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A CRITICAL INTRODUCTION TO DEEP ECOLOGY IN HIGHER EDUCATION: AN APPLICATION OF KOLB'S MODEL OF EXPERIENTIAL LEARNING

1. Introduction

The shared understanding that different students in higher education do indeed learn differently – or at least prefer to learn – differently [Diaz and Carrtnal, 1999; Lemire, 1996; Snyder, 2000] makes it necessary for educators to use a variety of methods in their classrooms [Doolan and Honingsfeld, 2000; Ebeling, 2001; Nulty and Barrett, 1996]. The full involvement of students in the learning process could be achieved through active, rather than passive, learning approaches. Active learning, as opposed to passive learning, directly and actively involves students in the learning process. This means that instead of simply receiving information verbally and visually, students are receiving *and* participating *and* doing [McKeachie, 2001]. Active learning includes everything from listening practices, which help students to absorb what they hear, to complex group exercises in which students apply course material to "real life" situations and/or new problems.

Kolb's model of experiential learning [Kolb, 1984] is regarded as one of the best ways for both addressing this diversity of learning styles and for engaging students in active learning approaches. Kolb's model of experiential learning is used and recommended for use in a variety of disciplines [Brock, 1999; Healey and Jenkins, 2000; Sprau, 2001; Kelly, 2002; Manolas, 2003]. However, there are teachers who are not aware of [Healey and Jenkins, 2000], do not use or ignore this approach [Frederick 2000; Sprau,

2001] and for this reason it is important to find ways of informing them as to how this strategy can be used in educational activities.

Deep ecology is a term first used by the Norwegian philosopher Arne Naess in 1973. Naess argued that the environmental movement had two key strands, which he called the "shallow" and the "deep". The shallow movement, he maintained, is primarily concerned with human welfare and with issues such as the exhaustion of natural resources. In contrast, the deep ecological movement is concerned with philosophical questions about the ways in which humans relate to their environment. Much Western philosophy, Naess argued, relies on an outdated view of the world, in which humans are believed to be separate from one another and from the natural world. Deep ecology understands humans not as isolated, separate objects, but rather as interconnected with each other and constantly in relationship with everything around them – part of the flow of energy, the web of life. Deep ecology advocates a dramatic transformation of human values, beliefs and society. The assumptions on which modern Western culture rests are erroneous and highly dangerous [Palmer, 1997; Harper, 1996].

Deep ecology can be considered as one of the most important features of contemporary environmentalism for a number of reasons. For example, the terms "deep" and its complement "shallow" are frequently used – by advocates of deep ecology and others – as a means of classifying the many different forms of environmentalism. Deep ecology itself has been adopted as a philosophy and basis for action by certain pressure groups (*e.g.* Earth First!) and by some of the more radical members of political parties (*e.g.* the UK Green Party).

The goal of this paper is to apply Kolb's model of experiential learning to introducing deep ecology to students and inviting them to think critically about its principles and implications. The premise of the paper is that the ultimate purpose of education is not to produce blind followers or propagandists of an idea but free thinkers.

2. Kolb's model of experiential learning

In Kolb's model, the process of learning is divided into four stages, all of which must be passed through for learning to be most effective. A brief description of these stages follows.

Concrete experience provides the basis for the learning process. Lessons at this stage engage the individual personally and learning relies on open-mindedness and adaptability rather than a systematic approach to the situation or problem.

Reflective observation makes sense of experiences. In this stage, students consider their concrete experiences from a variety of perspectives and articulate why and how they occurred. Learning occurs as a result of patience, objectivity, careful judgment and observation. Reflection helps students break down their experiences into their constituent parts and to categorize them for use in the next stage of learning.

Abstract conceptualization assimilates and distills observations and reflections into a theory or concept. In this stage, students come to understand the general concept of which their concrete experience was one example by assembling their reflections on the key parts of their experiences into a general model. Abstract conceptualization requires students to use logic and ideas in understanding situations and problems. Students may require considerable help from the instructor to proceed through this stage.

Active experimentation tests these theories and leads students into new experiences. In this step, students use the theories they developed during the abstract conceptualization stage to make predictions about the real world and then act on those predictions. Students' actions, of course, lead to new, concrete experiences. The learning cycle begins anew.

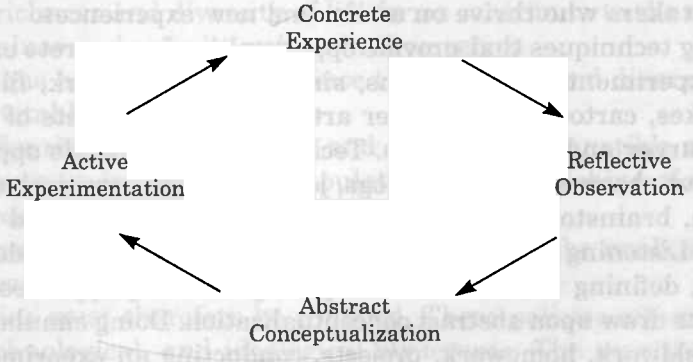

Fig. 1. Kolb's Cycle of Experiential Learning
Source: Author's own elaboration.

The key to planning lessons that take students through the full cycle is to note that the second word in each of the four stages' names indicates what the learner experiences. The learner begins by having experiences that involve him or her in a situation (experience) and then reflects on these experiences from several perspectives (observation). The learner draws concepts or conclusions from these reflections and formulates them into theories or models (conceptualization) that lead him or her to experiment or act (experimentation).

Kolb found that learners typically did not use all four learning stages equally, but preferred to concentrate on one or two of them. He identified four learning preferences, each of which reflects the fact that different learners may be most comfortable in a different pair of learning stages. Based on responses to a set of questions called the Learning Style Inventory, Kolb described the four groups of learner preference as divergers, assimilators, convergers, and accommodators. Understanding these preferences is critical to understanding how students respond to lessons designed specifically for each stage.

