Reading 13

Teaching a concept-based course

Janet Stuart

Notes

One of the critical weaknesses in South African education is that it focuses on teaching content, and on the (often) rote recall of facts. Good teaching and learning is about developing understanding. This, in turn, requires teaching that focuses on the subject or learning area's *key concepts*.

In this reading Janet Stuart explains what a concept is, and how we can teach so as to develop conceptual understanding. She shows how we can use facts and content to *build* concepts and generalizations. An important point that emerges from this reading is that learning is often (and mostly) about getting to understand how facts *relate to each other*, and how these relationships are the building blocks of deeper conceptual understanding.

You might notice that many of Stuart's ideas are similar to those used by other writers in other articles. For instance:

- **Her focus on relationships echoes the Learning Guide's idea of 'webs' of knowledge.**
- **Stuart's reference to conceptual understanding seems very similar to other writers' reference to 'principled' knowledge.**

Check to see whether you agree.

Finally, we found Figure 2 on page 130 very useful. While it reminds us of something many believe is obvious – that we must begin with what is familiar to learners – it also suggests that we can only do so if we know where we want to take our learners conceptually, and if we possess this high level of conceptual understanding ourselves.

---

*These edited extracts are from J. Stuart, 'Teaching a concept-based course', Chapter 1 in G. Seidman and J. Stuart, **Working for the Future: a Teacher's Guide** (Gaborone, International Foundation for Education with Production, 1990).*

Concepts

Concepts are tools for thinking about the world. They are abstractions that enable us to discuss events and ideas in general terms, without having to refer to examples all the time. Thus, using the general concept of 'industry' enables us to bring together, for example, different kinds of factories, workshops, and activities for making goods, and permits us to discuss how, in general, this helps development.

However, we cannot discuss 'industry' unless we all know what we mean by this word. We must all share, in our minds, some image of groups of people working, mostly in buildings, using machinery, with some kind of power source, to produce things in large quantities. We must be sure that we are not visualizing, for example, women weeding in a field.

A concept like 'industry' is fairly abstract. It means little until we connect it to real objects, people, or situations. Only when we have a very clear picture of what it involves in reality do we 'understand' a concept. Only when we have this 'understanding' can we make sensible general statements about it, such as:

- 'Industries are usually found in towns.'
- 'Industries give many people wage-employment.'
- 'Industries need capital to get started.'

As we shall see shortly, such statements are useful 'generalizations'. You will also notice that the last two statements use other concepts; 'wage employment' and 'capital'.

How do we learn to understand such concepts? How did you acquire the concept of 'industry'?

- Gradually, or all at once?
- By visiting factories?
- Or working in one?
- By seeing pictures?
- By reading?
- By listening to someone who has experienced industrial work describing it?
- Or from several of these?

Reading

Grasping concepts in the classroom

When we teach Development Studies in schools, we want students to gain real understanding as quickly and accurately as possible. We can only do this by building on the experiences they have already had. The concept must be related to something they already know. If the concept is very far from their experience, the teacher must bridge the gap in some way so as

to lead them to it.

This is often quite difficult in a classroom. But fortunately Development Studies is about the real world, and it is often possible, using a little imagination, to anchor new concepts firmly in their previous experience. If not, the teacher must provide some new 'experience', either real, simulated, or of a symbolic kind, such as books and pictures.

Some possible practical ways of doing this for 'industry' are listed below:

- Arrange a visit to a factory or industrial estate.
- Use pictures from books, magazines, newspapers, or any other form of visual aid.
- Relate the concept of 'industry' to anything in the children's environment that exemplifies it. This is easier in towns, but even rural children may have seen heavy machinery in the fields or on the roads, or building dams, or visited a large-scale workshop.
- Use a story in an 'industrial' setting, either from a book, or told dramatically by the teacher, or by an industrial worker.

The more examples used the better! Pupils may need many examples before they grasp fully what 'industry' is, and what it isn't.

It is easier, of course, to do this with some concepts than others; it depends on the level of abstraction. 'Wage-employment' is easily exemplified, but 'capital' is more difficult. For the latter, the teacher may need to provide a real or simulated experience: a classroom game with play-money would be a simulation, or a real, productive exercise can be carried out, such as buying a box of fruit for resale at a profit, or raising chickens. (This is where co-operative projects feed into the theoretical lessons.)

What we have discussed here is the so-called ***inductive approach***. It is considered to lead to much better understanding of broad concepts, because it is based on the concrete experience of the students.

