

Engineering and Golf: A Professional Development Partnership between Mississippi State University's Center for Engineering Student Excellence and Professional Golf Management Program

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Abstract – This paper describes a partnership between the Bagley College of Engineering's Center for Engineering Student Excellence (CESE) and the College of Business and Industry's Professional Golf Management (PGM) program at Mississippi State University. CESE and the PGM program offer Engineering and Golf (EG), a free program in which engineering students of different backgrounds and genders gain a working knowledge of the game (under the tutelage of PGM undergraduate students) while developing the social and team-working skills to make them more attractive to potential employers. A secondary goal of the program is to allow students to seize potential business opportunities more readily, as recent studies and initiatives show that much of today's business is done in a social setting like a golf course.

Topics include the rationale behind the program, CESE's aims and programs, EG's implementation and costs, and quantitative and qualitative assessments of the program from engineering and PGM student participants.

Keywords: Center for Engineering Student Excellence, Professional Golf Management, Engineering, Golf, Peer Instruction

INTRODUCTION AND RATIONALE

In fall 2006, the Bagley College of Engineering's Center for Engineering Student Excellence (CESE) partnered with the College of Business and Industry's Professional Golf Management (PGM) program to form the Engineering and Golf initiative (EG). EG is free to engineering students and allows them to learn the fundamentals of golf in an encouraging environment under the instruction of PGM students.

Dr. Tommy Stevenson, CESE director, and Dr. Stephen Lemay, PGM program director, began the initiative with two major goals: to offer general golf instruction to engineering students of various levels of expertise, ultimately exposing them to more networking and business opportunities; and to provide hands-on teaching opportunities for PGM students. Secondary objectives of EG included helping engineering students improve their networking and team-working skills, including fostering relationships between the Bagley College's mostly male Caucasian students and female and minority students; encouraging peer-to-peer instruction among engineering students and between engineering and PGM students; and promoting golf as a healthy, stress-relieving pastime for engineering students.

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Why Golf?

The first major EG objective was to teach the 86 enrolled students basic golfing skills. Golf lends itself well to demonstrating and reinforcing principles students learn in STEM (science, technology, engineering, and mathematics) classes because every aspect of the game revolves around physics and engineering. The academic community is currently scrutinizing the materials, designs, and movement of golf balls, golf clubs, and even golf carts [Choi, 8], [Tanaka, 33], [Huntley, 17], [Watanabe, 36], [Cheong, 7], [Nass, 26], [Roberts, 29], [*Professional Engineering*, 27]. Academics are also studying the biomechanics of golfers and using computer simulations of golfing equipment to create the “perfect” swing [Ming, 23], [Teu, 34], [Watanabe, 37], [Ming, 24], [Thilmany, 35]. Finally, academics are studying even the turf itself both to protect the environment and to provide a quality playing experience [Chen, 6], [Mueller, 25], [Carlson, 5], [Wright, 38]. Countless innovative educators currently use golf to appeal to elementary- to university-age students. For examples, Michigan State University students critique golf club design using computer-aided engineering software [Degaspari, 13], while Mississippi State University’s physics department attracts middle-school students, especially women and minorities, to STEM fields by hosting a summer golfing camp called Science on the Green [IIE, 19].

Academia is also beginning to acknowledge golf’s benefits outside the classroom, particularly to help students find good jobs. According to [Crane, 11] and [*Golf Business Magazine*, 16], approximately 26 to 28 million Americans (around 13 percent of the U.S. population) play golf, a number that has tripled during the past five decades. The National Golf Foundation estimates a growth rate of 0.6 percent annually from 2005-2020 [*Golf Business Magazine*, 16]. Increasingly, golf is becoming a substantial business tool; *USA Today* has termed golf “the preferred game of business” [Jones, 20]. A 2002 survey of more than 400 business executives claimed 92 percent of respondents believed golf helped them attract new clients, 97 percent believed golf helped them build relationships with clients, and 43 percent claimed to have completed “their biggest business deals” while golfing [Joyce, 21].

