Teaching Methods & Program Development in EE

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Environmental education serves many purposes, and depending upon the context, does very different things. One of the primary purposes of EE must be helping learners, regardless of age or setting, to understand complex environmental issues and be able to then make critical decisions relevant to their context and culture (Daudi and Heimlich, 2002). Methods are the intersection of the elements of the teaching-learning exchange (Heimlich and Norland, 1994) and provide an important key to success or failure in effective transmission of the intended message to the intended learner.

Unfortunately, many instructors select methods based on their own experience, exposure, and prior models—often poor models at that (Barzun, 1991) – rather than on the needs of the learner, the learners, the content, the context, and their teaching abilities. People learn in what can be organized as three distinct patterns: as individuals, in collaborative groups, or in institutionalized patterns, e.g. schools (Seaman and Fellenz, 1989). Our role and goal is to reach individuals in whatever pattern using the strategies that will most likely facilitate learning success.

Building Programs and Program Theory

For many decades, the U.S. was driven by curriculum theory in formal education and program design models for non-formal and informal educational programs. Ryder (2006) notes the variety of prescriptive design models including Algo-heuristic theory, ADDIE, ARCS, Criterion-referenced, component display, ISD, 4C-ID and others and presents a comparison against postmodern theories of instruction focusing on constructivism, action research, activity theory, anchored instruction, andragogy and the like. This suggests that how we teach is now more grounded in learning than in design from the instructional point of view.

With the move toward accountability, the field of evaluation's use of program models using program theory became increasingly dominant (Rogers and Haski, 2001). Currently, most organizations and agencies are requiring planning using program models which link intended audiences and activities directly to the outcomes of the program or educational experience. For many educators and organizations, this shift in planning focus has changed instructional methods used in various programs. To be more effective, an examination of the desired outcomes with the audience, the context, and the activity force educators to reconsider how they are presenting and engaging learners in their learning: the methods and strategies used in instruction.

Jones et al (1995) reported the work of Means' identification of seven variables that, when present in the classroom, indicate effective teaching and learning. These classroom variables, which can transfer to any learning setting and across the life-span are:
- learners engaged in authentic and multidisciplinary tasks
- assessments (formal or informal) based on learners' performance of real tasks
- learners participate in interactive modes of instruction
- learners work collaboratively
- learners are grouped heterogeneously
- the teacher facilitates learning

• learners learn through exploration

Methods are the tools by which educators can construct these opportunities.

Using Methods to Link Program Goals with Learner Motivations

Some theorists note there is consistent confusion about words used to describe the teaching process: methods, strategies, techniques, tools, devices, products and others (Seaman and Fellenz, 1989). In the vernacular, most individuals use "method" to refer to specific instructional strategies, even though theorists use method in reference to larger approaches. There are numerous taxonomies of methods and teaching strategies, and the purpose for all is to create a framework for understanding theoretical connections among different tools, all aimed at providing effective vehicles for transmission (Stronge, 2002). An example of the range of strategy considerations is the continuum of instruction from information giving to inquiry for science learning (Cantrell, 2004) to experiential education structures (e.g. Kraft and Kielsmeier, 1995). For many educators, the more traditional structure for methods includes five categories:

Presentation Methods include traditional lecture, lecture with visual aids, lecture with supplements (e.g. sensory added), presentations with examples including live animals, theatre, monologues, presentation/lecture with question/answer session, and other approaches where. In all of these, the teacher holds the information and controls its release in a primarily didactic manner. The primary purpose of presentation methods is the efficient delivery of a large quantity of information with the role of the educator being to present the information clearly, simply, and concisely (Lovell, 1987). When done well, a presentation method is effective in supplying information to learners in a directed, teacher-to-learner manner.

Discussion Methods range from small group activities to full group discussions, brainstorming approaches, group voting, and a host of other strategies that engage learners with each other. Over 10 years ago, a colleague and I gathered descriptions and citations for over 120 different group discussion strategies for a workshop on group process. Discussion methods are used to share knowledge among learners, create synergy, elicit ideas and information, and solve problems. When done well, discussion methods help move learning to evaluative levels through constructed situations developed and managed by the educator.

Discovery Methods are often those used in conservation education, outdoor education, and experiential education. For some educators, discovery methods include experiential methods while in other taxonomies, experiential methods are presented as a distinct category. In other taxonomies, discussion methods are considered part of discovery. Regardless, discovery learning is based on the premise that learners already know or have the ability to know most things. Discovery learning can include games, experiments, and process activities. When done well, discovery methods appear effortless in instruction (though they take tremendous amounts of preparation time), engage the learners fully, and are often "fun" hands-on, minds-on activities.

Media. Increasingly, media are viewed as a distinct methodological approach to teaching. In part, the rapidity with which technology is improving is creating ways of using media to share experiences and sensory experiences with learners that the educator could not otherwise provide. When done well, the educator prepares the learners for the medium and the information that is relevant to the class, course, or program. Media can supplement an educational experience with opportunities for learners that would otherwise be impossible to see or hear – an electronic or film-based field trip; interviews with expert scientists; tangible documentation of another's experience and the like.

Teacher-absent/Distance learning. As with all clusters of methods, there are entire books and courses dedicated to concepts of individualized instruction, programmed learning, and distance education. In all of these, there is an educator – they may be in a different location: asynchronous in interaction; engaged more in the development than the transmission of the information; presenting 'on-demand' information via electronic media; or play some other role in shaping the learning that follows that differs from the teacher in front of the group. The intent of these methods is to provide information to the learner either when the learner needs or wants to gain the information, or to provide information widely to a contemporary group of learners. When done well, teacher-absent/distance learning methods provide rich and rewarding experiences for individualized learning.

The intent of instruction is to facilitate learning; within environmental education this includes applying the skills of critical thinking and decision-making. The tools available to us to facilitate this learning are many and we need to use as many of these strategies, techniques, products, or devices as necessary to satisfy the diverse needs of learners, and to match our strategies to the abilities, characteristics, and levels of our learners (Woolfolk, 1990). Studies over several decades continue to reveal that different approaches to teaching can all be equally effective or equally ineffective (Biehler and Snowman, 1986). Our role is to find what works and use the tools appropriately.

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