Teaching Tips

A Forum for discussion and tips for advancing teaching and learning at Mona

Teaching for Deep Learning

Students often decide on an approach to learning/studying subject matter content in our classes. This is usually associated with deep learning or surface learning. In many cases, they are very strategic about the decision they make based on their thinking concerning the importance of the content, particularly in relation to the examination. Of course, we would like all our students to embrace deep learning instead of surface learning.

Deep Learning

Deep learning is an approach and an attitude to learning where a learner uses the higher order cognitive skills such as the critical analysis of ideas, synthesising content and engaging in problem solving. This approach calls on the student to investigate new ideas, theoretical propositions, problems and evidence. Then, they should integrate, relate or link these new ideas, theoretical propositions, evidence etc. with previous experiences, concepts, principles and understandings. This leads to greater and deeper understanding of these concepts/ideas and an enhanced ability to retain the new information. The new content or new knowledge is available to the learner in various ways, including using it for problem solving in new and even unfamiliar contexts.

When students study using deep learning approaches, the impact is far reaching. These study arrangements have a sustained and substantial positive influence on the students thinking and actions. The motivation for learning is usually enhanced and students become focused on making real and intellectually meaningful gains. In this regard, there is oftentimes much reflection on the personal significance of the course content that is being learned.

Surface Learning

On the other hand, the surface approach to learning is the unquestioning acceptance of course content and memorization of the information for the purposes of regurgitating it. The information is usually isolated and unlinked. Hence, the connections that ought to be made to other important concerns of the course and to the field of studies etc. are generally missing. A major concern of surface learning is the examination. In this regard, after the examination, the information is easily forgotten (Marton & Saljo, 1976; Biggs, 1987; Biggs, 1993; Ramsden, 1992). So, surface learning does not promote long-term retention of the information or its application to various contexts.

Teaching to Promote Deep Learning

University teachers are challenged to teach to promote deep learning in our students. That is, to promote true understanding/thoroughgoing understanding of the course material. This must be done by making the classroom learning environment highly interactive rather than passive. In a classroom where the lecture is the main pedagogical approach, there should be challenging open-ended questions and problems that push students to think deeply and use the course   content to uncover and unravel responses to major questions posed. We often think of such teaching learning approaches as the interactive lecture.

Further, university teachers must encourage students to take charge of their learning and understand the benefits of that approach when they embrace deep learning. An interactive classroom where dialogue is utilised is certainly one that has great potential to promote deep learning and contribute towards positive student motivation.

Assessment is a big part of teaching and learning and therefore, where deep learning is being encouraged, special care must be taken to choose assessment tools that will call forth the deeper connections that are to be made in the lessons. Deep learning is hindered when the assessment task is only a multiple choice examination that is focused on testing lower order thinking skills, particularly the testing of recall. For these kinds of assessment tasks,

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students memorize isolated facts and in many instances they do not understand these facts. However, exposure to courses where they have been rewarded with good grades for regurgitating course material have caused some students to choose these study arrangements. The challenge for university teachers is to develop assessment tasks that call for the use of higher order thinking skills. There is no real challenge or benefit to students to develop assessment tasks that call on students to use content stored in short term memory. In this scenario, there is every likelihood that students will opt for surface learning. It's worth repeating the age old adage here "assessment drives learning." Accordingly, university teachers must be committed to the task of preparing assessment tasks that require higher level thinking skills. When students realise that the assessment task (examination or otherwise) cannot be answered with memorized facts, they generally prepare in other ways for the task. These study arrangements might include learning the content and seeking to determine how it is applied, analysing of the content and of course, synthesising the material. Therefore, teacher guidance is necessary in helping students to select deep learning strategies.

There have been various study strategies that have been used for deep learning. Stranger-Hall (2012) offers a list of strategies associated with surface learning and deep learning. We must remember that it is possible for students to be engaged in activities (physical engagement) in the classroom with very little cognitive involvement. In other words, they can be doing things but not thinking about them deeply. In this regard, they are involved in cognitively passive learning behaviours. On the other hand, they can be actively engaged in activities, for instance discussing issues where they are cognitively involved. Hence, they would be engaged in cognitively active learning behaviours. Hall (2012, p.297) offers a list of study strategies associated with surface and deep learning. Despite the problems that some people might have with approaches such as listing cognitive tasks, since behaviourally focused lists oversimplify deep learning, it is worth looking at the lists offered, which appear below. These lists provide some assistance to teachers as we seek to guide students in developing study arrangements that are focused on deep learning. Therefore, let's pay attention to the following lists and allow them to guide our thinking as we support learners in making choices about arrangements that are important for deep learning strategies.

Cognitively passive learning behaviours (surface learning approaches)

- I previewed the reading before class.
- I came to class.
- I read the assigned text.
- I reviewed my class notes.
- I rewrote my notes.
- I made index cards.
- I highlighted the text.
- I looked up information.
- I asked a classmate or tutor to explain the material to me.

Cognitively active learning behaviours (deep learning approaches)

- I asked myself: "How does it work?" and "Why does it work this way?"
- I drew my own flowcharts or diagrams.
- I broke down complex processes step-by-step
- I wrote my own study questions.
- I reorganized the class information.
- I compared and contrasted.
- I fit all the facts into a bigger picture.
- I tried to figure out the answer before looking it up
- I closed my notes and tested how much I remembered.
- I asked myself: "How are individual steps connected?" and "Why are they connected?"
- I drew and labelled diagrams from memory and figured out missing pieces.
- I asked myself: "How does this impact my life?" and "What does it tell me about my body?"
- I used Bloom's taxonomy to write my own study questions

References

Biggs, J. B. (1987). *Student approaches to learning and studying*. Hawthorn, Victoria: Australian Council for Educational Research.

Biggs, J. B. (1993). From theory to practice: A cognitive systems approach. *Higher Education Research and Development,* 12, 73-86.

Marton F., & Saljo, R. (1976). On qualitative differences in learning: I. Out come and process. *British Journal of Educational Psychology,* 46, 4-11.

Ramsden, P. (1992). *Learning to teach in higher education.* London: Routledge.

Stanger-Hall, K. F. (2012). Multiple-choice exams: An obstacle for higher- level thinking in introductory science classes. *Cell Biology Education—Life Sciences Education*, 11 (3), 294-306.