Metaphors in Agroecology Education: One Personal Method of Learning

Metaphor: the application of a word or phrase to an object or concept; it does not literally denote in order to suggest comparison.

Among multiple methods of learning, personal metaphors created by students while walking the farm and rural landscape and while working on farms have been particularly useful in establishing identity with the context of farming and food systems. In the literature on metaphors and learning, there is frequent reference to the dominance of traditional "teaching and learning" by transmission of knowledge, while much less common is an appreciation of learning as a social process (Martinez et al., 2001). Educators in Finland refer to these two models as an "acquisition metaphor" and as a "participatory metaphor" (Paavola et al., 2003). They add a third metaphor that relates quite directly to our approach in the Agroecology MSc programme, that of "knowledge creation". It is within this third arena that we have assigned students to create their own metaphors while walking the landscape and exploring new places in the farm and rural community context. Some revealing examples are presented below.

Learning objectives are to 1) encourage students to observe carefully the physical landscape and especially its biological elements, 2) provide opportunity for personal identity with these elements in ways that are uniquely appealing so that they will dig more deeply into their own learning, and 3) offer safe space to present and discuss these individual metaphors within the immediate learning community as well as listen to others' creative ideas. We have successfully included this dimension with the initial transect walks across the farm and the rural landscape in several short workshops as well as in semester-long immersion courses in agroecology.

Methods for the discovery of personal metaphors are rather simple. We ask students or workshop participants to be alert observers as they traverse the landscape, and while they are soaking in the sounds, sights, smells, and feel of the experience to seek some element with which they have a particularly personal identity. This could be a plant, an animal, or a specific feature of the place. We ask them to remember that feeling, and to share it with the group when we reassemble, but only if they are comfortable doing so. Although we often use this exercise early in the schedule of a course or workshop, it is encouraging to observe the level of trust and confidence in the group that has often been built in a very short time, and this is related to other activities in community building [see Building a Social Learning Community, NACTA Journal, September 2011, page 99] and the abilities of the instructors to create safe space and an affirmation of individuals for their previous experiences and qualities that are brought to the group.

Outcomes of the exercise have been observed in a number of workshops and classes, but to date have not been adequately assessed in a systematic way. Probably the best indication of outcomes is to provide a number of specific metaphors that students created from the activity, several of them in a workshop on nutrient cycling in Tingvall, Sweden in a 2003 course.

As an agroecologist and sustainable agriculture advocate in my department, even among the grad students, I feel like that one brown and white cow in the herd of Holsteins that we visited; it seems like everyone must be looking at me.

I feel like that clump of perennial grass that is prominent in the pasture we walked through, with deep roots that go down into the soil and the history of Sweden, just as my own ancestors belong to this land.

When I walked by the dairy barn there were several swifts that flew out from their nests and then swirled around above me in the air; it seemed like I would like to be wild and free and be able to sail around like that and observe things from above.

Over by the milking barn there is a large manure lagoon above ground ... you have all seen it ... that is about 3 meters deep and 20 meters in diameter. On top there is a green scum or crust, and several small birds carefully walking around and picking up insects from this rich medium. When I am in my department back on campus, I feel like those birds – there is useful stuff here to harvest, but any mis-step or reference to sustainability could send me into deep manure with my professors and colleagues.

These are exciting and even visceral types of identity with living entities in the environment on a dairy farm. They probe individual feelings and encourage a

type of learning about oneself as a component of the landscape and its activities that would be inaccessible in a classroom, and highly unlikely on a field trip that turns into a lecture on cropping systems by the instructor or a farmer. We consider this a valuable stimulation for learning in agroecology.

