

# Horticulture students link problem-solving to employment

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Recognizing the need for university students to develop problem-solving skills they will need in their careers, educators are looking to student-centered, problem-based learning strategies. Problem-based learning (PBL) experiences have been shown to promote higher-order thinking skills in students, but, for faculty, implementing and assessing problem-based activities often means a substantial time investment. Iowa State University professor Ann Marie VanDerZanden and graduate student Tigon Woline published a study in *HortTechnology* that reported on an innovative approach to integrating case-based problem-solving and computer-based instruction.

According to VanDerZanden, some problems—in the classroom as in the real world of work—have one clear solution, while others have many paths that can lead to an answer. In educational language, the former type of problem is called "well-structured" while the latter is termed "ill-structured". While traditional textbooks feature mostly well-structured problems, ill-structured problems are more common and often more challenging. Many educators find that students are inadequately prepared to solve real-world problems because these ill-structured problems are rarely posed in traditional education courses.

As a means of encouraging faculty to use more problem-based activities, an online environment called The Problem-solving Learning Portal (PSLP) was developed by an interdepartmental team of Iowa State faculty members. The environment includes a database with resource documents, an Internet interface, and instructor-provided questions. To

evaluate the online PSLP environment for use in solving an ill-structured horticulture case study, VanDerZanden and Woline designed a research study involving Iowa State [University students](#) enrolled in a landscape class.

The researchers assigned 45 students a series of four online, ill-structured case study problems based in a realistic residential landscape. Results showed that students perceived problem-solving as an important skill and were concerned with finding the best solution to problems. However, students were more concerned with obtaining the right answer than developing a strategy to solve the problems. "That the students said that finding the best solution (to a problem) is among the more important aspects of problem-solving indicates that they understand how their problem-solving impacts the people they are trying to satisfy, in either an academic or a business situation", the authors wrote.

[Students](#) in the study rated the online learning environment as adequate, reporting that they liked the variety of resources available and the fact that case information was consolidated in a single location. Further research at Iowa State is focusing on designing a more user-oriented interface for the PSLP that would allow instructors to create, manage, assess, and gather data on their cases. The [environment](#) is also being integrated with other ill-structured problem-solving systems at Iowa State and other universities.

**More information:** The complete study and abstract are available on the ASHS HortTechnology electronic journal web site: [horttech.ashspublications.org/...nt/abstract/20/4/820](http://horttech.ashspublications.org/...nt/abstract/20/4/820)

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