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Abstract

Increasing costs and decreasing numbers of university Extension faculty have made it difficult to provide quality turfgrass short course education. In response, faculty from nine institutions collaborated to develop the Great Lakes School of Turfgrass Science. This 12-week online course provides students with unique learning experiences through a combination of assigned readings, quizzes, lectures, and live instructor discussion. Student attendance increased and costs decreased relative to traditional in-person short courses. Additionally, student feedback has been overwhelmingly positive. These results demonstrate that online courses such as this can provide an effective and flexible source of knowledge that meets the busy schedules of students and instructors.

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Introduction

For nearly 100 years, turfgrass short courses have offered highly applicable educational and advancement opportunities for turfgrass managers outside formal college or university settings. Lawrence Dickinson offered the first turfgrass short course in 1925 at the Massachusetts State Agricultural School, and similar 8- to 12-week courses were initiated in subsequent years at Penn State and Rutgers University (Beard, Beard, & Beard, 2014). Many university programs across the country currently offer a turfgrass short course, but in recent years many institutions across multiple states have merged to provide joint short courses. Illinois and Indiana were the first states to merge, in 1994, and numerous other states initiated collaborations in following years (Patton, Trenholm, & Waltz, 2013). Declining enrollment and fewer turfgrass science faculty have been the primary drivers behind the merging of short courses, and the mergers allow the larger numbers of participating short course faculty to offer more specialized instruction tailored to their particular strengths.

The University of Wisconsin–Madison and the University of Minnesota–Twin Cities merged their short courses in 2003 and alternated the host site between the two states. The course averaged 25 to 30 students each year

until 2014, when unusually low enrollment coupled with increasing course costs drove discussion about developing a new course format. Those discussions eventually included turfgrass faculty from surrounding states, and the result was a nine-state online collaboration called the Great Lakes School of Turfgrass Science that debuted in 2014.

Great Lakes School of Turfgrass Science

The 12-week online course occurs once per week for 2 hr. Each week a topic is taught by an expert in a particular area (Table 1). This lead instructor presents a live lecture to the class via Google Hangouts, which is embedded in a Moodle class management website. Two or three additional instructors participate in the lecture, asking questions and initiating discussion (Figure 1). Typically, following the main presentation, the course administrator and other instructors engage in a 15- to 20-min roundtable discussion on the topic(s) covered. These discussions are not scripted and tend to hit on the latest trends or controversial subjects that were not presented in the main lecture. Over 90% of the students surveyed indicated that these discussions were helpful to their understanding of the associated topics (Table 2).

Table 1.

Participating Institutions and Faculty and Topic Areas for the 2014 Great Lakes School of Turfgrass Science

Institution	Faculty member	Title	Area of expertise
University of Minnesota	Sam Bauer	Assistant Extension professor	Course administration and general turfgrass familiarity
University of Minnesota	Brian Horgan	Professor	Selection and establishment
University of Wisconsin	Doug Soldat	Associate professor	Soil science
University of Wisconsin	Chris Williamson	Professor	Entomology
University of Wisconsin	Paul Koch	Assistant professor	Plant pathology
Texas A&M University	Dave Chalmers	Professor emeritus	Mowing and cultural practices
Michigan State University	Kevin Frank	Associate professor	Nutrition and fertility programming
Ohio State University	David Gardner	Associate professor	Turf species identification
Chicago District Golf Association	Ed Nangle	Director of turf programs	Specialty product usage

Purdue University	Aaron Patton	Associate professor	Weed science
University of Nebraska	Zac Reicher	Professor	Mathematics and calibration
Cornell University	Frank Rossi	Associate professor	Abiotic stresses

Figure 1.

Screenshot of Google Hangouts Feed from Great Lakes School of Turfgrass Science Showing Main Lecture in Primary Window and Assisting Presenters in Smaller Windows

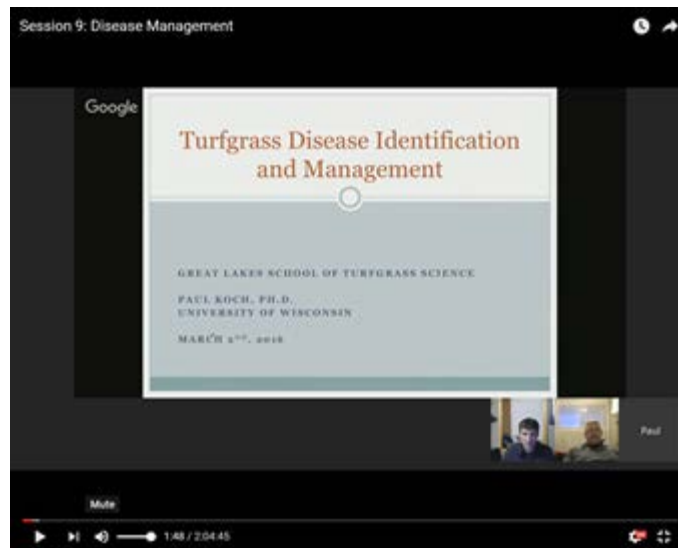


Table 2.

