Learning from our Experience in the Field:
Using Participatory Development Methods in the Higher Education Classroom

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Abstract
Participatory development methods are used in international development work to assure local and grass-roots initiation, design, implementation, evaluation, and ownership of development programs. A tacit assumption is that a participatory process is more likely to yield a successful and sustainable program, for such a process starts with the people’s needs, mobilizes local resources, and strengthens local capacity. Thus, participatory processes have been designed to bring out the best of each individual, facilitate exchange of ideas and collaboration, and result in a much better product than any one team member could have produced alone. In turn, adult educators and other teaching and learning scholars are empirically demonstrating that college education can be improved by further involving students in the planning and evaluation of their learning. The purpose of this paper is to discuss the potential of participatory development methods in supporting the shift from a teacher-centered to a student-centered learning environment in higher education. In particular, one method, the problem/solution tree, is analyzed in-depth. Some of the contributions to teaching of the problem tree, as emphasized in the paper, include: 1) enhances group processes and cooperative learning, 2) promotes active learning, 3) nurtures multidisciplinary analysis, 4) improves student motivation, initiative, and individual work prior to class meetings, 5) promotes student development of higher order thinking skills, and 6) addresses the needs of particular students who would typically not participate in traditionally-designed group exercises.

Keywords: Participatory methods, student-centered education, student participation, problem/solution tree, collaboration, higher education.
Introduction

Many college educators are shifting from teacher-centered to student-centered instruction in an effort to increase higher-order thinking and help students to acquire problem-solving and life-long learning skills. Some strategies used by instructors in college agricultural and extension education to enhance student-centered learning are inquiry-based activities and laboratories, “multidisciplinary information search” (Koulaouzides, Acker, Vergos, & Crunkilton, 2003, p. 73), problem-solving, case studies, small group discussions, project evaluations, role playing, peer learning, and multi-media learning environments (Murphrey & Christiansen, 2002). The success of these strategies depends on institutional, instructor, content, group dynamics, and individual student factors.

Active student participation is key for student-centered instruction success. “Students learn better [not only] when their learning is active . . . [but also when it] involves talking and interacting . . . and when they have more opportunities for feedback” (Smith, 1992, p. 337). In addition, active participation of students is also “particularly important if one of the objectives of the class is to affect changes in attitudes” (Onken & Eastwood, n.d., p. 2).

Finding ways to encourage student participation is one of the recurring challenges faced by instructors seeking a more student-centered environment. There are many “student” factors that influence the willingness or ability of a student to participate in class, including: 1) Student personal characteristics, background, academic preparation, and self-perception (Armstrong & Boud, 1983); 2) Student attitude toward the course, other students, and the instructor (Myers, 2004); and 3) Situational factors: Course difficulty and level (Fritschner, 2000), type of class (content, size, dynamics), and systems for tracking and rewarding participation (Smith, 1992).

Nurturing collaboration among students is another challenge of college educators but invaluable to foster interdisciplinarity, higher order thinking, and holistic knowledge (Mu & Gnyawali, 2003).

According to Johnson, Johnson, and Smith (1998), there is “little doubt that cooperative learning is appropriate to higher education: it works. While it is never easy to implement, when all the critical elements are in place, it is very powerful” (p. 27).

Cooperative learning is not often used by college instructors in part because of its complexity for both instructors and students.

Purpose of the Paper

The purpose of this paper is to discuss the potential of participatory development methods in supporting the shift from a teacher-centered to a student-centered learning environment in higher education. In particular, one method, the problem/solution tree, is analyzed in-depth.