Pam Swensen is the current CEO of the Executive Women’s Golf Association (EWGA), an organization that began in 1991 and has more than 120 current chapters, claiming a total membership of 80,000 and a current membership of approximately 18,000 [Swensen, 32], [Rombel, 30]. She says that “it is a myth that many business deals are closed on the course [...] [but] many are started and sealed there [...] Golf provides the opportunity to spend as many as 4 to 6 hours of quality time with a business client or colleague. Few other venues offer such an extended period to interact and develop mutual respect” [Swensen, 32]. Increasingly, executives are voicing similar opinions that golf provides business and socialization opportunities uncommon in a professional setting [Hyman, 18], [Crane, 11], [Joyce, 21].

Golf is also being used by business professionals for assessing character [Swensen, 32], [Joyce, 21], [EWGA, 15]. Swensen states that golf “brings out the best and worst in people,” both in a recreational setting and in a professional one [Swensen, 32]:

Many of the rules of golf apply to the business world—being prepared, paying attention, assessing situations quickly and maintaining ones [sic] composure [...] Situations created on the golf course reveal how the player responds to success or failure, performance under pressure, and [...] the rules and ethics of the game.

Lemay concurs, stating that players need not be professional golfers to enjoy the game or to be equipped to handle business outings on the course: “Business conducts golf outings all the time. It’s a networking opportunity” [Lemay, 22]. Rather than stressing one’s ability to outplay an opponent, Lemay emphasizes to students the ability to play casually while making a personal connection with someone, but “to do that, you have to know the basics [of the game]” [Lemay, 22]. Swensen advises aspiring golfers to ask themselves, “can you hit the ball at least 100 yards; do you know the basic techniques for chipping, putting, pitching, and sand; are you 100% confident you know how to get around a golf course in a courteous manner?” Additionally, she recommends golfers know basic course etiquette such as “when not to talk, where to stand when others are making a shot, how to take care of the course, where to drive the cart, when to play, cell phone etiquette, how to tip and how to dress” [Swensen, 32].

MSU electrical engineering senior Jeffrey Dobbs, who interned at Halliburton during summer 2006, reported that the chemical engineer supervising him suggested that he learn a skill such as golf to socialize with colleagues outside of the office. “My supervisor usually would ask if I wanted to go play golf, or go fishing, or go to dinner with a client,” Dobbs said. “He [the supervisor] said knowing how to golf can be a social thing for the customer.” At one point, Dobbs said, he requested a raise, which his supervisor in turn requested from his boss. “This was all discussed over golf,” Dobbs said. “I definitely think it would be in my best interest to learn golf,” Dobbs added,

saying that he had wanted to participate in the EG program during fall 2006 but that his class schedule did not allow his participation. He says he will learn the basics before working for Halliburton full time after graduating from MSU in December 2007. In the meantime, Dobbs said, "I'm actually watching television [...] [just to have] some insight about the game" [Dobbs, 14].

To accommodate Dobbs and students like him, more schools are seeking ways to provide their students basic golfing skills. This fall, the University of Maryland offered a three-credit "Golf: For Business and Life" class, where students learn "how to interview or be interviewed [by potential employers] while golfing" [Joyce, 21]. The program began at Purdue and is funded by the Professional Golfers' Association of America, which has established similar programs at 59 American universities, including MSU's College of Business and Industry [*Bunkershot.com Golf Magazine*, 3]. In 2006, China's Xiamen University began requiring that economics and computer software majors take golf classes because of the sport's popularity in China [Associated Press, 1]. Notably, Japan is also experiencing a dramatic surge in interest in golf [Rowley, 31]. Worldwide, many students now equate learning golf with investing in their professional futures.

Women and minorities are also becoming increasingly participatory in golf. The National Golf Foundation reports that women constitute 22 percent of American golfers [Crane, 11]. EWGA members, most reporting personal annual incomes exceeding \$50,000 [Rombel, 30], largely attribute their business success to golfing with clients [EWGA, 15]. National programs such as Take Your Daughter to the Course Week and Women in Golf Week are booming. In its seventh year, Take Your Daughter to the Course Week now has a current participation of 74,490 [*Golf Business Magazine*, 16]. Almost 600 facilities participated in Women in Golf Week this year [*Golf Business Magazine*, 16]. Events such as the Black Enterprise/Pepsi-Cola Golf and Tennis Challenge are specifically held to draw African Americans to sports believed to be traditionally "white" [*Black Enterprise*, 2], [Crane, 11]. Additionally, the National Golf Foundation is avidly recruiting Hispanic players, the fastest growing American sector [*Golf Business Magazine*, 16].