References

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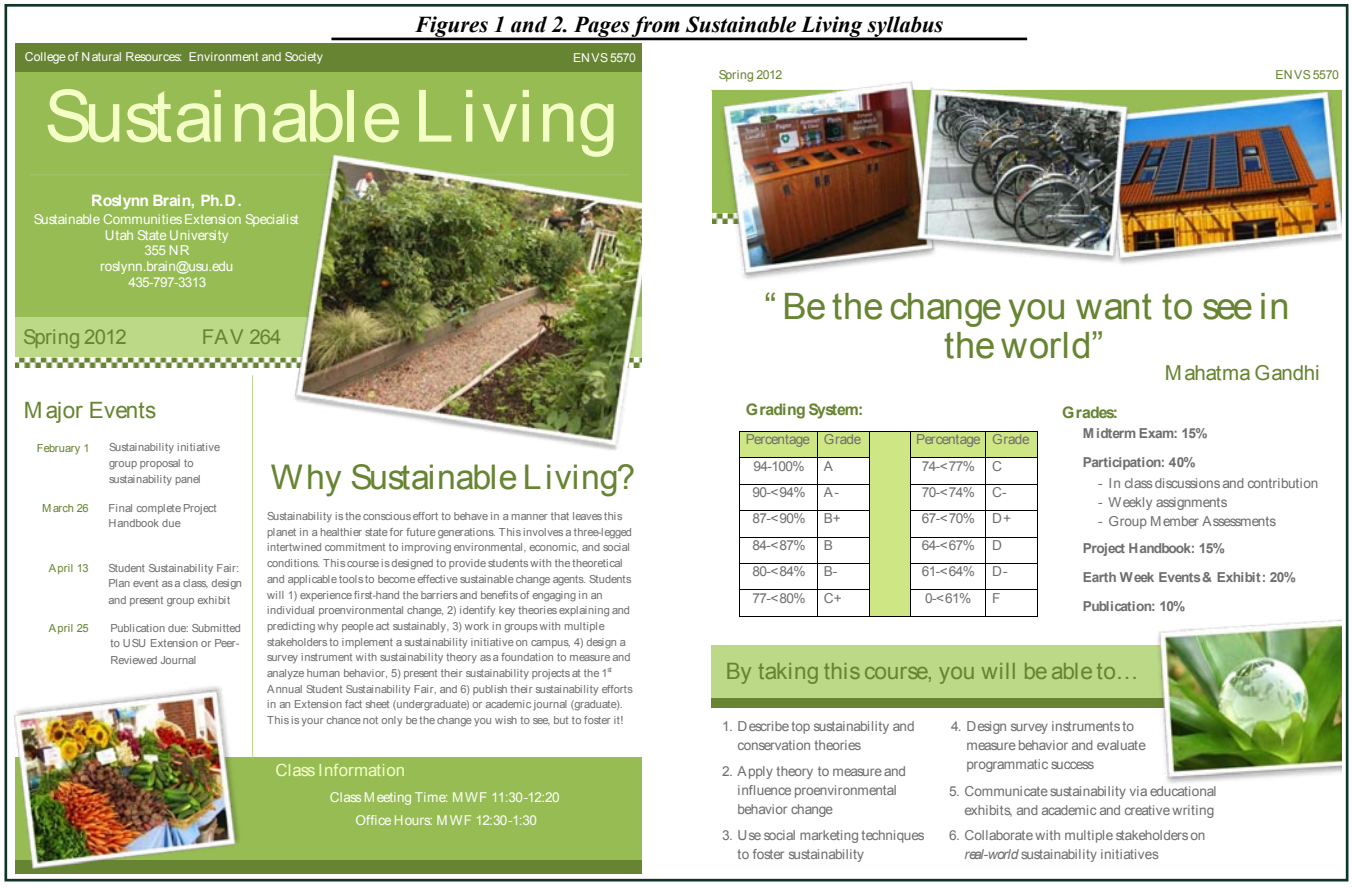
Changing Lives in a Semester: A Teaching Approach to Help with Tenure and Promotion While Providing an Experience They'll Never Forget.

