

## **Education 101 – What Have Teachers Learned?**

Whether we are leading a learning-by-doing (experiential learning) program or teaching a theoretical course, a foundation of education theories is useful.

In any such program of learning we should ask:

- When the Program is complete, what has been added to the student?
- How do we measure success?
- How do we feedback to improve the Program?
- Whose Program is it?

### **Education Theories**

Piaget (1928) said that there are stages of mental development in children that mean they only become capable of abstract thinking as teenagers. Vygotsky (1978) expanded Piaget's work and said that many types of learning must occur in a social setting before becoming available to the individual.

When we consider the best project to undertake, we make use of Kolb's (1975) theory of learning styles, which dealt with a cycle of experimentation, reflection and iterative improvement. We base learning experiences on a constructivist approach pioneered by Dewey (1929) and Montessori (1946), where we expect the learner to incorporate new knowledge with what they already know.

Loewenstein (1994) noted that curiosity for new (and interesting) learning depended on a 'manageable gap' between existing knowledge and what is to be learned. If the gap is too great, the learner will be discouraged and if it is too small, there will not be sufficient challenge to ensure a sense of achievement when the goal is reached.

Knowledge, skills and attitudes are always considered together. Knowledge and skills are straightforward, but how can we think about attitudes when planning for learning?

### **Attitudes and other 'Soft' Attributes**

Sometimes student attitudes are termed the 'affective domain', which relates to development of awareness and growth in attitudes, emotion and feelings as they relate to other living things. Other domains include cognitive, psychomotor and interpersonal domains. Education typically focuses on the cognitive domain where we often talk about knowledge, comprehension, application, analysis, synthesis and evaluation. However, people often have more talent in these other domains and may respond best to learning experiences in a variety of non-cognitive domains. Howard Gardiner (1983) eventually documented nine different areas of human talent which he called 'multiple intelligences'. These are: Logical-mathematical, Spatial, Linguistic, Bodily-kinesthetic, Musical, Interpersonal, Intrapersonal, Naturalistic and Existential.

Some ideal student attitudes are already set out by the *International Baccalaureate Organisation*. The IB Learner Profile is a set of ten student attributes: Inquirer (researcher), Knowledgeable, Thinker, Communicator (collaborator), Principled, Open-Minded, Caring, Risk-taker(resilient), Balanced and Reflective. This complements an outward-looking perspective and an expectation of lifelong learning in the IB courses.

## **Lesson Planning and the Syllabus**

A teaching episode (lesson) is planned by considering the knowledge and skills base of each learner and the goals for new skills, knowledge and attitudes. Knowledge is then packaged for delivery, exercises are created and final assessment is devised to check that the objectives have been met. This should involve different experiences for each student, based on their ability and prior knowledge/skills. This is called differentiation. Each student is also part of a complex web of influences such as friends, family, government, the media and so on. This was identified by Bronfenbrenner (1979) who saw each person at the centre of a nested ecological system of influences.

Over the whole course of lessons the document which summarises the learning objectives, activities and assessments is called the syllabus. The syllabus is always developed in a specific educational context including prior knowledge, skills and attitudes of students. Students' interests and objectives are important so that they will find the learning activities interesting and relevant (authentic). The available facilities and other resources are also very important and so are the requirements and full commitment of the host institution and the wider community.

## **What's Missing? - Team-work, Co-creation and Safe Failure**

Developing students to do well in individual high-stakes examination can mean less time is spent developing skills in team-work and collaboration. There are also limited opportunities to safely experience failure. In a project you may need to come to an understanding that if you plant ten seeds you may find that only seven grow or that the aeroplane you built will not fly!

Given the growing importance of large scale collaboration made possible by the Internet, there are a range of collaboration skills which are vital to lifelong learning and to the co-creation of new knowledge. Skills, knowledge and attitudes required for creation of a digital identity, working at cultivating trust and reputation as well as full participation in the creative flow [Csikszentmihalyi (1990)] are vital for todays 'digital natives'.

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