Philosophical Themes

Participatory methods have proven to be invaluable tools for agricultural and extension educators in development programs “through the step-by-step process of assisting a community to identify its problems, find and implement appropriate solutions and to monitor and evaluate performance and results” (Harvey & Appleton, n.d., p. 3). A key feature of a participatory process is that it facilitates the connection between diverse stakeholders with the purpose of collective reflection, co-creation of knowledge, and action-oriented efforts to solve their shared problems (Röling, 2004, p. 10). A tacit assumption is that a participatory process is more likely to yield a successful and sustainable program, for it starts with the people’s needs: Stakeholders that have been involved in a participatory needs assessment and program design, are more likely to “own” the
program and therefore have more interest in investing in program implementation, evaluation, and continuation. The value of participatory methods is both as an invaluable tool to achieve successful and sustainable programs, and in the synergistic benefits of the participatory process itself. The process connects people, mobilizes local resources, strengthens local capacity, and empowers participants through enhanced understanding, knowledge, connections, tools, and vision.

Participatory methods engage people with different perspectives, needs, knowledge, and opinions, in interdisciplinary and collaborative brainstorming processes. These methods seek to bring out the best of each individual, facilitate exchange of ideas and collaborative learning, enhance individual and collective knowledge and creativity, empower all participants, and result in a much better product than any one could have produced alone. Thus, these methods seem to be perfect candidates to help college instructors shift from teacher-centered education to student-centered learning.

Using participatory methods, however, will require new attitudes and skills from instructors, including a “dual competency: the ability to manage content and process,” and the ability to help the students “evolve from a collection of individuals into a learning community with shared values and common goals” (Christensen, 1991, p. 16). One difficult task for college professors is to relinquish control of the classroom. Similarly, students may not easily transition from an individual and passive presence in class to a group-oriented and active role in the learning process. There are strategies that instructors can use for effective cooperative learning. Figure 1 illustrates the elements presented by Johnson, Johnson, and Smith (1998) as critical to cooperation, and explains what they mean from a practical standpoint.

**Figure 1.** Elements presented by Johnson, Johnson, and Smith (1998) as critical to cooperation, and explanation of what they mean from a practical standpoint for classroom instructors.

Examples of a participatory development methods that can be used in college education are: Community mapping (could be used to identify topics and to establish a common vision for all class participants), question boxes (could be used as a team-building activity and as an introduction to new topics), story with a gap.

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**Critical elements to cooperation**

- **Positive interdependence**
  - Make certain that students understand that they are linked with each other and cannot succeed independently

- **Individual accountability**
  - Assess each student individually and independently

- **Promotive interaction**
  - Help students help, assist, support, encourage, and praise each other

- **Social skills**
  - Promote and reinforce students’ social skills and ensure that they are used appropriately

- **Group processing**
  - Give enough in-class time to students to engage in group processing
(before and after), three-pile sorting (good, bad, and in-between), problem and solution trees (to analyze causes, effects, and solutions to specific problems), option ladders, and pocket charts or matrix scoring (to analyze and evaluate situations and solutions to a problem) (Harvey & Appleton, n.d., p. 21-33; see also International Fund for Agricultural Development, 2002).

An example: Problem and solution tree diagrams

“The problem tree is a visual problem-analysis tool that can be effectively used . . . to specify and investigate the causes and effects of a problem and to highlight the relationships between them” (Anyaejigbunam, Mefalopulos, & Moetsabi, 2004, p. 23). In this visual representation, the tree roots are a net of causes of the problem, and each cause can be analyzed as a problem in itself. The trunk is the main problem studied, and the branches and leaves are the consequences of the problem. The problem tree is then used as the basis for discussion to analyze and prioritize causes of a critical problem, and to work to formulate solutions. The graphic nature of the tool helps participants to visualize relationships between ideas, and discuss whether a proposed solution will address causes or effects of the problem, as well as to evaluate the long-term effect and sustainability of each solution.

In the higher education classroom, a problem tree can be used to introduce and study a wide variety of science and social topics. Some possible examples are: Soil erosion; Animal disease; Low levels of student achievement; Hunger; Program failure; or Teacher burnout. The specific contributions and advantages that using a problem tree could provide to teaching and learning in higher education are presented in the following paragraphs.

1. Support building a class community: In constructing a problem tree, individuals understand the value of building it in cooperation with others, and the power of positive interdependence of members of a team (Johnson, Johnson, & Smith, 1998).

