

# 53 Powerful Ideas All Teachers Should Know About

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## Students approach topic areas in different ways

In Educational Psychology textbooks whole sections are usually devoted to individual differences between learners, such as intelligence and personality, which are assumed to be relatively fixed characteristics of individuals. While some of this is interesting, it is often difficult to see what the practical implications are that teachers can actually do anything about. One such individual difference that does seem worth understanding concerns how different students approach whole knowledge areas. This is often termed 'cognitive style' and the term 'style' here turns out to be crucial, as we shall see. 'Cognition' is about how we apprehend the world – how we pay attention, recognise, process information, remember, solve problems and so on. The assumption is that some people consistently do this in quite different ways to others.

There are many different accounts of cognitive styles but most are rather similar and theorists such as Scheck have argued that they are really all about the same thing and can be described in terms of just two overall 'styles'. He calls the two styles 'analytical' and 'global'. This difference has been noticed many times by different researchers in different contexts when observing what students do when confronted with a whole bunch of new information and ideas.

Some students will pay attention to details, perhaps one at a time. They will tend to remember facts, operations and procedures. They progress in a logical way from one small piece of solid ground to the next, gradually building up a collection of related separate bits into a well structured whole in a step by step, sequential, organised way. They may be gifted at logical and critical thinking, but less so at creativity and imagination. They spot differences, especially small differences, because they focus on parts rather than on the whole. If this sounds a bit cautious, it is. Such students do not take risks generalising beyond what they are sure of but keep to 'the facts' and follow well established procedures. A related phenomenon concerns people who are 'intolerant of ambiguity' and need solid ground and certainty, while others are 'tolerant of ambiguity' and do not mind if there are no right or even best answers, and can cope with multiple competing explanations and messy data. This sometimes sounds more like an emotional difference than a cognitive difference!

In contrast to an 'analytical' style, other students have been found to display a 'global' style. They seek general impressions, scanning information quickly looking for patterns or similarities in an impressionistic way. They are not sequential, but access information in seemingly random ways and multiple ways.

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They are more intuitive and less conscious of deliberate decision making in the way they make progress. They actually cover more ground and access more information than do 'analytical' students, but less securely.

The first practical implication here is that amongst your students some are likely to be doing quite different things than others as they think about your presentation or a chapter of their book, or a problem or case study you have set them to work on. If your presentation style is logical and step by step this will suit some students much better than others. Similarly if you have a 'broad brush' kind of presentation style this will be much easier to handle for some students than for others. If you set small well bounded problems of a kind students have already worked through, or open ended problems of a kind they have not encountered yet, this will suit some students better than others.

But let's stand back a moment here and examine what a 'style' really is. As with almost all psychological variations between people, cognitive styles are more or less normally distributed – what I mean is that most people will be near the middle of any range and only a few will be at extremes, whether it is intelligence or personality differences or cognitive style we are talking about. Most people are not extremely analytical or extremely global. In fact most people are somewhere in the middle and what is more they adopt a mix of analytic and global styles, and do so differently in different contexts. And it turns out that an extreme analytical or an

extreme global style is not actually very effective. Researchers have described 'versatile' or 'synthetic' styles as most effective for tackling a range of problems or knowledge domains. So, as so often, it is better to change the students, in this case so that they can adopt a range of 'styles', rather than changing the teaching to suit some students. A problem with changing your teaching, of course, is that it might suit some but not others – unless you yourself also adopt a 'versatile' and balanced approach.

Another issue here has already been flagged up in the last paragraph. It turns out that most phenomena associated with cognitive styles of one kind or another are quite context-dependent – students will tend to do one thing with one kind of subject matter and another thing with another kind – perhaps with statistics and art history, for example. Most attempts to describe permanent, fixed, deep-rooted differences between human beings have run into trouble as soon as the context varies much. For many kinds of individual differences the context has turned out to determine most of the observed variation between individuals, the interaction between the context and the individual contributes something, and individual differences on their own contribute least to what they actually do in any specific situation.

A final issue here is that individuals change over time. Some of what was originally seen to be a fixed characteristic of the way an individual's head worked has been seen in retrospect as more like a habit, perfectly



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amenable to retraining or maturation so that different and more flexible and efficient mental habits can develop. Studies of the difference between Arts and Science students, following Hudson's work he called 'Contrary Imaginations', found that they could explain to an Arts student how a Science student usually went about things and ask them to act as if they were a science student, faced with an everyday problem. They found that most students could manage this and behave in quite different ways than they normally did – they simply did not do that in their own subject. What Schmeck described as a fixed cognitive style with a focus of attention on individual facts, William Perry described as the very first stage of a development of

understanding of what knowledge is and how knowledge is approached, in the memorable phrase "quantitative accretion of discrete rightness". Perry never assumed that students are fixed but merely that they may be currently unsophisticated or inflexible. Perry's is a developmental scheme and is about growing understanding of epistemology, not about fixed underlying cognitive style, and yet aspects of the phenomena Schmeck and Perry describe looks pretty much the same thing.

The implication for teachers here is much more clear – it is to develop students' sophistication.

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