Golf's benefits to college students are widely proclaimed; however, the EG initiative also serves MSU's PGM students by offering them hands-on instructional opportunities, the second major goal of the program.

Peer-to-Peer Instruction

Six PGM students, ranging from first-year students to seniors, participated in the fall 2006 EG initiative. PGM students worked with 86 participants with moderate to no prior golfing experience, thus giving PGM students firsthand experience at tailoring their instruction to meet an individual's needs. Through this concentrated instruction, Lemay explained, these PGM students learned and practiced a greater variety of approaches to starting the game. Even though most of the PGM students "were already professionals [employed as golf instructors] and experienced," Lemay said, the EG initiative helped them prepare for their careers as managers of professional golf institutions. "Any experience they get from teaching at this level of their careers is valuable," he stated [Lemay, 22].

The benefits of peer-to-peer instruction are well known; students, both the ones teaching and the ones being taught, usually understand and retain information better [Cortright, 9], [Cahyadi, 4], [Cortright, 10], [Crouch, 12], [Rao, 28]. EG also fosters peer instruction among engineering students, who were assigned to teams during the competitive golf scramble and had to work together to advance. At MSU, engineering students are frequently required to complete group work, but they are often left to form their own groups and routinely team up with their friends instead of collaborating with unfamiliar students, particularly women and minorities, within their fields or other engineering fields. Therefore, by assigning students to teams to ensure teams were equally matched in terms of golfing experience, EG organizers not only helped students learn from their peers, but also fostered networking skills and encouraged students to interact with the often marginalized female and minority students.

Topics further discussed in this paper include CESE's aims and programs, EG's implementation and costs, and quantitative and qualitative assessments of the program from engineering and PGM student participants.

CESE'S AIMS AND PROGRAMS

To understand the EG initiative fully, one must first understand a major impetus driving the program. CESE ensures that MSU's engineering students develop not only technical proficiency, but also the communicative, leadership, and collaborative skills vital to a well-rounded educational experience. Its objectives include creating a culture of teamwork, cooperation, and open communication that better prepares engineering students for the global

environment they will face as professionals; improving the recruitment and retention of students and faculty; and enhancing the visibility of the Bagley College.

CESE integrates nine student-centered college enhancements under one umbrella formalized in 2005, including the Dorman Blaine Congressional Fellowship Program, in which engineering students assist a Mississippi senator for one semester and learn patent law, government, and business; the Six Sigma Certificate Program, in which students use Six Sigma® to reduce defective products in any given process; the Jack Hatcher Entrepreneurship Certificate Program, which recognizes students who successfully complete 15 hours of business and engineering classes, attend numerous seminars, and complete a commercially viable business plan; and the K-12 Outreach Program, which attracts elementary- and high-school students to STEM fields through activities such as teacher and counselor engineering workshops, student summer camps, and student science and engineering fairs and competitions.

However, the EG initiative was developed specifically to serve the five remaining CESE programs by promoting leadership, worldliness, diversity, and communication—all secondary EG goals.

Students interested in leadership have the opportunity to earn a certificate or a minor in leadership through the CESE Leadership Development Program. In addition to attending seminars by successful engineers and practicing their acquired engineering skills, Leadership students have the chance to shadow engineering executives and learn non-technical skills required in engineering. By exposing engineering students to business and engineering faculty/staff/alumni volunteers, the EG initiative allows students to interact with current leaders in academia and industry. Additionally, since EG student teams compete with one another to master golfing skills and win the culminating golf scramble, individual students may assume leadership roles within their groups.

