one that is complex, messy and strategic. Technical skills are seen as the ingredients required to meet client or management demands, rather than the basis of a core of "practical wisdom", allowing the "exercise of professional judgement" (Fish & Coles, 2005).

Research in to the varying conceptions of teaching held by academics suggests two main categories of approach: teaching as information transmission, and teaching as supporting student learning (see for example Martin *et al* 2000; Prosser, Trigwell and Taylor 1994; Kember 1997). A similar model sees the teacher's role as either filtering or supporting students – the former presents the teacher as being the "gatekeeper" who only lets those with the right knowledge, skills and aptitude enter a profession. This conception, and the idea that teaching is simply the transmission of information, fit the approach that industry appears to want us to take. At the same time, pressure from government (especially with the imposition of Key Information Sets with statistics on employment success and graduate salaries) threatens to push courses in to approaches that offer guarantees and fit with a nationally approved curriculum.

There is a certain level of attraction to the idea that a course should be easy to describe and assess. External pressures from industry bodies, government and students "shopping around" and wanting easy checklists to compare courses mean content-based approaches to curriculum development have a strong appeal even to those who want to offer something more challenging.

There is a danger that approaches like the UK's NOS, if used for the purpose of course development or evaluation, threaten innovation and experimentation within the design curriculum, and that even if they only are used as a baseline they are so numerous that they leave little room for other topics, something that has been identified as an issue in other disciplines such as law, engineering and architecture where the external requirements are seen as onerous and often out of date.

Student conceptions of relevance

When students choose to study a topic it is generally assumed, or at least hoped, that they will be interested in it, and not question why they are being taught it. It is, some might claim, a student's role to fit in to the existing context and understand how the discipline works, from both an industrial and academic context. There is little need to explain to students why they are being taught something.

However, the will to learn is tested by the common fixed approach to curricula. As Bruner put it (Bruner, 1966):

> *The will to learn becomes the problem only under specialized circumstances like those of a school, where a curriculum is set, students confined and a path fixed. The problem exists not so much in learning itself, but in the fact that what the school imposes often fails to enlist the natural energies that sustain spontaneous learning.* (p. 127)

In other words, while many academics might complain that students do not possess the will to learn, the key contributor is the curriculum with which they are presented: rigid, imposed curricula oppose the intrinsic will to learn, which is motivated by a sense of discovery and serendipity. Regulated curricula suit those whose only desire is a qualification, rather than a challenge. And this is not in the interests of those who employ graduates, nor those that teach them.

The approach taken by some in industry and government appears to be limiting and demand-led: get students to choose courses based on their adherence to "industry approved" standards. But this approach arguably lowers student engagement and is extrinsic – you are learning something because someone in industry says you must.

Social relevance

Figure 1: The relevance continuum

Debates about design education emphasise an apparent tension between an "academic focus" and "industrial focus" - the suggestion from organisations such as Sector Skills Councils and the UK government being that universities should realign towards the latter "correct" view.

An academic focus emphasises research-led approaches, questioning conventions, discovering new knowledge, looking to the future, cross-pollination with other disciplines, and learning for learning's sake. An industrial focus emphasises skills used in existing occupations, tradition and history, starting at the bottom, learning for specific outcomes (a so-called "instrumentalist" view of education).

Seen in this way, design education occupies a continuum with programmes positioning themselves somewhere between the two extremes (Figure 1).

This paper proposes a third area of relevance that provides a bridge between the other two: relevance to students' own lives. It is only through understanding their own context, making sense of who they are and where they came from, that students can develop clear goals in life which may, or may not, relate purely to desired careers. And it is only through contextualising knowledge through their own experience that they can connect knowledge gained in education with knowledge applied in employment - and go beyond it. The purpose of education after all is, arguably, not to serve employers or the economy, but society and individuals. They in turn provide the demand for industry, and the imagination and effort that industry needs to grow. To return to the NOS example cited above, a textile designer who could only do the things listed in the NOS might be an efficient producer of responses to client briefs, but they would hardly move the industry, or the world, forwards.

How social relevance affects learning

Studying the way in which children from non-English speaking backgrounds developed language proficiency, Cummins noted that "Conceptual knowledge developed in one language helps to make input in the other language comprehensible." (Cummins, 2000). This has a simple, but profound implication. Language is not just a collection of words and structures, but of concepts; the words are simply labels for those concepts. It is easier to learn the word "justice" if the concept is already understood; otherwise the student has to learn not only the label, but the concept too.

