# AC 2012-4133: CATALYZING GRADUATE STUDENT RESEARCH DISSEMINATION: CASE STUDY OF A TECHNICAL POSTER COMPETITION

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Since 2007, Shashi Nambisan has been the Director, Institute for Transportation (InTrans) and a Professor of Civil Engineering at Iowa State University (ISU) in Ames, Iowa. He previously served on the faculty at the University of Nevada, Las Vegas, for more than 17 years. He is a registered Professional Engineer in the state of Nevada. One of Nambisan's passions is the development of the future transportation workforce. He enjoys working with students. His advisees have developed successful professional careers at universities or in the private and public sectors. Many of them serve in leadership positions in professional societies. He has taught 18 different undergraduate and graduate courses related to transportation as well as undergraduate capstone design courses. Nambisan also has been very active in leadership roles of several professional societies and organizations such as the American Society of Civil Engineers (ASCE), American Society for Engineering Education (ASEE), Council of University Transportation Centers (CUTC), Institute of Transportation Engineers (ITE), and Transportation Research Board (TRB). His current appointments include those as a member of the Educational Activities Committee which reports to ASCE's Board of Direction; Chair of the ASEE Civil Engineering Division; member of the Executive Committee of CUTC; and member of the AASHTO Research Advisory Committee-CUTC Liaison Group. For his contributions as an educator, researcher, and leader, Nambisan has received several awards and honors. Among the awards and honors he has received are the following: a proclamation by the Governor of Nevada designating Jan. 31, 2007 as the "Professor Shashi Nambisan Day" in recognition of his leadership role in and contributions to enhancing transportation safety and the Harry Reid Silver State Research award in 2005.

# Catalyzing Graduate Student Research Dissemination: Case Study of a Technical Poster Competition

## Abstract

Engineering graduate students are strongly encouraged to disseminate their research. However, many graduate students either do not pursue or are not successful in such endeavors. Informal discussions among graduate students in the civil engineering department at Iowa State University identified three primary impediments: inexperience with research poster preparations, lack of confidence with oral communication skills, and limited time resources. To enhance the success of professional dissemination efforts, graduate student leaders in the department organized and conducted a research showcase and poster competition. It was designed to catalyze dissemination by providing students an opportunity to practice poster preparation, improve oral communication skills, and build confidence. The inter-divisional research showcase closely mimicked poster sessions at professional conferences. The event was publicized extensively to an audience that included faculty, research staff, undergraduate and graduate students. A panel of judges (senior faculty from the civil engineering department and practitioners who represented the state of Iowa's Departments of Natural Resources and Transportation) were provided an evaluation rubric to assess the presentations and they provided formal critique of each presenter's ability to communicate their research. Surveys were designed to evaluate the effectiveness of the event, and they were administered prior to, during, and after the event. An analysis of the 185 responses that were received reflects the event's success: 94 percent indicated that the department should support the event in the future, and all respondents stated that the showcase was valuable for the presenters. In addition, 75 percent of presenters reported that they had plans to present or had already presented their research at a professional conference. Although the inaugural competition was successful in catalyzing graduate student research dissemination, future efforts are needed to translate participation in the departmental event to presentations at professional conferences and publications through topical peer-reviewed outlets.

## Introduction

A catalyst is a substance that increases the rate of a chemical reaction by providing an alternative pathway with lower activation energy. These substances offer significant value because the reaction promoted does not consume the catalyst, allowing indefinite reuse. A narrow definition restricts catalysts to chemical settings. However, a broader application of the term provides appropriate characterization of this case study's problem solving approach to increasing graduate student research dissemination in peer-reviewed publications and conference presentations.

Graduate Student Council (GSC) members of the Department of Civil, Construction, and Environmental Engineering (CCEE) at Iowa State ISU (ISU) identified a need to improve in graduate student research dissemination efforts when discussing the ranking of their program in comparison to other programs (e.g., as reported by *U.S. News & World Report*). While such ranking systems are complex, the department chair indicated that standings are based, in part, upon quantity and quality of peer-reviewed publications from the department. Graduate students provide a significant portion of the research efforts for the department, but in many instances do

not pursue efforts to disseminate it beyond the department. More importantly, the Chair impressed on the GSC that timely dissemination of research efforts and their outcomes is extremely important to the students' professional growth and career development. Viewing the chair's comments as a challenge, the GSC proposed a student-organized research showcase and poster competition. This technical poster competition, which was designed to mimic a research conference environment and targeted to graduate engineering students, catalyzes dissemination of research by these students, results in development of their graphic communication and oral presentation skills, and enhances recognition of the department.

The first event was held in September 2011, included 16 poster presentations, and it was attended by more than 125 people. Although consumables at the event require sustaining funding (e.g., from endowed professors), the method developed by the student council functions like a catalyst, lowering the hurdles to dissemination. Preparation of a research poster for the first time can be a daunting task; one often avoided or delayed by graduate students until faced with a required formal presentation.  Practicing the preparation of a research poster and verbalizing the findings offers student presenters a first step toward successful dissemination efforts in peer-reviewed settings.

This paper offers value to student leaders, faculty members, and department chairs/heads interested in conducting a similar showcase event. It presents a playbook, certain mechanics that are believed to have resulted in many successful outcomes of the pilot event at ISU and similar events at other universities. Additionally, the paper presents the lessons learned from the event based upon more than 100 evaluation surveys received from attendees of the event and from 8 structured interviews conducted with poster presenters.