Divergers prefer learning through concrete experience and reflective observation. They may be particularly adept at viewing a situation or problem from many perspectives and developing imaginative solutions. Assimilators favor abstract conceptualization and reflective observation. These individuals are often able to pull together seemingly very different observations into an explanation or theoretical model. Convergers learn best through abstract conceptualization and active experimentation. Their strength lies in the practical application of ideas. They tend to organize their thinking so as to use hypothetical-deductive reasoning to focus on specific problems. The dominant learning preferences of accommodators are concrete experience and active experimentation. Accommodators tend to be risk takers who thrive on action and new experiences.

Teaching techniques that provide opportunities for concrete experiences include experiments, observations, simulations, fieldwork, films, storytelling, jokes, cartoons, newspaper articles, examples, sets of problems, taking a survey and reading texts. Techniques that provide opportunities for reflective observation include logs, journals, peer appraisal, debriefing, discussion, brainstorming, thought provoking questions and rhetorical questions. Listening to lectures, seeking out and critiquing models in texts or articles, defining models and analogies, generating hypotheses, papers and projects draw upon abstract conceptualization. Doing simulations, case studies, fieldwork, homework, projects, conducting an experiment in the laboratory or in the field require students to engage in active experimentation [Brock, 1999; Healey and Jenkinks, 2000; Kelly, 2002; Kolb, 1984].

In addition to the points raised above, it must always be kept in mind that learning increases by up to 50 percent if educators set clear and meaningful goals [Kolb, 1985].

3. An Application: A Critical Introduction to Deep Ecology

The proposal which follows offers guidelines on the content and techniques which could be used, in order to successfully apply Kolb's cycle

of experiential learning in teaching higher education students how to understand and think critically about the principles and implications of deep ecology. The amount of time available for the completion of this process is a decision which depends on many and various factors, such as the number of students, amount of teaching time and total time available for the completion of the course.

Objectives

– To understand the fundamental principles of deep ecology, one of the most important viewpoints in contemporary environmentalism.

– To gain a critical understanding of the principles and implications of deep ecology.

Stage 1: Concrete Experience

Naess and others have proposed eight basic principles that describe deep ecology. Students individually read a handout containing these principles:

1. The well-being and flourishing of human and nonhuman life on earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.

2. The richness and diversity of life forms contribute to the realization of these values and are also values in themselves.

3. Humans have no right to reduce this richness and diversity, except to satisfy vital human needs.

4. The flourishing of human life and cultures is compatible with a substantial decrease in the human population. The flourishing of nonhuman life requires such a decrease.

5. The present level of human interference with the nonhuman world is excessive and the situation is rapidly worsening.

6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.

7. The main ideological change is that of appreciating quality of life (living in situations of inherent value) rather than continuously increasingly the standard of living. There will be a profound awareness of the difference between big and great.

8. Those who subscribe to these points have an obligation to directly or indirectly try to implement the necessary changes [Naess, 1989].

Stage 2: Reflective Observation

In groups of 3–4 students consider key questions such as: Why were the above principles written? What do the principles make you think or feel?

Do you see any limitations and/or flaws within these principles? Which principle(s) do you think is/are most important? What questions do these principles raise? What examples from everyday life can you think of that would illustrate these principles? At the end of the small group discussion students share their answers with the whole class. Students are being primed for the next stage.

Stage 3: Abstract Conceptualization

Students hear a lecture on deep ecology and on critiques of deep ecology. In his/her lecture, the teacher makes use of students' ideas as they emerged in Stage 2. The students are also given a bibliography to read which will enhance their understanding of the lecture they heard and which will help them complete the activity in Stage 4.

Stage 4: Active Experimentation

In groups of 3–4, students write a short essay entitled "Drawing upon your knowledge and critical understanding of the principles and implications of deep ecology, construct your own 'deep ecology'. You do not need to construct a complete philosophy, but you should pick out an eclectic 'basket' of ideas that engages you intensely." Students are directed to read and present their papers at the next class session. In this stage students are actively experimenting with theoretical positions.

Stage 5: Concrete Experience

Students present their papers to the class and hear the papers from other groups.

Stage 6: Reflective Observation

Students as a whole class discuss what they have accomplished and what they have learned. They share ideas on how they have been affected and how they would act in the future based on the new knowledge they have gained through their experiences.

The cycle can be maintained, but it may be closed when Stage 6 is concluded.

As can be seen from the above sequence, all the learning stages are included in this cycle and students with each of the learning preferences have the opportunity to use their preferred learning style and develop the other three. At each learning stage, students with the corresponding learning preferences will excel. This has the dual benefit of allowing students to serve as role models for each other and increasing individual students' self-confidence for learning new skills. Students learn to value

their own gifts, as well as those of their peers. The Kolb model stimulates students, regardless of their learning preference, and challenges them to develop and build all the skills necessary for effective thinking and problem solving.

4. Conclusion

Two of the biggest challenges facing teachers in institutions of higher education are to respond effectively to the diversity of learning styles which characterizes student populations and to successfully engage students in active learning approaches. This paper presented the basic characteristics of Kolb's model of experiential learning and applied Kolb's ideas to introducing deep ecology to students and in inviting them to think critically about its principles and implications.

This paper put forward a proposal aimed at changing feelings, attitudes and values by utilizing a variety of techniques such as observing, listening and debriefing, in order to help students draw conclusions and make recommendations. It involved higher level cognitive skills, such as synthesis and evaluation and encouraged students to engage in activities which promote personal and/or group empowerment. These are, after all, the ultimate aims not only of environmental education, but of education itself.

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