The relationship between facts and concepts

Concepts are probably more important than facts, but a factual base is needed as the starting point from which to develop concepts and the related generalizations.

Taking the example of 'industrialization' – a concept derived from 'industry' but on still a more abstract level – we can build it up by studying factually the different kinds of productive processes in the past and the present, and by looking at what is happening in the students' own country today. Facts such as 'X percent of our population are miners, Y percent are factory workers, and Z percent are farmers' are not themselves worth memorizing as they will have changed in five years' time.

But they are useful because they allow students to compare their country against other countries with different proportions, so that they can call one country 'industrialized' and the other 'agricultural'.

Only when they have reached that stage can students go further, to study how a country can move from being agricultural to being industrialized. At this next stage, facts will again be studied as a basis:

- some historical facts about the industrial revolutions in the UK and USSR;
- some facts about China's policies since 1949, and so forth.

Again, these facts are important only because they enable the students to form generalizations such as, 'Industrialization requires many workers to leave the countryside and move to towns.'

The relationship between facts, concepts, and generalizations

By 'generalization' I mean broad statements which express some important idea; they may describe a general state of affairs, or point to a general relationship, such as cause and effect. They usually involve the use of concepts. Like concepts, generalizations can be formed at many different levels of abstraction and generality. Some merely describe, others go further. Here are some examples:

- 'Our industries are based on our mines' generalizes within a country, while
- 'Industries are usually found in towns' generalizes across the world.

Both of these are fairly concrete generalizations. A more abstract statement might be:

- 'Industrialization implies urbanization.'

Some generalizations give explanations. Here is one:

- 'A reason for the rapid growth of British industry in the eighteenth century was the capital accumulated from colonial trade.'

This could be extended so that it takes the form of a more general 'law of development' such as:

- 'Industrialization requires previous capital accumulation.'

It is obvious that students would not 'understand' such a statement unless they had studied the facts on which it is based; it should be equally obvious that learning facts without drawing them together into such powerful and useful generalizations is often a waste of time.

Another use of facts is to check generalizations against them. Some

generalizations may be in the form of a hypothesis or prediction:

- 'If a country has a good mineral resource base, industrialization will take place.'

Such a statement can – and should – then be tested out against historical and modern evidence: do all countries with good mineral resources develop industries? If not, what conditions hinder or facilitate such developments? Here, accurate facts are very important.

The relationship can be summarized in a diagram:

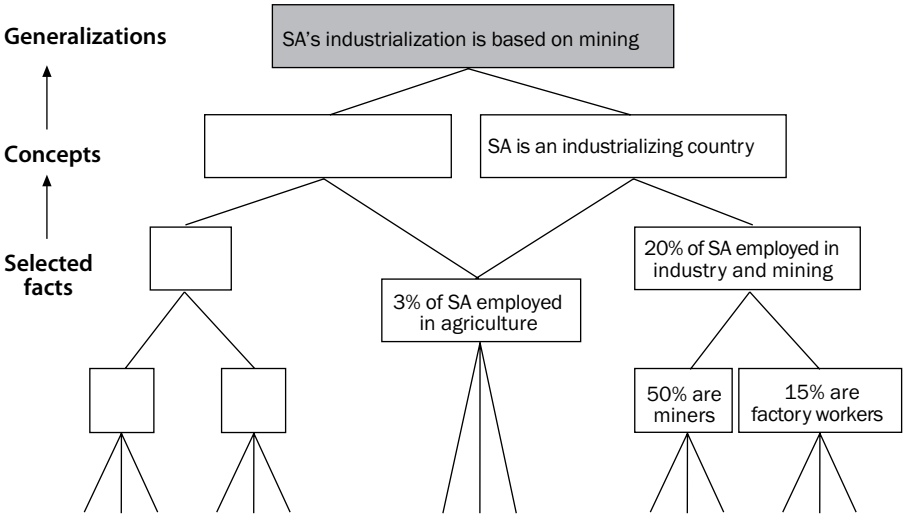

Figure 1: The relationship between facts, concepts, and generalizations.

Teaching strategies

Let me spell out how the teacher can teach the syllabus in such a way. First, the teacher must have an overall view of the structure of the syllabus, and indeed, of the whole subject matter of Development Studies. She will know what concepts and generalizations the students have to aim at and how they can reach them. (She will also know what concepts they will probably not acquire until they are older, or go on to further study, but which depend critically on the groundwork laid in COSC.)