**Background and Literature Review**

Dissemination of research is an important step in the research process. It allows for others to review, critique, and potentially build on the research disseminated. This step however is often overlooked in the research cycle, especially by students who are just learning how to conduct research and how to complete the research cycle. Walkington (2008) noted a gap in the research cycle where students miss the critical step of disseminating research and gaining feedback from outside sources[1].

One way students can be encouraged to disseminate research is to host student poster competitions. These competitions allow students a reasonably comfortable forum in which to practice their professional communication skills, which may lead to presentation of the same research at other professional events. The following sections address the format of typical student poster events, unique ideas of certain events, common barriers faced in running a successful event, and other topics not addressed in the current literature.

*Typical Events*

Student poster competitions and showcases on college campuses involve undergraduate students, graduate students, or a combination of the two student classes. These events, which tend to either occur at the department, college, or university level, follow similar formats. Most usually start with an application process that mimics a professional event in which students are required to submit an abstract of the research they aim to present. These abstracts are reviewed, and student authors of the accepted abstracts are given time to complete their poster. Students are then required to print their posters, or submit a copy of their poster via electronic file to the organizers who will then print the poster. At the event, students interact with other students, faculty, researchers and sometimes outside professionals. Judging of posters usually occurs with judges rating not only the content and poster design, but also the oral presentation. Cash prizes are sometimes awarded to winners of these events[2,3,4].

A sampling of six poster competitions held at campuses across the nation is shown in Table 1. These events ranged from small with 16 presenters to very large at over 250. The purpose of these events, based upon information given at event websites, generally was to provide a structured forum in which students could present their research with the opportunity to win cash prizes. These events all followed similar formats as mentioned previously.

Table 1. Sampling of poster competitions at various universities.

| Date | Location | Presenters | Event Purpose |
|---|---|---|---|
| Feb. 2011 | Temple University | Not listed | To present the college's graduate and undergraduate student research activities to internal and external audiences[5] |
| Feb. 2011 | University of Buffalo | 16 | Provide students the opportunity to present their work to the CSEE faculty and to compete for cash awards[6]. |
| Apr. 2011 | University of California, San Diego | Over 250 | Get feedback from industry, investors, alumni, faculty and peers. Compete for cash awards. Network and learn about research across all engineering disciplines[7]. |
| Apr. 2011 | University of Texas at Austin | 32 | Great opportunity to display research poster among other students and win cash prizes[8]. |
| Nov. 2011 | Texas Christian University (TCU) | Over 130 | Showcase graduate and undergraduate science research in a relaxed setting[2,9]. |
| Nov. 2011 | University of South Florida | 127* | Provides an opportunity for students to network with faculty, fellow students, and local industry. It is also intended to attract undergraduates, providing them valuable insight into various multi-disciplinary research activities across the College of Engineering and USF campus[10]. |

* includes faculty as well as students

### Unique Attributes

While most poster competitions follow similar formats, various events have unique attributes worthy of note. For instance, the annual Student Research Symposium at Texas Christian University's offers faculty-led workshops on how to create posters[2]. Content of these workshops include how to use various software for creating posters as well as time to receive feedback while creating the poster. At the University of South Florida, the top student posters during Research Day are awarded travel funds to present their research at professional meetings[7].

### Common Barriers

Common barriers to hosting research poster events include time and monetary constraints. Organizers have limited time to arrange these events and in some cases short time spans are available for event planning. Squire and Hyre (2004) addressed ways to help tackle the time obstacle by outlining committees and a detailed schedule an organizer could follow which can reduce the time needed for new organizers. They also list a sample budget that can be useful in determining monetary requirements. Participation during an inaugural event can be a challenge[3]. Sullivan (2008) found that low participation at Bellevue College might have resulted from a short start-up time as well as faculty's lack of knowledge on assisting students with poster

preparation techniques[4]. Squire and Hyre (2004) recommended giving examples of good and bad abstracts to students to encourage those unsure of how to prepare a good abstract[3].

### Gaps in the Literature

The literature available on hosting student research showcases and poster competitions focuses primarily on faculty or staff-led events[2,3,4,8,10]. Faculty and staff tend to have greater financial and staff resources than do students. Student-run events may encounter hurdles not presently addressed in the current literature. Additionally, the literature focuses heavily on events targeted at undergraduate students[3,4,8,10], whose expectations from such an event may differ from those of graduate students.

While the purpose of many of these events is to share student research[2,3,5-10], not all have the primary goal of the event being a catalyst for students to present research at future professional conferences, and in turn furthering the reputation of the associated department. The literature does not focus on how these events can be used as a stepping-stone to disseminating research beyond the university. This paper focuses on closing the gap on the lack of guidelines for hosting a student-run showcase and to encourage research dissemination efforts by graduate students.

