Powerful Design: Set the stage for higher order thinking

**Southern Cross University**

Higher order thinking develops deep understanding that underpins success in your subject. However being able to think critically, to problem solve, or argue in a sound and logical manner does not just happen. Higher order thinking is a disciplined act which needs development and practice to set the stage for developing sound thinking as it applies in your subject.

Why

Curriculum and Assessment

Thinking soundly requires a deep knowledge of the subject matter coupled with the necessary skills and dispositions (Vardi, 2013). These can be mutually reinforcing. As students soundly apply thinking skills and dispositions in a subject, their knowledge improves. As their knowledge improves so does their ability to solve problems, to make decisions, and evaluate. Extensive research has shown that deep thinking impacts positively on achievement, success, and learning (Abrami et al., 2008; Pithers & Soden, 2000; Schraw, McCrudden, Lehman, & Hoffman, 2011).
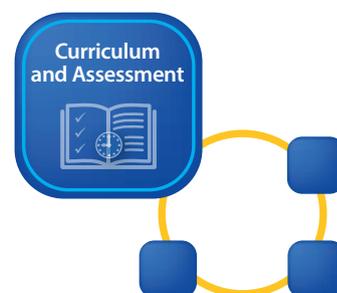
You can enable student success and high achievement by developing a sound knowledge base together with the necessary skills and dispositions for thinking about, and with, that knowledge.

How

Look across all areas of your curriculum to ensure that the stage for higher order thinking is carefully established, modelled, developed, and practised in context (Vardi, 2013). This includes all contexts for unit delivery from your lectures, tutorials, field trips, and Blackboard Collaborate sessions, as well as all your learning materials such as study guides and readings.

Include key content necessary for thinking in your subject area:

1. **Core and threshold concepts**

Set aside time in the curriculum to carefully develop understanding of the core and threshold concepts in your unit. Threshold concepts can be particularly challenging for students to understand as they represent a new way of seeing things. They are sometimes referred to as troublesome knowledge that students find difficult to grasp as the threshold concepts often don't align with their current beliefs or understandings and may seem counter-intuitive (Meyer & Land, 2003). Developing understanding of these important discipline-based concepts is seen as being transformative as they lay the basis for thinking soundly in your subject. They can take time for students to grasp.

Plan your curriculum to develop understanding over the course of the session. Start with clear explanations and plenty of examples in your learning materials. Make sure that your curriculum includes plenty of opportunities for students to play with and receive feedback on their developing understanding. Have the students test out the concepts in different ways and then try to explain what is going on. Ask students to reformulate, exemplify, and apply these ideas through a variety of means such as explanations, analogies, diagrams, graphs, equations, etc. Creating multiple and varied opportunities for students to play with these concepts provides teachers with useful points to gauge students' understanding and provides timely guidance and opportunities for feedback.

2. **Theories and perspectives**

A grasp of the broader disciplinary context is also important for thinking deeply and intellectually. In order to think well, students need to be aware of the lens through which they are learning and thinking. Ensure your curriculum includes an introduction to, or explanation of, the theory, perspective, or approach from which your content, ideas, and concepts arise. It is important for students to know that there are other ways of viewing ideas in your discipline, each of which has different assumptions, implications, and impacts. Developing these understandings improves students' abilities to see strengths and weaknesses, pros and cons, gaps, limitations, and biases.

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Setting up the broader theoretical context takes students beyond following the processes and procedures they have been taught, to thinking about and evaluating them. It takes them beyond arguing their own established position to understanding the overarching framework and assumptions from which this and other views arise. Providing the broader context enables students to better understand the subject, their own views, and the views of others.

3. **Debates and disagreements**

Expose students to the debates and disagreements in the subject area, and trace the historical and research base for these. This helps to establish the streams of thought and research. It provides a context for understanding the relevance of referencing within the discipline and where selected authorities in the area are 'coming from'. It also helps students to see how knowledge has developed in your discipline and the role that thinking plays in progressing and applying knowledge. Showing knowledge as being more than a set of facts or opinions further helps students to recognise the importance of thinking critically (Kuhn, 1999).

Set the stage for developing the skills for thinking in your subject area

With key content and context determined, set the stage for developing the thinking relevant to your curriculum. While the words may sound the same, thinking skills and how they are used vary from discipline to discipline, and even from task to task. Incorporate the development of those skills that are specifically relevant to the subject, learning outcomes, learning activities, and assessment tasks. This enables success and achievement.

1. **Explicitly build opportunities for thinking into your curriculum**

Start by ensuring that there are multiple opportunities for students to think critically and deeply throughout the curriculum. Make sure that this higher order thinking is explicitly articulated in the learning outcomes. Plan interesting and challenging thinking activities and tasks for students to do before, during, and after class, and make clear the thinking required. There are many forms of higher order thinking including critical thinking, creative thinking, problem solving, argumentation, and decision making. Select those that apply to your content and context. See Baron and Sternberg (1987), Facione (1990), and Vardi (2013) for a useful breakdown on various thinking skills and how to teach them.

2. **Directly teach how to think**

Often students benefit from direct instruction on the process and use of thinking skills in your subject area. Explain how you want your students to analyse, categorise, judge, or evaluate in the activities and assessment tasks you have built into the curriculum.

Include time in the session for teaching staff to work through frameworks, models, examples, and flow charts showing the process or steps to undertake prior to the students having a go. Help student development by building in activities for reviewing the quality of the thinking that was undertaken. This may involve you in developing standards, checklists, and directive questions that help students to reflect on and talk about their work. See Vardi (2013) for examples of useful questions that can be used to focus students' minds.

Build up to activities and assessment tasks which allow students to determine which skills, frameworks, and/ or processes are appropriate to use, and the manner in which they will be enacted (Halpern, 1998).

3. **Build in feedback on the quality of students' thinking**

Ensure space in the curriculum structure for teaching staff to provide both immediate and delayed feedback to students on the quality of their thinking, as well as an opportunity for the students to address that feedback in a subsequent activity or task (Vardi, 2012, 2013). In this way you mindfully create a curriculum that builds, extends, and develops students' understanding and thinking through the course of the session.

Set the stage for developing the dispositions for thinking

Thinking skills are only one aspect of developing deep thinkers. It is also useful to develop the dispositions or habits of mind that make thinking skills work well in context. These include the dispositions of being open and fair minded, wanting to be well-informed, facing up to one's own prejudices and biases, and being prepared to change one's mind in the face of evidence. These dispositions enable the thinking skills to work well and help students to facilitate a deeper understanding. See Facione (1990) and Paul and Elder (2001) for a more detailed look at the dispositions.

Help your teaching staff to develop students' dispositions by building some intellectual tension into your curriculum which challenges your students' belief systems and current understandings. Where appropriate, include activities and tasks that show conflicting perspectives, raise awareness of students' own

contradictions and confusions, and raise doubt about actions and beliefs (Browne & Freeman, 2000). Where possible, build into your curriculum the ability for your teaching staff to relate the outcomes of these activities and exercises back to the overarching views, perspectives, and frameworks of your discipline.

In summary

Setting the stage for higher order thinking through the design of content, activities, and assessment tasks will enable teaching staff to work with the students in a deeper way. It will also enable students to be successful in the learning environment.

Find out more

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