Do all university courses have to be structured in a traditional way? For many, the answer is a resounding, NO! Generally, we assume a course needs to have a midterm, final and at least one major project. Although this may fit well with many standard courses, it can be a wonderful experience to deviate away from the norm and delve into the world of service learning.

As an extension specialist in sustainable communities, I was asked to teach sustainable living at our university last semester. This was a course with a previous lecture format of planned presentations, five quizzes, a major research project and various smaller assignments. This was a solid foundational structure, but why not tear it apart and try to implement lasting pro environmental change on campus within a semester? That became my goal as I restructured the class. (See syllabus examples in Figures 1 and 2.) To summarize, the new course with 32 enrolled appeared as follows:

1. Students selected an area on campus to conduct a sustainability audit and submitted letters to the deans/facilities staff/administrative staff regarding

Figures 1 and 2. Pages from Sustainable Living syllabus



their observations and specific recommendations for improvement.

2. Students selected environmental topics of top interest to them, merged themselves into groups, and worked all semester to try to see their pro environmental change come to fruition on campus. This was done using Community-Based Social Marketing Techniques and working closely with key campus stakeholders. Topics ranged from using a reusable bottle or mug to buying local food.

3. The major assignment for the semester evolved from class discussion, and became the first annual campus Earth Week with a focus on land, air, water, food and a finale covering all topics at a student-organized sustainability fair.

4. A midterm was administered for content retention, but instead of a final exam, students submitted a fact sheet based on the environmental topic they had studied all semester. In co-authoring the fact sheets, this assists directly with tenure and promotion given the outreach expectations of extension faculty.

Unexpected Outcomes

1. Prompted by the student letters, dining services formed a sustainability group and have already begun working on better recycling habits, composting, and offering reusable "to-stay" cups in campus cafes.

2. Over 5,000 students participated in Earth Week, with over 1,000 signing various pro-environmental pledges.

3. In conducting a student life skill assessment in the class, significant changes occurred on all levels ($p = 0.001$ or smaller) at a 95% confidence level. This included not only expected skills gained in communication and marketing techniques which were a large focus of the class, but also in applying sustainability strategies in the workplace, general public speaking skills in other classes, working in groups, negotiation, dealing with difficult people, and overall self-confidence.

4. Students evaluated the course on all goals and items "higher" than all classes across campus, and rated it as "much higher" in learning to apply course material to improve thinking, problem solving and decisions.

5. Student evaluation comments following the semester demonstrated the course impact, as is demonstrated in the following selected quotes: *"This course was the most useful course I have ever taken in my four years as an undergrad and one year as a grad student…I walked away from [the course] feeling as though I had made a difference in my own life, on campus, and in my career." "I love!!!!! That this was a hands-on learning class. I really learned more than just the subject. It was indescribable how this class changed me and my future."*

Tips for success

1. Collaborate with multiple stakeholders who can make change happen on campus. This fosters a sense of responsibility in students, but also ensures they will see results from their hard work.

2. Consider your tenure and promotion expectations. Can you find a good balance between students building their resumes and you checking off required tasks?

3. Demonstrate to students how to add publications and event planning from the class into their resumes. This helps them see the "so what" of their efforts.

4. Be flexible. Students – not the professor – designed the major assignment of Earth Week.

5. And lastly, but of most importance, show your enthusiasm for the subject matter and faith in their ability to succeed.

Remember, life change can happen in a semester!