## Materials and Methods

### Basic Mechanics

Figure 1 presents a simplified 16-week planning and 4-week evaluation schedule (i.e., approximately 5 months) that outlines the major tasks required to organize, conduct, and analyze a student-led technical poster competition. A draft of this schedule was developed prior to organizing the showcase, but the presented form reflects nominal improvements based on the experience gained through the organizing process.
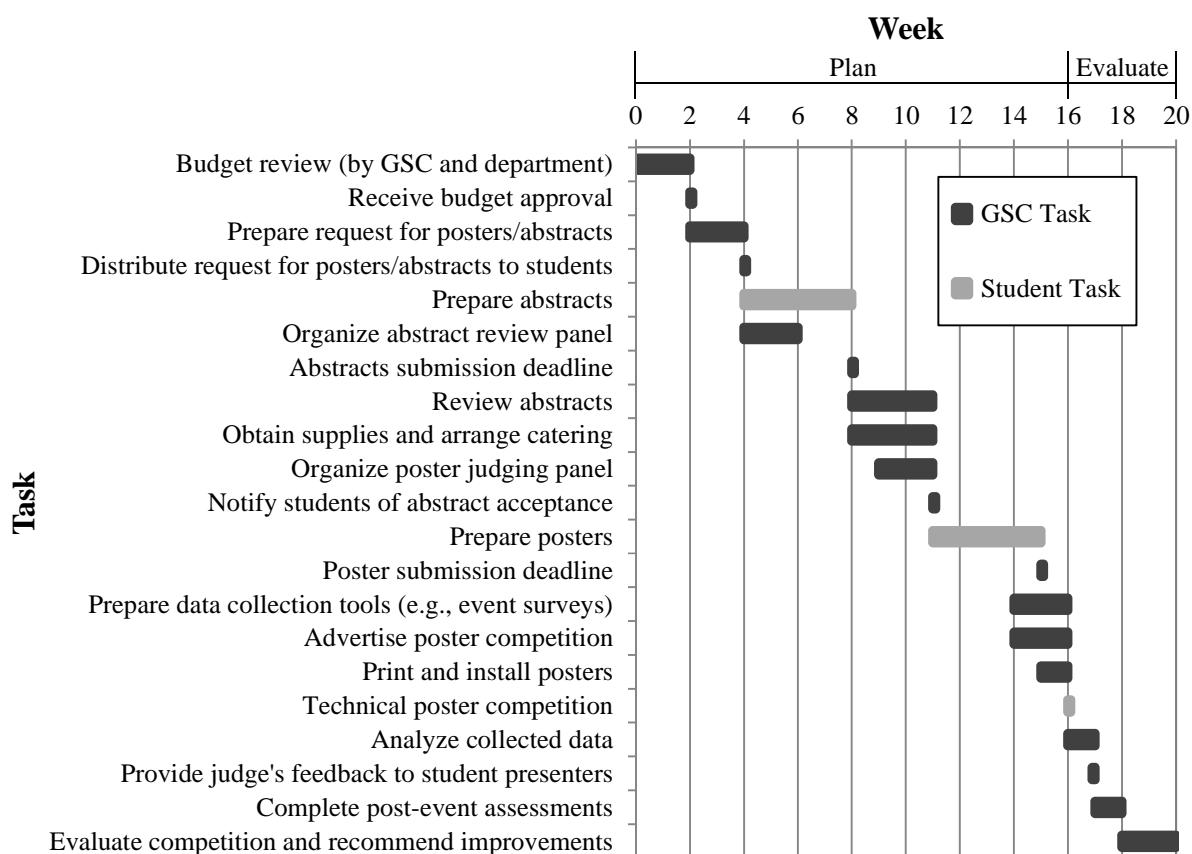
Figure 1. Technical Poster Competition Schedule.

The event was organized entirely by graduate students, designed to mimic a professional conference environment, and created around the vision of catalyzing graduate student research dissemination across the department. After the GSC received budget approval from the department administration, the organizational tasks were divided among the seven council members. The request for posters/abstracts was distributed by e-mail to all graduate students within the department, ensuring that all eligible participants were aware of the event. To provide top-down motivation for students to participate in the showcase, GSC members made personal requests to the faculty in their respective divisions within the department. In addition, on behalf of the GSC, faculty members made presentations that advertised the showcase to their colleagues at the pre-semester faulty retreat and to students in their research programs.

Students were given a 4-week period to prepare their abstracts. The abstracts were submitted via an on-line portal that mimicked a professional conference. Online abstract submission also permitted efficient distribution of abstracts to the review panel. To provide students with impartial and meaningful critiques, this panel included faculty from all of the department's divisions and student representatives who were not members of the GSC. Participants were informed of abstract acceptance and instructed to prepare their posters at the end of the 3-week review period. This acceptance e-mail included instructive details regarding event timing and

location, acceptable poster dimensions and other general preparation guidelines, and the judging rubrics to be used to assess the presentations and posters (see Appendix I).

The GSC purposely decided not to provide very specific preparation guidelines. Poster preparation is a creative and knowledge-gaining experience that enhances future research dissemination and should be guided by the student's mentor rather than being micromanaged with structured guidelines. However, the GSC did seek to lower the 'activation energy' required to complete the basic printing and mounting tasks. Therefore, the acceptance e-mail also provided an online poster submission mechanism and informed students that they would not be responsible for these operational tasks.

In order to create a professional atmosphere, the event included high-quality poster mounting materials, pre-event marketing and advertising, rigorous internal and external judging, and "fine" hors d'œuvre offerings. The GSC considered two different poster-mounting options: foam core and metal frames with vinyl covers. Foam core creates a crisp unobstructed aesthetic; however, the council was planning on an annual event that could be repeated with minimal cost in future years. Although the purchase cost of the frames was approximately double that of the cost of foam core mounting, the metal frames can be used for future poster competitions, resulting in substantial savings that contribute to the showcase's catalytic nature (see Figure 2).



Figure 2. Photographs of Poster Presentations.

Tasteful and professional signage was created to publicize the event across the department's building during the 2-week period before the showcase and to designate the registration headquarters during the event. The GSC also worked with the department's communications specialist to advertise the event on Facebook, Twitter, and the department's webpage and also requested that faculty use this event as an extra-credit opportunity in their undergraduate classes.

