

# Exploring the learning areas: Science

## Transcript of video

### Online professional development Semester 2 2011

This video is available for viewing at [www.qsa.qld.edu.au/15812.html](http://www.qsa.qld.edu.au/15812.html)

Speaker: Welcome to this online professional development exploring the learning area of science. Today I'm going to take you through the science learning area of the Australian Curriculum, and we will look at some of the different resources the Queensland Studies Authority has produced for the science learning area from Prep – Year 10.

Before we begin, let's have a listen to Professor Denis Goodrum talking about some of the aspects of the science curriculum. Denis Goodrum was the lead writer for the shape of the Australian Curriculum: Science.

[Video excerpt. Original video can be viewed in full at: [www.australiancurriculum.edu.au/Science/Introduction](http://www.australiancurriculum.edu.au/Science/Introduction)]

All the curriculum learning areas are made up of different aspects. They all begin with the rationale and the aims. They talk about how the learning area is organised, year level descriptions, content descriptions, achievement standards and so on. The job of the rationale and aims is to make clear to teachers what the purpose of the learning area is, how that learning area develops, the nature of the learning area and so on. There are many different lenses we can look at in terms of science when we are considering how we are going to enact the science curriculum. In today's session we are going to pick a couple of different lenses to look through. The learning area is made up of lots of different aspects. Today one of the main focuses will be on Science as a Human Endeavour.

Before we move on to that, let's make sure we have a good understanding of how science is organised. Science has three different strands: Science Understanding, Science as a Human Endeavour and the Science Inquiry Skills. They're made up of sub-strands, so the understanding has the biology, chemistry, Earth and space science and physics. Science as a Human Endeavour is made up of the two sub-strands: the nature and development of science, and the use and influence of science, and then we have some of those inquiry skills there as well. The main thing to note is the inquiry skills and the human endeavour. Content descriptions are written across a two-year band, science understanding content descriptions are different at each year level. The general capabilities and cross-curriculum priorities sit behind those and they're embedded throughout the content as appropriate. Science also has six overarching ideas. In particular, you can find those in the year level descriptions.

The curriculum can be seen quite easily on one page for a year level where you get that year level description, the content descriptions, the achievement standards and then also some work samples. That's all the information about one particular year level for science or any other learning area. The year level descriptions serve an important role. In science they emphasise the interrelated nature of those three strands. So the human endeavour is not meant to be taught separately, for example, from the inquiry skills or from the understanding. They are meant to be taught together in an interrelated fashion. The human endeavour clearly is something you can use to contextualise the science learning that the students are doing. The year level description also, as I said earlier, re-emphasises those overarching ideas, and you can see them being developed through the different phases of learning. It will begin the second paragraph talking about what happens over a phase. So, for example, over years 3–6 you'll see that students develop their understanding with a range of systems, where systems is one of the overarching ideas. You will also then develop a bit more specifically into the content for that particular year level, and you will see those overarching ideas come through there. So it's important to have a good look at the year level description to get an understanding of where that year level fits within the entire sequence of learning for the entire curriculum.

In this next video clip Professor Denis Goodrum is going to talk about some aspects of the Australian Curriculum and some of his hopes for it. Let's have a listen to Denis.

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When we're implementing new curriculum there are obviously a range of ways that it can be implemented. I'm going to take you through the three broad categories, but obviously it's just a continua of different places you might be at. You can obviously audit your curriculum that you're currently teaching and change as little as possible. Obviously that can be a very good reason for doing that, in that if your current curriculum really closely matches the Australian Curriculum, then obviously you probably don't need to change it a lot. There just might be a bit of tweaking here and there. If your curriculum doesn't match it at all or you're using the curriculum as a chance to renew what you're doing, you might actually start again from scratch. But most of the time for most people, I imagine, who have looked at the Australian Curriculum: Science, you will be something in the middle. You will not have to throw everything out — we wouldn't want you to. If you are doing some high-quality work, why would you want to throw it out? But you might have to make some changes here and there. So I want to talk a little bit about some of the approaches you can take in terms of seeing where you're at and then using the Australian Curriculum as a way to view what you are currently doing, to make some changes to what you're currently doing to match the curriculum.