Secondly, the teacher needs a clear understanding of the stage students have reached, so she can build on their present experience, extending it to form the foundation for the next stage.

Thirdly, she must encourage the students to be active in their learning. In sum, the teacher has to plan the route carefully from where the students are to where she hopes they will get. She must plan it stage by stage,

paying attention to the building up and to the pacing of each part, as well as to ways students participate in learning. This is what constitutes the art and craft of the teacher. No matter what excellent textbooks are available, the teacher still bears responsibility for the strategy in the classroom.

Building up

As we have said, the teacher starts with the students' own present knowledge, with their familiar environment. She starts with facts, low-level concepts, and concrete ideas and statements, easily illustrated; she builds up to broader concepts and more abstract generalizations, covering wider perspectives, until she has led the students to a peak of understanding from which they can survey all the concepts and their relationships, laid out like a map before them.

But the paths of the students and of the teacher are different in this respect: the teacher has been there before and knows the way. In fact, in planning her teaching, she works downwards: she starts with the most abstract concepts and the broadest generalizations that she hopes the students will eventually reach, and moves downwards, deciding which concepts they will need on the way, and which generalizations will make good half-way steps. Then she chooses a selection of suitable facts to study which will illustrate the ideas, and takes examples from the familiar environment to exemplify the concepts. Finally she plans the learning activities which will introduce the students to the concepts and ideas.

The students start off at the bottom: they experience the learning activities, they meet the facts, form the concepts, begin to draw suitable conclusions, and make general statements. Thus, gradually through the course, they struggle upwards through a long series of ever more abstract concepts and generalizations, till they achieve the comprehension of the broad concept. Finally they understand where the teacher was taking them. It is often a good idea to give the students a rough outline of the ground they will cover, showing them where they will be going. But they cannot start their learning at the top: they always need to climb the pathway themselves.

Figure 2 illustrates the process for 'industrialization'.

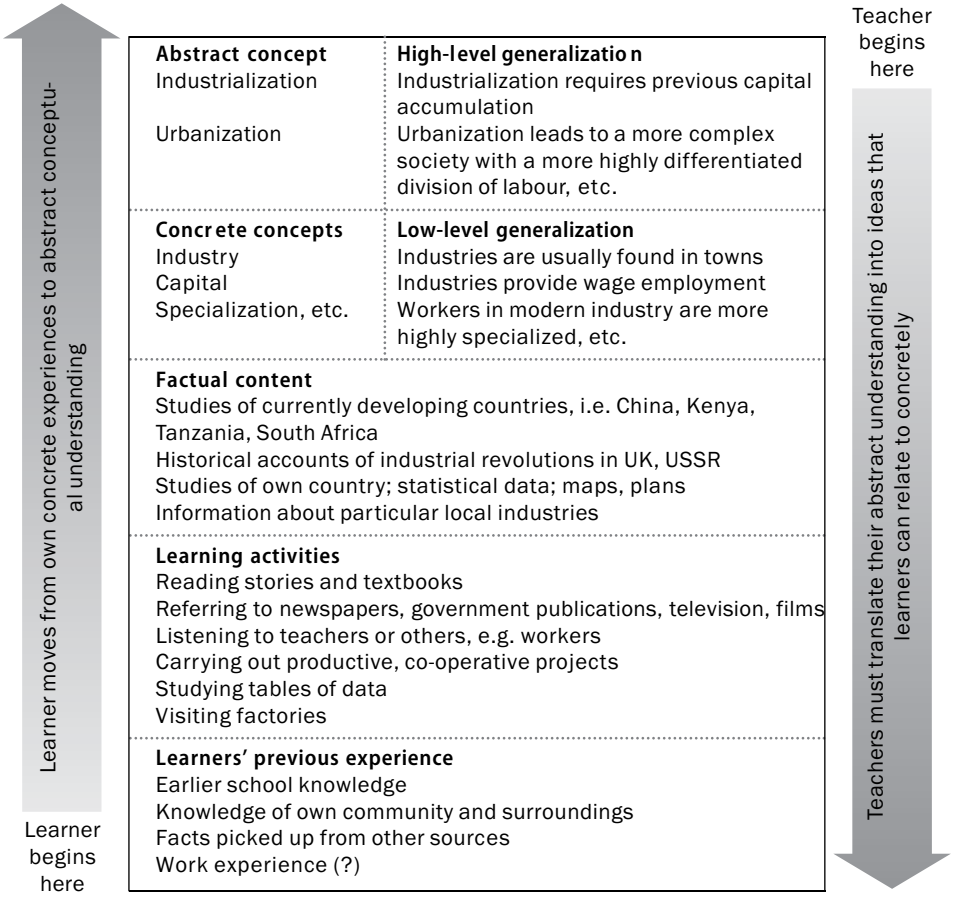

Figure 2: Teaching and learning the process for industrialization.