The judging panel included both senior faculty from the department and practitioners from the State Department of Natural Resources and the State Department of Transportation. These external reviewers were selected to provide students with a broader perspective critique. As a generalization, graduate students suffer from pizza over-consumption—as this staple of the American diet is often provided as an incentive to attend and participate in a multitude of events. The GSC sought to distinguish the showcase from other free-to-attend events and to contribute to

the event's professional impression by providing hors d'œuvre representative of a professional environment, e.g. artichoke dip and sesame chicken skewers.

The ISU Department of CCEE Graduate Student Research Showcase and Poster Competition occurred during an evening in September 2011.  Immediately prior to the 2-hour public portion of the event, GSC representatives made opening remarks to the student presenters, outlined the event's schedule, and introduced the judges.  As a result of the targeted advertising effort, the event was well-attended. The more than 125 attendees included undergraduate and graduate students, research staff members, and a many of the department's faculty members.  In addition to evaluations from the judging panel, the student's graphic communication and oral presentation skills were challenged by questions from the attendees with a broad range of backgrounds, including undergraduates with limited knowledge of graduate research, faculty from other divisions, and faculty from within the student's division who possessed a high-level of expertise in the subject area. At the event, the council provided certificates of participation to all students and gave monetary awards to the three presenters who received the highest marks on the judge's rubric, and also one presenter selected by people's choice. After collecting all of the judging panel's poster reviews, the GSC provided these critiques to participating students so that future dissemination efforts would be enhanced.

### Innovative Ideas

The research showcase and poster competition featured multiple novel elements that were specifically included to enhance research dissemination. Although some of these ideas were mentioned briefly in the preceding section and may also be featured at other events, their link to dissemination requires additional development in order to ensure the success of similar future student-organized, research-focused competitions.

*Student-Organized.*  Unlike the vast majority of departmental poster competitions, student leaders organized this event. The students identified a need to enhance the level of research dissemination by graduate students, sought to enhance dissemination of their work and the work of their peers by providing this launching platform and "hurdle lowering" event.

*Sustainably-Funded.*  A student-organized event faces unique challenges, notably funding. While many options could be considered, the department's director of graduate education secured funding from endowed processors on the GSC's behalf. The professors' endowments provide annual funding; therefore, this unique funding source is capable of sustaining the competition and maintaining this catalyst of research dissemination in future years. As an alternative, organizers could seek funding from local engineering companies, student government, or the graduate college at the university.  The companies' support must be recognized at the event, but caution should be exercised so that the event does not appear too commercial.

*Conference-Like Setting.*  The departmental competition required formal attire, included fine appetizers and served refreshments, and featured a formal judging procedure. These aspects created a venue that was very similar to professional conferences, which reduced the apprehension that students face when considering research dissemination options.

*Distribution of Judge's Feedback.* Following the competition, student presenters received copies of the evaluations prepared by the judges (see Appendix II for a selected example). These critiques provide vital feedback that enables students to hone their skills and techniques for future dissemination efforts.

*Monetary Awards and Recognition.* Four monetary awards were given to the three presenters who received the highest marks from the judges and to one presenter selected for the "People's Choice Award." Financial awards are offered in many poster competitions and although they do not need to be large, they are still appreciated by the winners. The winners were also recognized by tastefully prepared certificates awarded personally by the department chair and through articles and photographs posted to the department's web-site and its Facebook page. The recognition motivates winning students to continue their dissemination efforts and establishes a meaningful aspiration for students who did not receive an award.

*Attendance Incentives.* The value of the competition for presenters was increased by ensuring that the event was well-attended and included a broad audience. In addition to extensive advertising, the council facilitated this attendance by providing various incentives. Undergraduates received extra credit in some of their classes, multiple door prizes were awarded (e.g., a student alumni association membership, various ISU clothing items, and candy bars), and a people's choice award was given (encouraging attendance by peers and requiring that attendees to interact with all presenters).

*Public Poster Display Following Competition.* The event was held in the heavily-travelled, wide corridors on the second floor of the department's building. The framed posters were hung immediately before the event; however, they will remain on display for a year following the competition. In addition, electronic copies of the posters were featured on the department's website. While these displays do not provide motivation for the participants to continue research dissemination, public exhibition serves as a continual reminder of the competition, encourages student participation in future showcases, and provides future participants with poster examples.

*Extensive Data Collection.* To enter the drawing for door prizes and to vote for the people's choice award, attendees were required to complete an event survey. A total of 102 attendees completed this survey (see Appendix III). The data from these responses provide valuable information for the organizers to consider for future events. In addition, organizers collected post-event surveys from the student presenters and conducted structured interviews with selected poster presenters. The lessons learned from these sources will be used to improve future poster competitions within CCEE at ISU and the important findings are presented in the following section.

**Findings and Recommendations**

*Characterization of Attendees and Presenters*

Characterization of the event's attendees is provided in Figure 3. The distributions by gender and nationality roughly reflect these respective distributions for students in the department. Overall, the figure indicates a broad audience that challenges presenters to adapt their technical content

for those of different backgrounds. It is notable that the large numbers of participants from both North America and Asia provided a highly valuable experience in which presenters must learn to adapt their presentations so that they are effective for those who do not share their first language. Additionally, the wide distribution in university status and major (of the attendees who were students) indicates that differences in background knowledge also provided presenters with a worthwhile presentation challenge.



a. Distribution by gender.

b. Distribution by major.