Another major aim of CESE and the EG initiative is to expose students to various cultures, promoting the Bagley College's belief that its students must adapt to and embrace an increasingly global workplace. Within the CESE program itself, globally adventurous students can participate in the Study Abroad Program, studying and working internationally for a brief two- to three-week intersession, a five-week summer program, a semester, or a year. One goal of the EG initiative was to attract a large number of international students, partially to increase interaction between these students and the College's primarily Caucasian male student population. The EG initiative succeeded in attracting 11 international students in its first semester.

In addition to promoting worldliness among its students, the College is one of the leading engineering programs in the United States in terms of diversity. (Of a current undergraduate student enrollment of 1,869, 16.2 percent are female and 10.4 percent are African American.) The goal of CESE's Diversity Program is to create an educational environment of inclusiveness and high academic excellence that will ensure MSU remains a nationally recognized leader in graduating and preparing women and scholars of color for the engineering profession. The Diversity Program promotes interaction between minorities and the mostly Caucasian male student population. Initiatives like EG ensure students are constantly working in groups of various genders and ethnicities, promoting tolerance and teamwork among all engineering students. The EG initiative attracted 10 female and 7 African American students in its first semester.

Finally, the College constantly reinforces to its students the importance of written and verbal communication both in and out of the classroom. One of EG's major benefits is that it encourages student participants to network and communicate with engineering students, PGM students, and faculty/staff/alumni volunteers. These social skills reinforce two CESE programs: the Shackouls Technical Communication Program, which provides students with classroom instruction in effective written and oral communication; and the Cooperative Education Program, which offers participants the opportunity to gain relevant work experience in a chosen field of study while earning an academic degree. The co-op program is competitive, requiring excellent networking, interviewing, and communication skills.

CESE and the PGM program created EG with the secondary goal of reinforcing the abovementioned programs and the collaborative and social skills they promote.

IMPLEMENTATION AND COSTS

The EG initiative is a free program that began in fall 2006. This program offers MSU engineering students an opportunity to learn the basics of golf as well as develop social skills in a multicultural environment. The EG program began after discussion between Dr. Tommy Stevenson, Assistant Dean for Diversity Programs and Student Development for the James Worth Bagley College of Engineering at Mississippi State University, and Dr. Stephen

Lemay, Director of MSU's Professional Golf Management program. The PGM program, housed in the College of Business and Industry, offers golf instruction through the Golf: For Business and Life grant funded by the PGA, and Dr. Stevenson expressed an interest in utilizing that free instruction from PGM students for engineering students. In addition, the MSU Golf Course, in an effort to publicize its services and attract more potential members, donated time on the course for EG participants to practice with PGM students serving as instructors and for EG participants to play in the program's culminating golf scramble.

To promote the program, the Bagley College's Publications Office designed and displayed posters and flyers in engineering buildings and high-traffic areas on campus. The program also received publicity through word of mouth. This simple but successful strategy produced an overwhelming response. Eighty-six engineering students, six PGM students (serving as instructors), and various faculty participated in the program, with an average session attendance of 60, compared to an average attendance of approximately 10 during other golf sessions offered in the PGM program. The program engaged a diverse group of participants from students and staff who had never played golf to experienced golfers.

EG included four components: 1) an overview workshop on the game of golf and its potential as a networking tool and means of developing business opportunities; 2) classroom instruction on the basic use of club selections, grips, and proper golf edicts and etiquette; 3) hands-on-instruction in putting, chipping, and driving techniques; and 4) a culminating golf scramble in which assigned teams of students with varied experience levels competed for donated prizes.

The initial meeting was a workshop and overview of planned activities. During this one-hour session, Lemay and Billy Hoffman, the MSU Golf Course's licensed golf professional, provided an overview of golf's potential as an excellent tool to network and develop social skills. In addition, students asked questions about the scheduled activities at the MSU Golf Course, and all interested participants supplied their contact information to the faculty and staff volunteers who served as program coordinators. Approximately 45 students attended this first interest meeting. The number grew to approximately 80 students prior to the first meeting at the golf course. Program coordinators used an Excel file to track students' participation and used e-mail correspondence to communicate with participants between practice sessions.