2. Foster participation of all students and support teaching that is responsive to a diversity of learning styles (Budd, 2004; Mento, Martinelli, & Jones, 1999): To contribute to the construction of a problem tree, a student does not necessarily need to verbalize and explain in-depth his/her ideas. Sometimes, a word can be enough. The ability to communicate an idea in such a simple manner will encourage shy, quiet, and reflective students to be participants in the process, especially if they can add to the tree (causes, effects, or solutions) at any time. Visual learners also notably benefit from the tool.

3. Nurture analytical depth and breadth: In constructing a problem tree, many branches and types of branches are possible: Breadth of the analysis will be apparent through the number of roots (causes), branches (effects), and solutions, flowing from the center of the tree (problem). In-depth analysis will result in multiple, diverse, and intricate secondary branches (details of solutions, causes of causes, in-depth analysis of a specific cause).

4. Facilitate interdisciplinary teaching and learning by demonstrating “richer and broader associations” (Budd, 2004, p. 41). Cooperatively constructing a problem tree helps participants realize the wide variety of causes affecting the problem under study, causes that often are revealed only thanks to the integration of ideas from people from different disciplines, perspectives, and interests. Students will see the associations between concepts and ideas, causes and solutions, which will help them relate their contributions or ideas to those of others.

5. Channel holistic and global thinking: ‘Visual presentation of ideas helps one think about a subject in a global, holistic sense and increases flexibility. . . . Structures of the subject can be seen in a way that it is not possible with linear outlines” (Mento, Martinelli, & Jones, 1999, p. 391). This is
particularly helpful in including in the learning process both holistic thinkers (Nisbett, Peng, Choi, & Norenzayan, 2001) and global learners (Felder, 2006).

6. Promote student development of higher order thinking skills because they help ask WHY (in searching for causes) and WHAT now? (in proposing solutions) (Anyaegbunam, Mefalopulos, & Moetsabi, 2004, p. 23). In the words of a University of Georgia student who used a problem tree to analyze international agriculture problems: “It’s like upgrading brainstorming” (personal communication).

7. Help students “gather, interpret, and communicate large quantities of complex information” (Mento, Martinelli, & Jones, 1999, p. 391), engage students and promote active learning: When students are building the trees, exploring causes, and justifying solutions, they will not focus merely in studying the information presented by the professor, but will look and propose their own explanations, and will search and read additional materials that will help them support their ideas (Budd, 2004).

8. Nurture individual and team work: While students may work individually to gather and interpret information relative to their disciplines, the problem tree can only be completed through the participation of all members of the team (demonstrate positive interdependence and foster communication) (Johnson, Johnson, & Smith, 1998).

Conclusions, Educational Importance, and Implications

Participatory development methods can be excellent tools to help enhance student-centered learning in college teaching if they are carefully planned and appropriately adapted to the specific teaching environment. The problem tree and other participatory methods can help college instructors to: 1) Encourage and enhance student individual work and reflection prior, during, and after class meetings; 2) Promote active learning, enhance group processes, improve the depth and breadth of student contributions to group work, increase student interactivity, and foster cooperative learning (Johnson, Johnson, & Smith, 1998); 3) Promote student development of higher order (Anyaegbunam, Mefalopulos, & Moetsabi, 2004, p. 23) global, and holistic thinking skills (Budd, 2004; Mento, Martinelli, & Jones, 1999), 4) Guide student teams through multidisciplinary and interdisciplinary analysis, and 5) Be responsive to a diversity of learning styles (Budd, 2004; Mento, Martinelli, & Jones, 1999).

Having ample participatory experience in the field, agricultural and extension educators are in the best position to transform higher education for sustainable education: By using more participatory methods in teaching and learning processes, in addition to offering a better education to students in any field, educators can equip graduates with the necessary tools to better serve and work with their communities in the future, breaking the cycle top-down approaches to knowledge, communication, business, and politics. In addition, agricultural and extension educators working with college students should consider further analyzing, researching, assessing, and demonstrating how participatory development methods can enhance student-centered education, student participation, student learning, and student achievement.
References