c. Distribution by university status

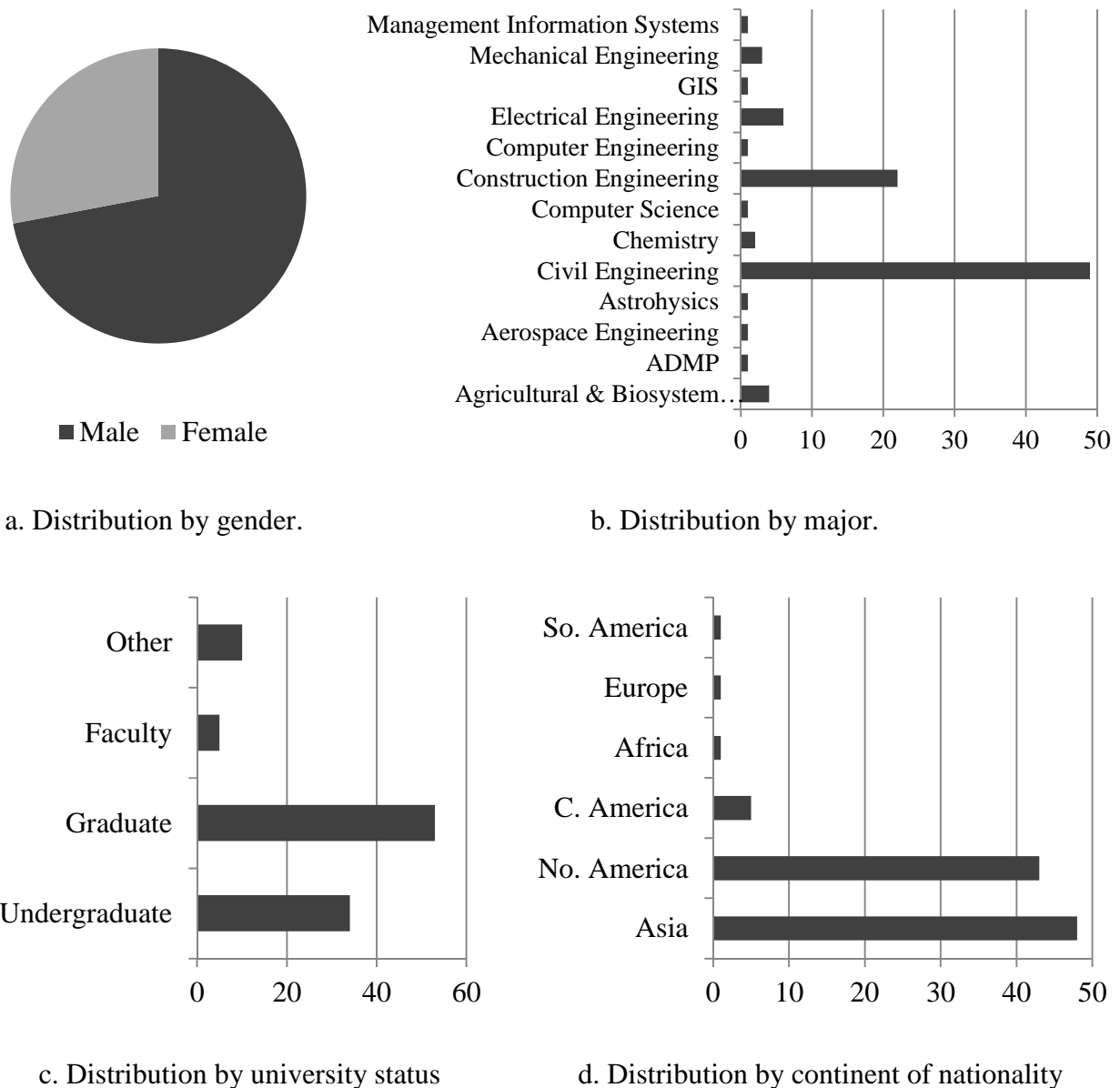d. Distribution by continent of nationality

Figure 3. Distribution of poster competition attendees by gender, major, university status, and continent of nationality.

The event was received positively by attendees: 94 percent of the survey respondents indicated that the department should support the event in the future, 98 percent stated that the presentation

quality ranged between good and excellent, and 70 percent learned about a new research topic. Of the 102 respondents, 60 percent indicated that they would be willing to present a poster at a future showcase. This is a substantail number considering that this percentage is greater than proportion of graduate students (52 percent) who attended. Of the 34 undergraduates responding to the survey, 54 percent stated that they were more likely to pursue graduate education after attending the showcase, while only 9 percent stated that attendence did not influence their consideration of graduate study.

### *Value for Presenters and Research Dissemination Catalysis*

The survey responses offered supportive evidence that the poster competition was well received by the attendees. However, the event was organized with primary goals of providing valuable experience for graduate students and catalyzing research dissemination efforts. All attendees responding by survey stated that the showcase was valuable for the presenters with 49 percent rating the value as 'excellent', the highest value. When this question is restricted to poster presenters, 80 percent indicated that the showcase was excellent. Selected responses from post-event surveys completed by the presenters are depicted in Figure 4. These responses indicate that the presenters are likely to pursue poster presentation at an engineering conference and that they are well prepared to represent the Department of CCEE at ISU.