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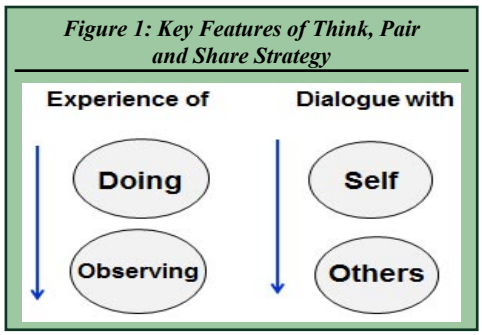
TPS (Think, Pair and Share) as an Active Learning Strategy

Today's classroom teachers are challenged to make students think, provide experiences that help them learn and understand the concepts that are being taught, and provide opportunities to do, think and reflect. Active learning (AL) is one such strategy that engages students in two aspects – doing things and thinking about the things they are doing (Bonwell and Eison, 1991). Active learning includes an array of teaching activities that range from simple question and answer sessions to complex practicum and research involvement. Research has shown that AL is an effective teaching technique that allows students to learn more with the help of the instructor and other students. As shown in Figure 1, providing students with opportunities to experience what they are doing, observe what others do and have a conversation/ dialogue with others and themselves will help them to critically think and apply concepts taught in class to real life situations.



Think, Pair, and Share – TPS is an AL strategy that can be used in any classroom format which gives students time to think on a topic, turn to their neighbor for a short discussion and share the results of the discussion to the rest of the class. The purpose of this "Teaching Tip" article was to describe the use of TPS in a senior level undergraduate research methods class and evaluate the effectiveness of TPS in enhancing student learning. TPS involved three steps. Step 1 (THINK) – in this step, students were asked to define a concept or term in the context of their research study. For example, validity and reliability as concepts in a research study. Then, they were asked to think about its meaning and write down its use in conducting a research study. In Step 2 (PAIR) – students were asked to discuss with the individual sitting next to him or her about the terms and concepts identified in step1. The rationale in step 2 is to not only understand the concepts from each student's point of view but also learn from each other. Step 3 (SHARE) involved sharing of the experience of learning the concept with the rest of the class. The rationale in step 3 is to understand the term or concept from a variety of perspectives. A total of 15 minutes are needed to complete the three steps. TPS was used six times in a semester.

To assess the effectiveness of TPS, a simple assessment tool was developed. Students indicated that TPS was a very useful strategy (100%), increased their critical thinking (80%), was a good strategy (100%), and recommend use of TPS strategy in other classes (100%). Further, students were also asked, at the end of the semester, to rate the effectiveness of TPS as an AL strategy on a five-point scale that ranged from 1 (strongly disagree to 5 strongly agree). The statement, "TPS helped students to know how knowledgeable their peers were relative to a specific research term or concept" received the highest mean rating (4.62), followed by "opportunities to pair with a fellow student to discuss concepts" (4.5), served as a good reinforcing tool for concepts learned in class (4.5), increased critical thinking of research concepts (4.3), and cleared doubts on concepts learned in class (4.3). Further, over 70% of the students indicated that TPS should be continued, more so in undergraduate courses. Overall, students agreed that TPS is a good active learning strategy to understand concepts before they are taught, get to know students and where they are relative to the concepts. The following verbatim comments support the student consensus on TPS.

"TPS strategy really helps you assess what you kno*w before you are taught the concept. If everyone has a good understanding of the concept, instructors can spend less time covering and move on to things that students don't know."*

"I think giving students the opportunity to present both broadens other students understanding and forces the presenter to verbalize and explain."

From the instructor perspective, TPS has several advantages which include 1) helpful in organizing content and tracking students on where they are relative to the topic being discussed in class, 2) allows students to prepare for each class session, 3) saves instructor time so that he/she can move to other topics, 4) provides opportunities for students to interact with each other and 5) helps the instructor in making the class more interactive than regular lecture sessions.

In summary, TPS is a very good active learning strategy. If properly implemented, it saves instructor time, keeps students prepared, helps students to get more involved in class discussion and participation and provides for cumulative assessment of student progress. TPS is not a good strategy to use in large classes because of time and logistical constraints. Frequency of using TPS strategy should be carefully planned so that it will not take too much time. Further research is needed to link TPS strategy to test performance. Please contact the authors for sample questions and details of procedures used in TPS discussions and assessment tools used to assess the effectiveness of the TPS strategy.

References

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