Following the first meeting, participants had the opportunity to attend six instructional/practice sessions with PGM students, ranging from first-year students to seniors, serving as instructors. Because of the expected number of participants (approximately 80) at the program's onset, the group was divided into two groups: a beginners group and an advanced group. Each participant was asked about his or her knowledge of golf and about his or her golf-playing history (e.g., how many rounds of golf the participant had played). These factors determined the group to which each individual was assigned. During the initial hour of each of the first four instructional sessions, half of the beginners received classroom instruction and the other half received hands-on instruction about putting and chipping. After 30 minutes, the beginners alternated from the classroom instruction to the putting and chipping instruction. During this time, the advanced group (those who had some prior golf experience) received lessons on performing bunker shots and instruction on iron play on the driving range. For the first four sessions, each group received hands-on instruction on the fundamentals of golf. Because of the number of participants and students' varying schedules, two additional golf lessons were offered at various times (for a total of six instructional sessions).

As a culminating event, EG participants played in a nine-hole golf scramble. Hoffman established teams of four, which were each comprised of novice golfers and more experienced players. Tournament teams were assigned to distribute the talent and experience fairly so all teams were on approximately equal levels. A total of nine teams competed, and the team with the best score won. At the end of the tournament, three teams tied for the lowest (best) score, and each winner received a gift certificate from a local restaurant. Trophies were presented for the longest drive, closest to the hole, and longest putt in both the women's and men's categories. All participants received tournament T-shirts and goody bags containing candy, golf tees, and golf balls. These items were funded by the Bagley College of Engineering and CESE, which spent approximately \$25 per student for incidental costs such as the goody bags and T-shirts. However, this program would have been impossible without the financial support and instructional assistance of the PGM program professionals.

RESULTS

Based on positive quantitative and qualitative participant feedback, other engineering organizations, such as the Bagley College's student chapter of the American Society of Mechanical Engineers, have already expressed interest to the CESE in continuing the EG initiative annually or in creating similar golf tournaments as club fundraisers.

Forty-nine of 86 engineering student participants in the EG initiative (57 percent) responded to an anonymous survey posted online through the Bagley College after the initial interest meeting. The survey included five quantitative questions based on a traditional Likert scale, with 1 representing "not at all/strongly disagree" and 5 representing "always/strongly agree"; and five qualitative questions. The survey is provided in Fig. 1.

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Participant Survey

Please circle the number that corresponds most closely with your answer, where 1=not at all/strongly disagree and 5=always/strongly agree.

1. Rate your confidence in your golfing abilities.

1 2 3 4 5

2. I believe that business is regularly conducted on the golf course.

1 2 3 4 5

3. I signed up for this program to learn how to play golf.

1 2 3 4 5

4. I believe this program will eventually help me in my professional career.

1 2 3 4 5

5. I think there is no relation between being able to play golf and developing the social skills necessary to conduct business.

1 2 3 4 5

Please answer the following questions in your own words.

1. Do social skills play a role in career advancement?
2. What is your primary reason for signing up for the Engineering and Golf program?
3. In what way(s) do you think learning to play golf will benefit you?

4. Have any employers told you that you need to develop your social skills? Do you personally feel this need?
5. Have you experienced in your professional and/or academic career the need to play a sport or participate in a hobby?

Fig. 1. EG Interest Survey

In addition, the PGM students who served as instructors for EG responded to a post-program survey. The survey included six quantitative questions based on a traditional Likert scale, with 1 representing “not at all/strongly disagree” and 5 representing “always/strongly agree”; and three qualitative questions. The survey is provided in Fig. 2.

Engineering and Golf: A Great Partnership PGM Instructor Survey

Please circle the number that corresponds most closely with your answer, where 1=not at all/strongly disagree, 2=disagree, 3=don't know/no opinion, 4=agree, and 5=always/strongly agree.

1. Rate your confidence in your instructional abilities on the golf course before participating in the Engineering and Golf program.

1 2 3 4 5

2. Rate your confidence in your instructional abilities on the golf course after participating in the Engineering and Golf program.