a. Value for presenters.   b. Likelihood of submitting poster to a conference.   c. Preparedness to represent university at a conference.
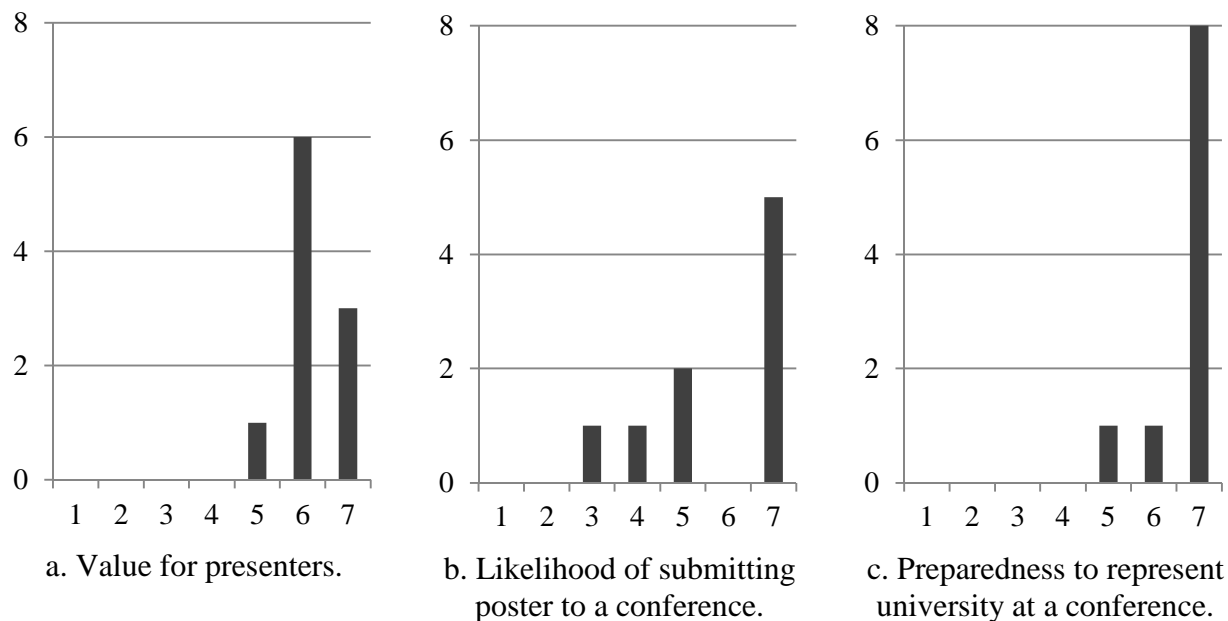
Figure 4. Selected responses to post-event surveys completed by presenters [response options included whole numbers from 1 (negative) to 7 (positive)].

Although the survey responses are encouraging because the presenters found the event valuable and are likely to disseminate their research, these surveys do not directly indicate whether the showcase served as a catalyst for their dissemination efforts. To determine if the showcase was useful in this regard, interviews were conducted with presenters. These students were asked whether graduate student research dissemination should be the overall goal for the showcase and

whether the organizers attained this goal. Of the 8 respondents, all agreed that dissemination should be the ultimate goal: 7 (88 percent) indicated that the organizers attained this goal, with only 1 student offering a neutral response. Respondents specifically found the showcase valuable because it created an opportunity to hone oral and graphical communication skills and, due to the broad variety of audience knowledge levels, required that participants adapt presentation from one person to the next. In a follow-up question, 6 (75 percent) students stated that after participating in the showcase they had plans to present their research or had already presented at a professional conference.

### *Recommended Improvements and Future Research*

Overall, the survey responses provide evidence that the showcase was highly valuable for the presenters and did serve as a means to increase research dissemination. However, the organizers did receive numerous comments regarding methods to improve future events. The comments that were constructive and selected for possible incorporation in future poster competitions are discussed here.

In the interest of efficient time management, the organizers limited the event to a two-hour period. In addition, the first 20 minutes of the competition was set aside so that presenters could view other posters. This schedule left 100 minutes—an average of only about 6 minutes per poster—for the judges to complete their work. Both students and judges indicated that this time constraint resulted in hurried judging and insufficient time to provide constructive reviews for the graduate students. The authors do not recommend extending the duration of the event; a two-hour period already represents a substantial time commitment for presenters and judges. Instead, the authors propose distributing electronic copies of the posters to the judges one week before the competition. This distribution allows judges to review the posters and provide preliminary comments on their rubrics prior to the event. At the event, their efforts can be focused on the personal interaction aspect of their judging responsibilities. However, the number of posters in the competition should be considered in determining the duration of the event.

Many student presenters also found that the judges' comments were not detailed enough to allow improvement of their posters and verbal presentations. While this deficiency may be due to the time pressure experienced by the judges, for future events the organizers should provide additional instructions to the judges and request detailed constructive comments. Furthermore, some students believed that their scores were unduly impacted because their research was not complete. Although the content of the research is important, the evaluations by the judges must focus on assessing graphical and oral communication, rather than then the completeness of the presented work. A negative review that was simply due to the fact that research was not complete could easily be demoralizing for a student—especially if this was their first technical presentation—and could discourage further dissemination. This guidance will be provided to the judges in the future.

