

Teaching Methods

On-site Instruction for Landscape Contracting Students

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Summary. To strengthen students' ability to solve landscape problems creatively while working in group settings, faculty members in the landscape contracting program at The Pennsylvania State Univ. incorporated experiential learning through the construction of on-campus landscape projects between 1992 and 1994. Collaborative student groups developed landscape plans and built the projects. Partnering with other university units resulted in benefits essential to completion of the projects. Student evaluations were shared between the instructor and the students. The success of these projects has led to planning future experiential projects.

Landscape contracting students at The Pennsylvania State Univ. receive a broad spectrum of instruction aimed at preparing them for

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entry into the landscape design/build profession. Hands-on projects have become an important element within construction classes. Since 1992, a variety of projects have been incorporated into course outlines, including planting an interior courtyard at the university's Nittany Lion Inn, constructing stone retaining walls at the university golf course, constructing a deck and access ramp at a nonprofit service agency, and constructing a formal garden area adjacent to an historic campus building. These projects provided students with opportunities to develop teamwork, communication, and leadership skills (Kahn, 1994), as well as technical construction skills.

Objectives

Landscape contracting experiential projects were designed to meet a variety of student learning objectives. Application of theory to real-world

problem-solving opportunities was a primary goal—one that would serve to facilitate lifelong learning (Cross, 1994). Skill development in critical thinking, group interaction, and communication were also identified as important outcomes of the projects.

Additional objectives for these projects included knowledge and proficiency in plant material selection and use, construction materials and methods, and project management techniques. Students were required to determine and analyze client objectives such as timely completion of work and adherence to a specified budget. A finished project that displayed high quality, including design, materials, and workmanship, was an overarching objective of faculty members, students, and clients.

The University House project

Interior and exterior renovations at the University House, an historic campus building containing offices and function rooms, began in Jan. 1994. When new utility lines destroyed part of the existing landscape surrounding the building, the university's landscape architect approached faculty members, offering the site as a class project. Students in a senior planting design class inventoried existing conditions and investigated the site's garden history. Working in groups, they developed seven alternatives for the design of a formal garden to serve as a focal point in the landscape and a location for outdoor receptions. University



Fig. 1. Organization of work teams is a part of project planning.

design and maintenance staff members were involved with the class from the beginning and attended the presentation of final plans. Faculty members and staff then selected one of the plans to be implemented.

Later in the semester, students in a junior construction class were given the opportunity to build the garden. They had responsibility for all details, from how to organize themselves, to identifying tasks, scheduling, and coordinating all operations and activities. Collaborative learning techniques (Bruffee, 1993) were used in the classroom before working on-site. Within small groups, students developed ideas that were then discussed and blended with those from other groups until a consensus was reached. Construction tasks identified included marking utility locations, laying out the design on the ground, grading, installing brick walkways and wooden arbors, and planting boxwood hedges and herbaceous perennials. Students also determined that teams would be needed for procuring materials and tools and creating a detailed schedule of activities. This activity generated much discussion, exploration, and sharing. These same teams, with some alterations, then became the work groups for implementing the plans in the field.

The project budget included funds for purchasing hammers, shovels, and other hand tools for use by students. At the end of the project, these tools were retained by the Office of Physical Plant for use on future student projects. Power tampers, brick saws, and other large tools were rented for the time needed. Backhoes, loaders, dump trucks, and their operators were provided by the university as needed. All construction and planting materials were purchased through standard university procedures and delivered to the site. Because the project was an educational experience and part of a scheduled class, there were no conflicts with union workers, and everyone involved was fully protected by university insurance coverage.

Organization was critical to the delivery of this project (Fig. 1). It was important not only to keep 50 students busy, but also ensure that all had an equal opportunity to learn. Organizational challenges were minimized by establishing good working relations with other university units, especially



Fig. 2. *Quality of the finished product is stressed throughout the project.*

grounds crews. These partnerships allowed the project to proceed without tying up teaching budgets or creating additional time-intensive tasks for faculty members. Students also benefited from working with purchasing agents and equipment managers by observing and actively participating in procurement and scheduling.

Throughout the project, quality was a top priority (Fig. 2). Because the finished result was permanently installed work, the grade could be no less than an "A." Students were aware of this from the beginning and were very curious about how their efforts would be evaluated. Given the option of having the instructor determine a grade or of sharing the grading duties with the instructor, students chose to participate in their own evaluation. The percentage of the total grade established by the students was 40%. Members of each work group were asked to assign a numerical rating for quantity and quality of work for each of the members of their group, including themselves. To evaluate the ability to work cooperatively, each student was also rated on attitude and behavior, important elements of being a successful student or professional (Williams, 1993). The average ratings for each student were then combined with a more extensive scoring system compiled by participating faculty members, resulting in a final grade. In reviewing student ratings, faculty members found the results to be very close to their own perceptions of individual quality and effort. Even though some low individual scores were earned in the above projects, there were no incidents of students contesting the grades assigned by their classmates.

Conclusions

For landscape contracting students, experiential projects meet a variety of course objectives in an exciting manner. An indication of student ownership of the project and process was evidenced in the number of students who showed up to work outside of regular class hours, many doubling or tripling the required time. Professionalism and job quality were never in doubt, as pride in the finished product was extremely high. The quality of the job was also an indication that students were able to make the connection between technical information learned in the classroom and application in the field. Studies indicate that hands-on work also has a positive effect on classroom performance (Cross, 1994). Students regarded their work as a permanent monument to their class that will exist for them to visit long after graduation.

Along with technical skills learned through hands-on activities, students learned to work with their peers (Fig. 3) to solve a wide variety of site-related, client-related, and logistical problems. Critical-thinking skills were developed through group decisionmaking processes. Students quickly realized that communication among themselves was important, as each work group relied on all others to complete the project. Hands-on projects give students an advantage when job-seeking, as employers recognize the value of their experience.

Benefits were also enjoyed by the landscape contracting program in the form of visibility and public relations and by the university in the form of completed projects and the ability to



Fig. 3. Students develop skills in working with others and in group decisionmaking.

publicize the partnership between campus physical plant and educational programs.

Experiential landscape projects require different teaching strategies and methods and must be balanced with more traditional pedagogy to present a complete course outline. Instead of performing as a lecturer, the instructor has to allow students to lead, stepping in as facilitator only as necessary to guide discussion and keep ideas flowing. This does not mean that the teacher is no longer in control of

the class. Rather, it means that the teacher must understand the diversity of learning styles existing within the class and the diversity of student learning objectives (Whitaker, 1994). The task then is to allow students to participate in meeting their goals in a manner that keeps them motivated and excited. A great amount of teaching and learning occurs among the students themselves, as those with experience step forward as leaders in various aspects of project work.

Projects must be chosen carefully, matching the scope of work with the time available. When properly selected and administered, these projects can provide the means to accomplish a wide range of instructor and student objectives. " Involvement of university design and maintenance staff in all phases of project development is necessary for a successful project. Students learn the realities of working with ideas and input from others, and organizational conflicts are kept to a minimum. The success of past projects has led to planning of a series of future campus projects. Administrators, faculty and staff members, and students are eager to continue the partnership.

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