1 2 3 4 5

3. I believe that business is regularly conducted on the golf course.

1 2 3 4 5

4. My instructional abilities improved because of my participation in the EG program.

1 2 3 4 5

5. I believe this program will eventually help me in my professional career.

1 2 3 4 5

6. I think there is no relation between being able to play golf and developing the social skills necessary to conduct business.

1 2 3 4 5

Please answer the following questions in your own words.

7. Do social skills play a role in career advancement in your field? Explain.
8. What is your primary reason for wanting to provide instruction to participants in the Engineering and Golf program?
9. In what way(s) did participating in this program benefit you the most?

Fig. 2. PGM Instructor Survey

Quantitative Student Participant Feedback from Survey 1 (Fig. 1)

The quantitative results indicate that engineering students who participated in the EG program believed their golfing abilities to be average before completing the program. Their survey responses also show that they overwhelmingly see the benefit of playing golf in light of their view that business is regularly conducted on the golf course. Finally, their responses signify that they value the EG program because they think that learning the basics of golf as well as developing social skills will help them in their professional careers. The quantitative feedback is provided in Table I.

Table I. Quantitative EG Participant Feedback

Quantitative Question	Percentage (Number) of Respondents					Likert Scale Average Rating
	Not at All/Strongly Disagree	Disagree	Don't Know/No Opinion	Agree	Strongly Agree	
Confidence in golfing abilities	18 (9)	16 (8)	43 (21)	16 (8)	6 (3)	2.76
Business is conducted on the golf course	0 (0)	2 (1)	8 (4)	45 (22)	45 (22)	4.33
Joined program to learn how to play golf	6 (3)	4 (2)	6 (3)	27 (13)	57 (28)	4.24
Program will help my professional career	2 (1)	2 (1)	10 (5)	33 (16)	53 (26)	4.53
No relation between golf and social skills development	47 (23)	31 (15)	14 (7)	4 (2)	4 (2)	1.88

Qualitative Student Participant Feedback from Survey 1 (Fig. 1)

To the first qualitative question (role of social skills in career advancement), all engineering student respondents indicated agreement. One respondent wrote, “Yes, because efficient communication ultimately determines the success of a person's career, as well as their mobility through the company.” Another student stated, “Most definately [sic] they do. How well you are able to communicate with people outside of the workplace will advance your career. People not only want to know you can work well but they want to know you can relate to people on a personal level.”

To the second question (primary reasons for joining EG), 45 respondents (92 percent) indicated that they were primarily motivated by a desire to learn how to play golf, but many also added that they hoped to develop their social skills and improve their professional careers. One respondent stated, “I would like to learn to play golf so I may participate in social activities with my co-workers and play in company sponsored events.” Another stated he/she participated in the program “[t]o learn how to play golf in order to enhance my professional career later.” Yet another stated he/she wanted “[t]o learn how to play golf better and to meet other engineers.”

The third qualitative question (benefits of learning golf) elicited various responses. One respondent wrote, “Golf will benefit [sic] in many ways. The first way is networking. The second way is developing social skills. The last way is a chance to get outdoors and enjoy being outside.” Another respondent stated, “I think it will help me to fit

in with fellow engineers down the road and it will strengthen relationships outside of work.” Yet another respondent stated that he/she believed golf strengthened a person’s character: “Golf is a game based on honesty. Playing golf makes people use integrity. Honesty and integrity are two of the most important aspects in one’s life.” Several respondents stated that the game would benefit them physically, socially, and professionally. For example, one stated, “Learning to play golf will open up a new hobby for me to do, and it will also help me in the long run when it comes down to associating with business partners [sic].” Others stated that they felt learning to play golf would provide opportunities for them that might otherwise be unavailable: one wrote, “I feel that it will allow me to participate where I otherwise wouldn’t be able to.”

To the fourth qualitative question (need to improve social skills), 41 survey respondents (84 percent) noted that they had never been told directly that they should enhance their social abilities. However, 23 respondents (47 percent) indicated that they personally felt this need. One respondent wrote, “No, but regardless what an employee [sic] says, I feel that you will always need to develop and improve social skills.”