Cummins devised a graphical model (Figure 2) to allow us to categorise the tasks and demands being made on students. Here the "context" relates to how abstract or otherwise a learning situation is.

> *A context-embedded task is one in which the student has access to a range of additional visual and oral cues; for example he can look at illustrations of what is being talked about or ask questions to confirm understanding. A context-reduced task is one such as listening to a lecture or reading dense text, where there are no other sources of help than the language itself (Shoebottom).*

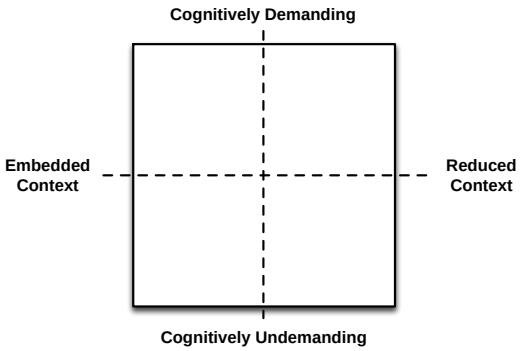

Figure 2: Cummins's graphical model of context

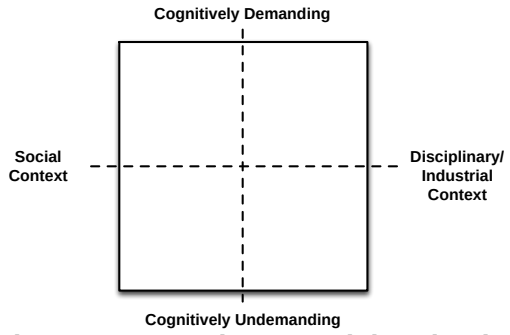

Figure 3: Cummins's model revised

Cognitive difficulty

Learning a word is cognitively undemanding (it simply requires memorisation and practice), but learning the *meaning* of the word, when and how to use it, are cognitively challenging. The principle applies to all disciplines: learning terms and techniques is less demanding than learning how and why to apply them with some mastery. This again illustrates the problem with "industry relevant" curricula: the focus is on the "extrinsic technical" aspects, learning for approval by others, rather than the richer "intrinsic meaning", learning for self-fulfillment.

The challenge for the teacher is to move students from "exterior" conceptions to "interior" ones. On Cummins' model we could view this as analogous to moving from "undemanding" to "demanding", while at the same time relating the subject being taught to the context in which it is being learned, *i.e. the student's own social context*. The point being that there is more than a shift from "easy" to "difficult" in the learning process, and that the nature of the cognition is different - from mere replication and reciting of skills, techniques and knowledge to satisfy external requirements to unconscious mastery and synthesis of new skills, techniques and knowledge that make sense in one's own world.

Context

Most curricula place an emphasis on teaching things that are relevant within the context of the discipline (learning labels, skills, histories etc). The context (or "relevance") we need to focus on in learning is the social context of the exercise, or how it fits in to the student's own view and experience of the world.

How does this apply to design? Frequent visits to art galleries or the ability to name well-known designers are good examples of how disciplinary context is used as a filter at the application stage on some programmes, even though it depends on things such as geographical location (what do you do if there are no galleries near you?) and socio-economic context (there is a correlation between "class" and access to or value for the arts). This contextual requirement continues throughout the curriculum, and new ideas, skills and knowledge are introduced without much attempt to provide any social context for the students; instead the focus is on the disciplinary context.

Cummins's model emphasises that **things encountered within the learning context (i.e. the classroom or studio) only have effect in that same context**. We are able to decline the verb "to go" in French to pass the exam, but largely unable to take what we have learned into the world beyond the classroom. We are able to perform certain manoeuvres in order to pass our driving test, but soon resort to "wrong" behaviours the moment we are no longer learning.

The vital context is not the classroom nor the industrial context (that is still extrinsic) but the world in which students live. It is the social context that matters.

It is possible to view social context (the student's view of the world) and the disciplinary context (the discipline's view of the world) as points on a continuum and to redraw Cummins's model with this change in mind (Figure 3).