A point to take would be to actually start from the beginning. So what do we actually value from what we are doing in science and where can we see this in the Australian Curriculum? Can we use that as a lens to re-evaluate some of the things we are doing in our units and so on? One of the things you might find in the curriculum that you

might value about science are some of those Science as a Human Endeavour statements about the big-picture stuff around what is important about science, what's the nature of science, how is science used in society? That might be something you could use as a lens to look at what you're currently doing, especially given the big emphasis on human endeavour as a way to tie together the three different strands.

So the example we have here is an example of an assessment that currently, as it's written, would very much assess the science understanding about erosion and some of the concepts there. It would definitely assess some of the inquiry skills, some of the investigative skills students would need, some of their communication, and so on. But it probably doesn't immediately link to Science as a Human Endeavour. There is nothing wrong with the way this assessment is done *per se*, but essentially a student would get a textbook, get some information from the textbook, and then transpose it to an A3 bit of paper as a poster. You would be able to assess them on their understanding and on some of their inquiry skills. Again, there is nothing wrong with this *per se*, but is there an opportunity to use the curriculum to reflect on this and then to try and improve this bit of assessment?

So what we have done here is looked at which bits of the curriculum would we identify as a way of relooking at that assessment? It's pretty obvious that one way we could look at this is the use and influence of science, where science knowledge helps people to understand the effect of their actions. Almost certainly most of those inquiry skills would be incorporated into this assessment too. When we relook at this assessment through the lens of the science of the human endeavour, we can think about, well, how can we make this an authentic investigation? So instead of just taking the information from a book and transposing it to a poster, we are actually asking the students to look at the problem of erosion but through their own local context. As soon as that happens, the task becomes a lot richer, picking that localised context allows you to do the exact same thing in terms of assessing, understanding and inquiry skills, but also now embeds that science as a human endeavour as an authentic context. So in your booklet you could have a look at that and consider an assessment of your own and think about, well, if I'm currently doing an assessment that does involve inquiry skills and does involve science understanding, is there a way I could contextualise that to involve some of those science as a human endeavour statements as well?

This next section is about comparing the Australian Curriculum in science to the Queensland *Essential Learnings*. I'll let Professor Denis Goodrum have a chat about that first.

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As we can see here in this comparison, the Australian Curriculum: Science and the Queensland *Essential Learnings* are very closely related in terms of their broad organisers, and in terms of the ideas around the types of skills we are trying to develop. Probably the key

difference is Science as a Human Endeavour was just organised under Knowledge and understanding in Queensland curriculum. But in the Australian Curriculum, Science as a Human Endeavour has its own strand, so it probably has a bigger emphasis. With that being said, those are very similar in terms of the way they are organised and the emphasis on the inquiry skills or the Ways of working, they are in both curriculum documents. The Australian Curriculum is probably more specific because it has content descriptions at each year level and starts at Prep, whereas the *Essential Learnings* begin at Year 3 and have those two-year juncture statements.

Our mapping documents, which you can find by going to the Queensland Studies Authority website and looking in the transition to the Australian Curriculum tab and clicking on Science. You will be able to find those curriculum mapping documents, and they are organised by the three different symbols. Year content is represented by the hotspot, the flame. Content that may have moved up and down a year level is represented by the arrow. And the exclamation point talks about where there might be bridging experiences. One of the main things with science would be the movement of particular science understandings from different year levels, the Australian Curriculum being quite specific about where things are taught. So, for example, electricity is something that is taught in Year 6 — very explicit about that. So those are things to be aware of. That might be in terms of moving units, one year to another year, and so on. Those are things you'd need to be considering with the Australian Curriculum: Science.

The activity in your booklet asks you to consider the Australian Curriculum of your year level and think about some of those things as I've said before. Perhaps if you're teaching a unit in Year 8 that actually belongs in Year 9, or you might have a Year 5 unit that belongs in Year 4. So you would need to have those conversations with your colleagues about moving these units around, about sharing resources and so on to prepare yourself for the implementation of the science curriculum.

Thank you for participating in this professional development. Please note that the Queensland Studies Authorities has a discussion forum on the Australian Curriculum. So if you have any questions, log on to that forum and you can ask us about the Australian Curriculum: Science.