To the fifth qualitative question (need to play a sport or have a hobby in a business setting), 30 respondents (61 percent) responded affirmatively. One respondent stated, “Yes, sports keep you active and helps [sic] you meet other people. You develop contacts through playing sports with other people.” Another wrote, “Yes, it is a good way to meet people who share similar interests.” Other students (29 percent) disagreed, stating that they had not experienced such a need. One student wrote, “Not particularly. My play has mostly been recreational in nature.” Some students did not respond to this fifth question, and others did not answer definitively yes or no, accounting for the remaining 10 percent of survey respondents.

Following the culminating golf tournament, participants were polled informally by program coordinators. Engineering students who participated responded positively about the EG initiative, indicating that they felt the program was a worthwhile venture for them.

Quantitative Instructor Feedback from Survey 2 (Fig. 2)

Four of the six PGM students who served as instructors responded to the survey provided in Fig. 2. The feedback indicates that the PGM students who served as instructors for the program felt confident in their instructional abilities before and after participating in the EG program and that they believed their abilities as golf teachers improved because of the program. The results also reveal that the PGM students strongly believe that business is conducted on the golf course regularly and that participating in EG will help them in their careers in professional golf management. Survey results are provided in Table II.

Table II. Quantitative EG Instructor Feedback

Quantitative Question	Percentage (Number) of Respondents					Likert Scale Average Rating
	Not at All/Strongly Disagree	Disagree	Don’t Know/No Opinion	Agree	Strongly Agree	
Confidence in instructional abilities before	0 (0)	0 (0)	0 (0)	75 (3)	25 (1)	4.25
Confidence in instructional abilities after	0 (0)	0 (0)	0 (0)	50 (2)	50 (2)	4.50
Business is conducted on the golf course	0 (0)	0 (0)	25 (1)	0 (0)	75 (3)	4.50
Improvement of instructional abilities	0 (0)	0 (0)	0 (0)	25 (1)	75 (3)	4.75
Program will help my career	0 (0)	0 (0)	0 (0)	0 (0)	100 (4)	5.00
No relation between golf and social skills	75 (3)	0 (0)	0 (0)	25 (1)	0 (0)	1.75

Qualitative Instructor Feedback from Survey 2 (Fig. 2)

PGM students who served as instructors for EG answered three qualitative questions in their surveys. All four respondents agreed that social skills play a role in career advancement in the professional golf management field. One student wrote, "Yes, the ability to network in [sic] key in my field." Another student responded, "Yes. Without the necessary skills it is impossible to advance." When asked why they wanted to provide instruction to participants in the EG program, survey respondents provided similar answers. One stated, "Promote the game and interest new people to game," while others answered that they wanted to improve their teaching skills. Finally, instructors stated how participating in the game most benefited them. All four answers were different: "Meeting new people"; "Improved my teaching and playing skills"; "Getting to work with beginners and showing them the basics"; and "I learned many things about learning styles."

Overall, survey results indicate that engineering students who participated in the EG initiative believed that learning to play golf would help them physically, socially, and professionally. They also responded that the primary impetuses for joining the program were to learn the basics of the game, to improve upon their current golfing skills, and to develop social skills that could help them in their professional careers. Survey results also show that PGM undergraduate students who served as instructors felt the program helped them hone their instructional skills and prepared them for their professional careers.

SUMMARY

The Engineering and Golf program at Mississippi State University was initiated to meet two primary goals: to provide instruction in golf basics to engineering students and to offer PGM students hands-on instructional opportunities. EG also helped students hone their social skills, improve their team-working and networking skills, foster relationships with peers with whom they might not ordinarily interact (such as female and minority students), and participate in peer-to-peer learning and instruction.

In addition, research indicates that college students familiar with basic golf skills have access to unique business opportunities otherwise unavailable. Ultimately, students who participated in the EG program responded that they felt more confident about their golfing abilities and that improvement gave them more confidence in their future careers because they believe that they will be better equipped for networking and business opportunities in their engineering fields.

The successful first endeavor of the EG program has led to other organizations, such as the Bagley College's student chapter of the American Society of Mechanical Engineers, expressing interest in similar programs, and the CESE and PGM programs plan to continue the EG initiative in future semesters.

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