Commenters also stated that student presenters should be given additional motivation to participate in the event and to disseminate their research through reputable outlets. Figure 5 presents a cycle that depicts how an event at the department level can provide students with presentation practice and confidence building and result in research dissemination. Of note,

follow-up is needed after the event to provide students with an additional thrust, which transports the student's research beyond the department. The organizers can provide a list of dissemination venues and the student's major professors (who are more familiar with the student's research) should discuss next steps with the participants. Recognition of the students and faculty who disseminate their research will increase the effectiveness of future departmental events and permit additional opportunities for students to enhance their oral and graphical communication skills in a controlled and familiar setting.
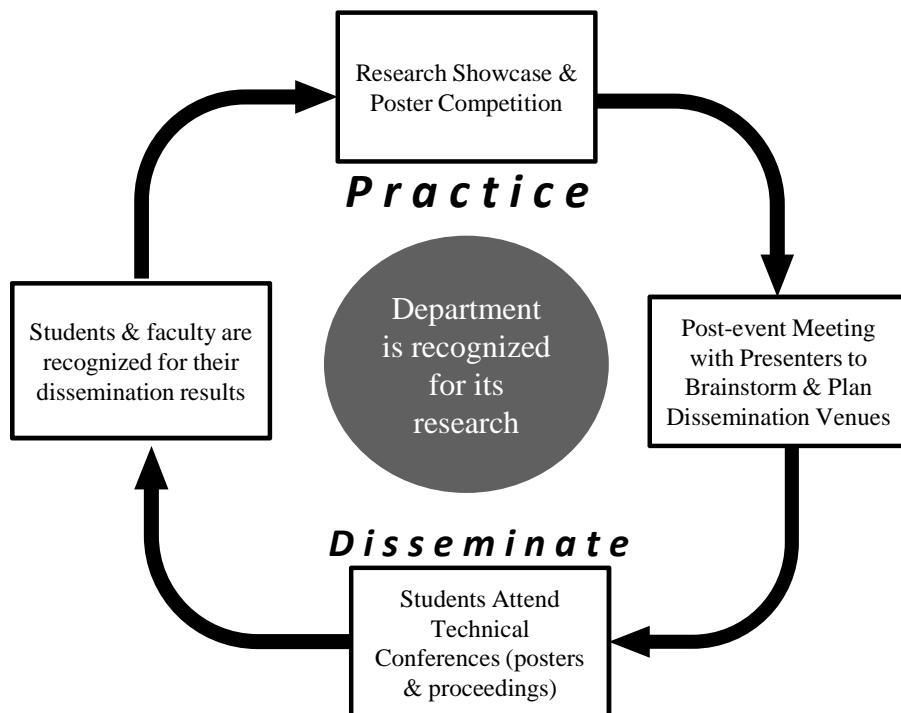


Figure 5. Cyclical model of graduate student research dissemination and department recognition.

Additional motivation for dissemination can come from financial support. The ISU CCEE Department provides a travel scholarship of up to $1,000 for graduate students who present their research at a conference. However, this scholarship is limited to 75 percent of the student's expenses (typically the remaining 25 percent is paid by the student's major professor). As an additional incentive to disseminate their research, some commenters proposed removing this limit for those who participated or placed in the department poster competition.

The inaugural graduate student showcase and poster competition was a notable success. While initial data indicates that the showcase catalyzes graduate student research dissemination, stronger evidence will be needed to determine whether this event is a cost-efficient use of resources and time or if another mechanism should be employed to increase dissemination efforts. This evidence must be collected over a period of years. The authors propose determining the rate of graduate student research dissemination during the current and upcoming years, and comparing this rate with the historical research dissemination rate. An increase would appear to support the authors' conclusions; however, this increase will need to be evaluated in light of the others efforts, which may also be attempting to address the same issue identified by the GSC.

## Conclusions

The student-organized Graduate Student Research Showcase and Poster Competition sponsored by the CCEE Department at ISU mimicked a conference environment, enhanced presenter's graphical communication and oral presentation skills and—based on initial data—catalyzed dissemination of research.  By strictly following a 16-week planning schedule, other student leaders can enhance dissemination of their research and the research of their peers within a typical semester.  In the view of the authors, the event was well received by attendees and regarded as highly valuable experience for the presenters. Others who seek to hold a similar event should consider the lessons-learned that are documented herein, and make concerted efforts to motivate students to disseminate their research following the event.

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**Appendix I: Poster presentation evaluation criteria and rubric**

# ISU CCEE  Graduate Student Research Showcase and Poster Competition

*Thursday Sept. 15, 6:00-8:00 PM, Second Floor Hallway, Town Engineering Building*

**Poster Presentation Evaluation Criteria**

The following categories will be used to evaluate the poster presentations. Qualities of high-level posters are provided in brackets.

1. Content
   a. Introduction *(clear justification, provides setting)*
   b. Body *(describes work without verbosity)*
   c. Results and conclusions *(clearly indicates relevance)*
2. Poster design & display
   a. Visual display *(clear figures, readable text, attractive color)*
   b. Organization of information *(logical flow, clear information, concise )*
3. Personal interaction
   a. Oral description and discussion *(strong voice, clear articulation)*
   b. Knowledge *(helpful project description, effectively answers questions)*
   c. Appearance *(confidence in presentation, enthusiasm for topic, appropriate attire)*

| Student:<br>Poster: | | |
|---|---|---|
| Content:　　　　　　　　 __/40<br>Poster design & display: __/30<br>Personal interaction:　　 __/30<br>Total:　　　　　　　　　 __/100 | Comments: | |

## Appendix II: Selected Example of Judge's critiques

**Student:** ▮▮▮▮▮▮▮▮▮▮▮
**Poster:** ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

| | | Comments: |
|---|---|---|
| Content: | 30 /40 | Format difficult to follow |
| Poster design & display: | 22/30 | Good ~~use~~ to use balanced arrange- |
| Personal interaction: | 27/30 | ment of text (limited) and graphics |
| Total: | 79/100 | Concl, / Obj should stand out |
| | | Colors |

**Student:** ▮▮▮▮▮▮▮▮▮▮
**Poster:** ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

| | | Comments: |
|---|---|---|
| Content: | 35 /40 | Very interesting and useable topic |
| Poster design & display: | 25/30 | excellent explanation of data/results |
| Personal interaction: | 26/30 | good poster |
| Total: | 86/100 | |