Example: teaching social typography

Typically we introduce students to their discipline or topic via an "easy" route - we begin simply. In typography, for example, one approach might be to give students a sheet of characters and some tracing paper, and ask them to trace the characters and label the different parts of their anatomy - counters, descenders, serifs etc. The aim of this is to help students learn how type is constructed and the basic terminology. As their learning progresses they may set bodies of text, so demonstrating understanding of leading, paragraph spacing, baseline grids and so on.

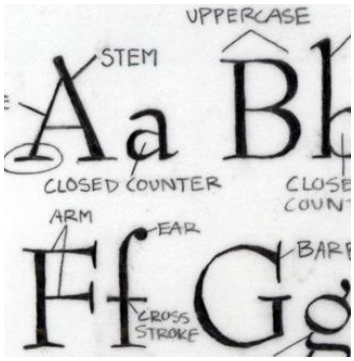

Figure 4: Anatomy of type (source: www.rsu-design.com/?p=858)

At the end of the module they may create a double-page spread, incorporating some images and different page elements such as pull quotes, subheadings and headings. They may also be expected to demonstrate not only mastery of a computer program such as InDesign, but some element of creativity in their use of type.

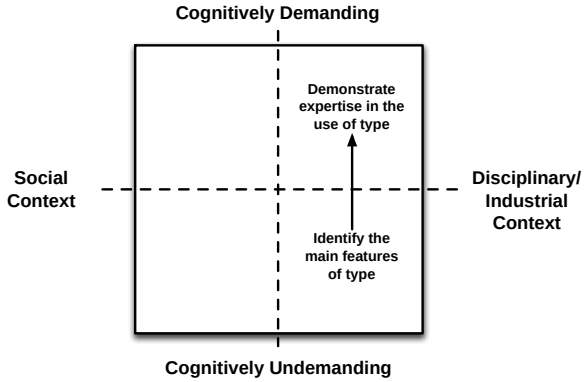

Figure 5: Teaching type in a disciplinary/industrial context

The curriculum plan for the module progresses from "easy" to "difficult" - learning is linear, from novice to expert (or at least better-than-novice) - and the curriculum itself is entirely "relevant" to the context of typography (Figure 5).

But have the students really learned anything? Experience suggests not: a module observed that followed this very simple approach had the highest failure rate in a whole programme, and even those students who did well did not seem to carry forward what they had learnt in to other modules. Once they were not being assessed on their typographical abilities, their skills in the area seemingly disappeared.

In contrast, students interviewed at a USA university majoring in creative writing, illustration and photography were studying a typography unit as an elective, alongside students majoring in graphic design who were taking it as a compulsory component. Asked about their approach to the task they had been set (laying out text for a poem chosen either from a selection or provided by themselves) the students responded differently:

> *I looked in the folder of text we'd been given and found one I thought would fit my grid. Then I used the menu in QuarkXpress to place the text in the text box. […] I chose a font I liked and then changed the leading and the space between the paragraphs so that it all fit on the page. Then I found a nice image on Google and added it to the top.*
>
> (Graphic design student)

> *I chose this course because I'm a writer and I wanted to understand whether I could tell my stories more effectively through the way they were presented on the page.*
>
> (Creative Writing student)
>
> *I wasn't sure what to study [for my elective] but this appealed to me because my work is usually seen with words. I find that the choice of typeface and the way the text is laid out on the page can really affect the way my work is understood and so things like the grid structure are important elements. In my photographs I try to compose the image. I want the page I design to be composed too.*
>
> (Photography student)

It is clear the graphic design student is "learning" within the disciplinary context. He has been set a task (design a page layout for a poem with an appropriate image) and is going through it methodically, following the instructions to learn the process.

The other students have elected to take this unit as a way of deepening their understanding of how their work is communicated to others. Neither wanted to be a graphic designer, but they wanted to understand how graphic design supported or detracted from their work. Within the short conversations it was clear they had a deeper understanding of typography and layout than the graphic design student and in taking the elective had also reflected back on their own practice as writers or photographers.

One group is "learning to do" while the other is "learning about" type. The key difference is the latter group is also "learning to do" as a side effect.