Pacing

This is very important. The teacher has to ensure that each stage is assimilated before students go on to the next stage.

Internalizing new knowledge

Starting from a familiar example, or from some real or simulated experience, she will add new facts, introduce new concepts, or give a new, more technical name to some familiar phenomenon. Then she must ensure the students have taken in (assimilated) this new knowledge, and, if necessary, re-organize (accommodate) their old knowledge to fit it. For example, vague knowledge about car factories and gold mines, together with odd memories of James Watt's steam engine, might now be reorganized and fitted together as examples of 'industrial processes'.

This is an absolutely crucial stage. The process of internalizing knowl-

edge takes place in the students, not in the teacher. But she has to help this process. She must pause, and give time to the students to carry it out. She can organize various classroom activities to help them, for example:

- answering structured questions orally or in writing;
- small group discussions where peers help each other to understand;
- individual written summaries;
- whole-class discussions.

Applying new knowledge

The teacher must then check to see how far the students have really internalized the new knowledge and made it their own, how far they 'understand' it. The only real proof of understanding is whether they can apply it: by producing it in a new form, such as a statement in their own words, a new pictorial or diagrammatic representation; by giving a new example; or by applying it to a new context. For example, the question, 'If we had industries in our village, what difference would it make?' tests understanding of the concept of industrialization.

Time spent on this is well worthwhile: if basic concepts and ideas are well understood, the students will then more rapidly assimilate the next stage.

Participation in learning: doing it themselves

The teacher should encourage the students to become active partners in the learning process. Having presented them with suitable factual content, and directed their attention to relevant experiences and examples, she should make them draw their own conclusions, and encourage them to formulate their own generalizations at each stage.

The students may draw different conclusions from the ones the teacher had first in mind; this is all to the good. Teacher and students can together test these against the evidence. If the students have made reasonable statements, the teacher should accept these, and then encourage them to look still further.

We may consider two problems here: language and time.

- ***Language.*** Students may not use precise language at first; they may not even know the right words. Yet they may be showing understanding in spite of this. They can be guided gradually to use the correct words and concepts. To express their own ideas is the first and most important step.
- ***Time.*** It may seem to take much longer if we allow students to stumble around trying to formulate their own conclusions. But this is only in the early stages. When students come to realize that these efforts are important and prized by the teacher, they will improve, and with practice become much faster. Later sections of the course will be handled much more quickly and competently.

The importance of such participation cannot be over-emphasized, Firstly, the students are learning to ***think for themselves***; they will no longer expect the teacher to provide a new answer which they can write down and memorize without understanding. They will become used to thinking out the conclusion by themselves. To learn this ***process*** of thinking is just as important as learning the right conclusions, if not more so.

Secondly, students will both ***understand*** and ***remember*** the generalizations better if they have worked their own way towards them. If they do forget a generalization, they may even be able to work it out for themselves!

Thirdly, when they have made the knowledge their own in this way, they will be in a position ***to use*** it, as specified in the general aims of the Development Studies syllabus.

There are several ways of organizing the classroom to achieve these ends, but they all involve some form of communication. Small group discussions, class debates, making reports, writing one's own summary – all these activities force the students to rephrase and recode their knowledge, either for themselves or for others. In this way we make knowledge our own. In other words, it is through communicating that we learn to understand. Don't we know, as teachers, that often the first time we truly understand a topic is when we had to teach it? Let the students experience the same thing!

[…]

Conclusion

This approach to teaching and learning is both easier and more difficult than the 'banking' approach. It involves the teacher in much careful forethought and planning. But it means that students do not have to stick rigidly to printed syllabus or textbook, fearful to omit a detail. Providing that the main concepts are understood, and the students have learnt through study of some facts and real examples to draw relevant generalizations and explain relationships, they will not only be able to pass the exam, but will also be able to participate in the process of 'developing' their country.