**Student:** ▮▮▮▮▮▮▮▮▮
**Poster:** ▮▮▮▮▮▮▮▮▮▮▮▮

| | | Comments: |
|---|---|---|
| Content: | 36/40 | Excellent poster design for "Green" Construction |
| Poster design & display: | 30/30 | Need a little more text for methodology |
| Personal interaction: | 27/30 | |
| Total: | 93/100 | |

**Student:** ▮▮▮▮▮▮▮▮▮▮▮
**Poster:** ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
▮▮▮▮▮▮▮▮

| | | Comments: |
|---|---|---|
| Content: | 35 /40 | Need a picture that shows |
| Poster design & display: | 22/30 | what kind of maint activity |
| Personal interaction: | 27/30 | is being studied |
| Total: | 84/100 | |

## Appendix III: Event Survey & People's Choice Award Ballot

People's Choice Award Ballot & Event Evaluation Survey

Iowa State University | Department of Civil, Construction & Engineering
2011 Graduate Student Research Showcase and Poster Presentation | September 15, 2011

**\*\*\* submit this survey to enter a drawing to win $50 at the ISU Bookstore (2 winners will be drawn)\*\*\***

1.  University Status:  FR   SO   JR   SR   MS   PhD   Faculty   Staff   Guest

    other _____

2.  Major (if applicable):  CE   ConE   other _____

3.  Gender:  Female   Male

4.  Country of Origin:  USA  or  _____(provide country if not USA)

5.  Did you present a poster at this Showcase?      Yes          No

6.  Would you be willing to present a poster at a future Showcase?     Yes          No

7.  Did you learn about an engineering research topic at the Showcase of which you previously
    were unaware?  (circle response)

    1 (learned very little new)  2     3     4     5     6     7 (learned a great deal new)

8.  If you are an undergraduate student, did the Showcase educate you about research
    opportunities as a graduate student?  (circle response)

    1 (learning nothing about research)  2     3     4     5     6     7 (yes, learned a great deal)

9.  If you are an undergraduate student, are you more likely to consider graduate school after
    attending the Showcase?  (circle response)

    1 (no, not at all)  2     3     4     5     6     7 (yes, absolutely)

10. If you are a graduate student, did the Showcase educate you about research collaboration
    opportunities with students of other divisions within CCE E Department?  (circle response)

    1 (learning nothing about research)  2     3     4     5     6     7 (yes, learned a great deal)

11. Do you recommend that the Department support this event again next year?  (circle response)

    1 (no, definitely not)  2     3     4     5     6     7 (yes, I'm excited for next year)

12. Do you think the business formal/conference-like setting was appropriate for the Showcase?
    (circle response)

    1 (no, just casual with no food)  2     3     4     5     6     7 (yes, excellent atmosphere)

13. Indicate your public's choice votes?  **Vote for 3** posters by placing 3 "X"s.

| Vote | Title of Poster | Presenter |
|------|-----------------|-----------|
| | Development of Effective Construction Project Teams | Nurhidayah (Hida) Azmy |
| | Resuspension of E. coli in Sediment Laden Streams | Amy Cervantes |
| | Characterization of Dynamic Soil-Pile Interaction by Random Vibration | Mohammad Fotouhi |
| | Effect of Culture, Risk, and Trust on Selection of Dispute Resolution Methods in International Contracts | Ghada Gad |
| | Increasing Use of Fly Ash in Concrete through Nanomaterial Modification, Multiscale Characterization, and Improved Processing | Nishant Garg |
| | Environmentally Friendly Treatment for Unpaved Shoulders | Richard Harris |
| | Precast UHPC Piles in Bridge Foundations | Jessica Heine |
| | Forecasting coal movements through Mississippi River lock no. 27 using ordinary least squares regression | Steve Lavrenz |
| | A Study on Issues Relating to Testing of Soils and Pavements by Survey Wave Methods | Shibin Lin |
| | Performance and inhibition recovery of anammox reactors seeded with different types of sludge | Jun Meng |
| | Risk Mitigation Strategies for Operations and Maintenance Activities – Crash Data Analysis and development of Integrated Risk Management Mode | Sayanti Mukhopadhyay |
| | Web-Based Project Management Action Research for Highway Project Under $10 Million | Jose Perez |
| | Benefits and Challenges of CM/GC | Jeanna Schierholz |
| | Dispersion and Drag through Emergent Vegetation in the Florida Everglades | Greta Schmalle |
| | City of Ames Flood Model Evaluation | Sara Schmieg |
| | Thermal Analysis of Mass Concrete for Iowa Bridge Foundations | Jacob Shaw |
| | Review of United States Portland Cement Manufacturing Facilities Mercury Inputs, Atmospheric Emissions, Controls, and Regulations | Joel Sikkema |
| | A methodology for estimating the cost of railroad construction | Jeffrey von Brown |
| | A Modification of Witczak and Hirsch's Dynamic Modulus Predictive Models for Asphalt Concrete containing Recycled Asphalt Shingles | Jianhua Yu |

14. Please offer suggestions to involve this event in the future.

_____

_____

15. Please offer additional comments and suggestions about this event.

_____

_____

**\*\*\* submit this survey to enter a drawing to win $50 at the ISU Bookstore (2 winners will be drawn)\*\*\***

Thank you for attending the 2011 Research Showcase
and Poster Presentation!
The CCE E Graduate Student Council

Thank You