An alternative curriculum model (Figure 6) to the one described above might begin with students collecting examples of type from their favourite brands, music, shopping expeditions and so on. Looking at these examples and considering the "personality" of the type, the message it is sending or reinforcing, would begin to link the choice of type to the concept of branding beyond the logo. Looking for common elements in the type or points of difference would also introduce the idea of the anatomy of type forms. So far we are firmly in the bottom left hand quadrant of the chart - this stuff is easy and within the students' own context but as we begin to talk about "personality" and "branding" we are moving upwards, cognitively. Introducing discussions of layout, looking at magazines and newspapers will add to the discussion but we have to remember something here: our (teachers') experiences are not the same as those of ordinary people. Graphic designers talk about type and experience it in ways that normal people don't and, for now, our students are closer to "normal people" than they are to us. So instead of making them study something they are not involved in, turn instead to how *normal people* experience type. Look at the many ways in which people see text: on screen, on packaging, in magazines, in print. Begin to consider the way these things are laid out - the difference between *The Sun* and *The Guardian*, for example. What does their layout say? How is that difference translated to their websites or iPad apps?

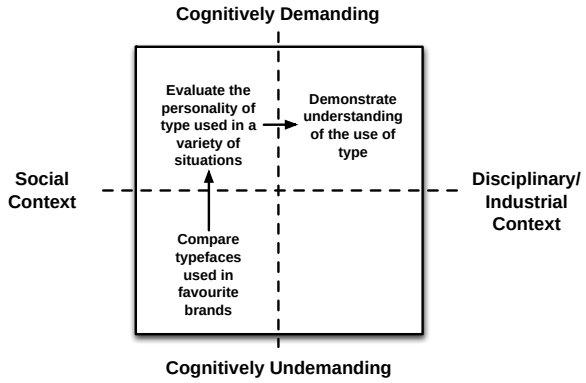

Figure 6: Teaching type in a social context

We are now firmly in the upper left-hand quadrant. Still in the students' context but wider, looking at the people they know and the people they don't know. The people, in fact, for whom, and with whom, they are going to end up designing. The concepts they are being asked to consider are more challenging but still "relevant" to them, and they are probably beginning to consider things they previously took for granted or ignored. An important aspect of design has now been revealed to them and chances are it is interesting.

Now we can move to the right. The students are ready: "How do I do this stuff? I want to do this!" Or, to put it more formally: students are *engaged* and as we move in to the discipline-relevant area of the module they have a goal, something to aim for: an audience to design for, a theory to test out, a model to work to. Grids are no longer a concept, they are a tool. Kerning and leading are not just ideas, they are real things. A typeface is not just something you choose because you like the look of it, but something that has a personality. It says "celebrity gossip" or "sober reflection".

What is noticeable in this approach is that the bottom right hand quadrant is untouched. **Things that are undemanding and lack contextual relevance are not worth doing**. However it is this area that leads to the greatest friction between this approach to learning and traditional approaches which focus on the accumulation of key and "relevant" skills and knowledge.

Case study: Teaching medicine socially

The discussion so far has focused on design education. It is proposed that the model can be used as a basis of interdisciplinary education in which students from various disciplines work together to understand a problem and use that deep understanding to develop conclusions within their own discipline.

As a theoretical example, let us take a seemingly discipline-focused topic: blood pressure.

If teaching medical students about blood pressure, it would be easy simply to teach them how to measure and, where necessary, treat blood pressure. This would keep it relevant, focused on what is needed and on required outcomes.

A short course would start by showing students how to measure blood pressure and what constitutes a safe result. By the end of the course the students would know what pills or

other treatments to prescribe in certain situations. This course is illustrated graphically in

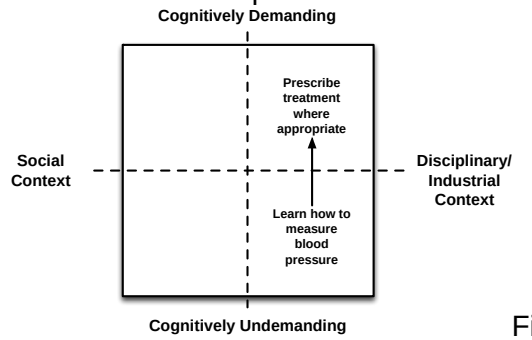

Figure 7.