Responses to Survey Administered at Conclusions of 2014 and 2015 Great Lakes School of Turfgrass Science Courses (*n* = 66)

Item	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
I would not have been able to take a turf management course without the flexibility provided by the online	0	0	1.5	3.0	6.0	21.2	68.2

format.

I believe I learned as much from the online format as I would have in person.	1.5	1.5	3.0	6.0	22.7	36.4	28.8
Online discussion amongst instructors increased my understanding of the topics.	0	0	0	6.0	10.6	42.4	40.9
The course was a good value.	0	0	0	0	3.0	19.7	77.3
I would recommend this course to others.	0	0	0	0	1.5	21.2	77.3

The online platform provides a unique way for Extension professionals leading the class to engage the students (Gharis, Bardon, Evans, Hubbard, & Taylor, 2014). Students can sign on and watch the Hangout live and ask questions through a live chat with the course administrator, or they can watch the recorded version at their convenience and ask questions of the instructors via Moodle forums. Students are assigned relevant readings prior to each live session and take a quiz developed by that week's instructor(s). To receive a certificate of completion, a student must satisfactorily complete 10 of the 12 quizzes. To date, approximately 50% of the students complete the course in 12 weeks, 35% take longer than 12 weeks, and 15% do not complete the required number of quizzes.

The benefits of using this format for both the students and the instructors have been numerous. First, the nine-state footprint increased overall student enrollment threefold relative to the best years of the Wisconsin–Minnesota short course and allowed students from varied geographic areas and segments of the turfgrass industry to participate (Table 3). Second, the flexibility of the online class was critical for both students and instructors. Nearly 90% of students surveyed in 2014 and 2015 agreed that they would not have been able to take a turfgrass science class without the flexibility the online course offered (see Table 2), and each instructor only needed to prepare for one lecture and assist in two others. Third, the class was effective in transferring knowledge to the students and, likely, in changing their behaviors (Table 4). Students reported their knowledge of pertinent topics before and after taking the class by using a 4-point scale (1 = *poor knowledge*, 4 = *excellent knowledge*; data not shown). Self-assessed student knowledge on a variety of topics covered in the class increased from an average of 1.9 prior to the start of the class to 3.1 at the conclusion of the class (data not shown). Fourth, enrollment costs were lower for students relative to the in-person course because there were no facility rental, food, and printing expenses to be covered. Moreover, students did not need to budget for hotel or travel costs and were not away from work or family for an extended period of time.

Table 3.
Student Enrollment in the Great Lakes School of
Turfgrass Science in 2014 and 2015

State	Number of students	
	2014	2015
Arizona	0	1
Colorado	0	1
Connecticut	1	0
Florida	2	0
Idaho	4	0
Illinois	2	5
Indiana	0	5
Kentucky	0	1
Massachusetts	2	0
Michigan	5	14
Minnesota	12	16
Missouri	1	2
Nebraska	1	3
New York	9	5
South Dakota	3	0
Virginia	0	1
Washington	2	0
Wisconsin	20	14
Internationala	12	9
Total	76	77

aStudents from Canada, China, Italy, Mexico, Spain, and Sweden were enrolled.

Table 4.

Respondents' Willingness to Adopt Various Practices Discussed During Class According to Survey Administered Immediately Following Course Completion in 2014 (*n* = 29) and Again Six Months Later (*n* = 17)

Area of focus	Definitely will not		Probably will not		Undecided		Probably will		Definitely will		Already adopted	
	End	mo.	End	mo.	End	mo.	End	mo.	End	mo.	End	mo.
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
	6	6	6	6	6	6	6	6	6	6	6	6

Methods/practices for greater economic efficiency	0	0	0	0	3.5	0	6.9	11.7	82.8	70.6	6.9	17.6
New or improved practices for ecologically sensitive management	0	0	0	6.0	0	0	27.6	17.6	62.0	58.8	10.3	17.6
New or improved practices that will enhance clientele/supervisor's acceptance and/or appreciation	0	0	0	0	0	0	10.3	11.7	79.3	52.9	10.3	35.3
New practices learned or improvement of existing practices	0	0	0	0	0	0	10.3	11.7	82.8	23.5	6.9	64.7

There were also drawbacks associated with the transition to a completely online course. Foremost was the resistance to online learning by some students in the course. As nontraditional students, many had never taken part in an online educational seminar and may not have known what to expect. There was also a technology gap for both faculty and students that led to technical difficulties, though it should be noted that the incidence of these was much lower in 2015 than in 2014. Despite these minor problems, the class to date has been considered an unqualified success by nearly all the instructors and students who have participated.

The Future of Turfgrass Short Course Education

The use of short courses will remain a staple of turfgrass management for years to come, and their importance in educating the industry may even increase in the future. Enrollment in traditional 4-year university turf programs has declined at most institutions for a variety of reasons (Richman, 2014), and workers entering the turfgrass industry will likely require continuing education from nontraditional sources (Patton & Reicher, 2011). Short courses, and, in particular, interactive and online short courses such as the Great Lakes School of Turfgrass Science, may be particularly attractive to these potential students. Though lack of support and accreditation from universities may hamper online short course growth, benefits such as flexibility and the opportunity for interaction between students and experts make online courses such as the Great Lakes School of Turfgrass Science increasingly valuable tools in educating the turfgrass industry workforce.

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