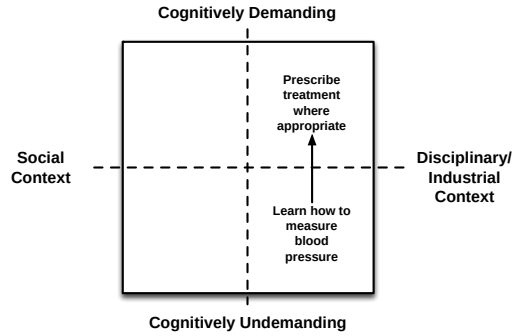

Figure 7: Teaching medical students about blood pressure

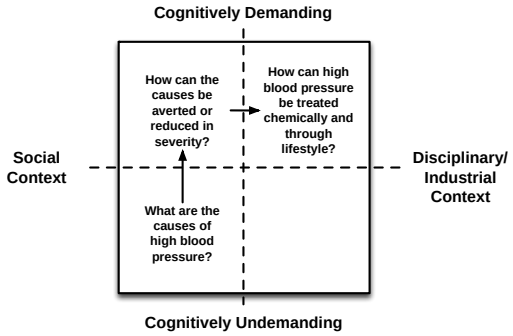

Figure 8: Teaching blood pressure as a social issue

To a student, academic or other professional who believes the curriculum should focus on "relevance" this would be an ideal way of teaching a clearly identified set of skills. However, this is not very useful or particularly interesting. The knowledge is confined to one particular circumstance: measuring and treating blood pressure. There is little that can be transferred in to other situations, and little in the way of depth of understanding. It is training, not education.

Moving the course in to a social context we get a situation as in

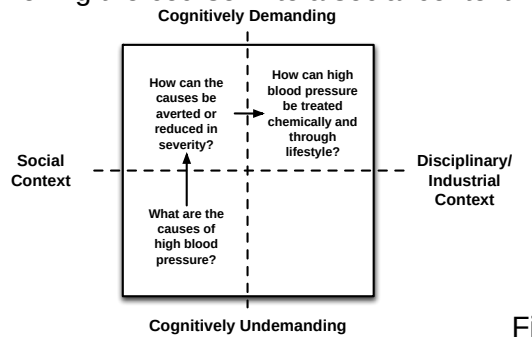

Figure 8.

Towards interdisciplinarity

There are three main causes of high blood pressure: genetics, lifestyle and primary conditions such as diabetes. Understanding who is at risk due to their lifestyle is important in preventing high blood pressure, which is preferable to treating it after it has developed. Focusing a course on the social factors, and seeing medicine as a matter of prevention rather than treatment, is an approach that has immediate links to many other areas of medicine and beyond. Bringing the course to focus on a disciplinary context towards the end will make it directly relevant to the medical profession. As in the typography example above, the low-level skills (measuring blood pressure and knowing what are safe figures) are not

explicitly covered as an end in themselves, but students will learn them in the process of looking at the other areas. This is a direct challenge to the NOS-style approaches to curriculum development and an area of concern to many academics who fear that approaches that diminish "skills" will by their very nature produce unskilled graduates. This is not the case.

It should be admitted that the term "irrelevance" is something of a red herring. In the discussion above, most would see the approach as being directly relevant to medicine – but would not see it as relevant to, say, design.

But if we look at the boxes on the left hand side of the diagram, we see what is commonly referred to as a "design problem". In other words, the left hand side of the model offers enormous potential as a means of developing a truly interdisciplinary module/course while the right hand side (or specifically the top right quadrant) shows how interdisciplinarity can still contribute towards discipline-based learning and practice – design students would create a design-led solution to the problem, understanding of which was developed alongside medical students.

Summary

This paper has illustrated a theoretical framework for the development of interdisciplinary teaching and a challenge to conceptions about the nature of relevance. Industrial models of relevance in education focus on lists of skills, knowledge and attributes and these in turn are often used to develop curricula that are said to *be* "relevant". However the example cited, the National Occupation Standards for fashion and textile design, demonstrate a limited view of what designers can do, and a limited view of what courses in those disciplines should cover. They also fail to consider either the broader strategic needs of the industry or its clients, and the broader life and career goals of students.

A curriculum that approaches learning through students' own social context offers an opportunity to frame skills and knowledge in a way that makes sense to students, and that allows the things that are learned to be transferred beyond the learning context. Learning in the social context, whether it is language, terminology, facts or skills, offers an opportunity to embed learning in to students' everyday understanding. It also offers greater possibilities that this knowledge will be *applied* outside the learning context. Doing this opens up opportunities for truly interdisciplinary learning opportunities as the one thing shared by all disciplines is a social context. Specialism can come later.

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