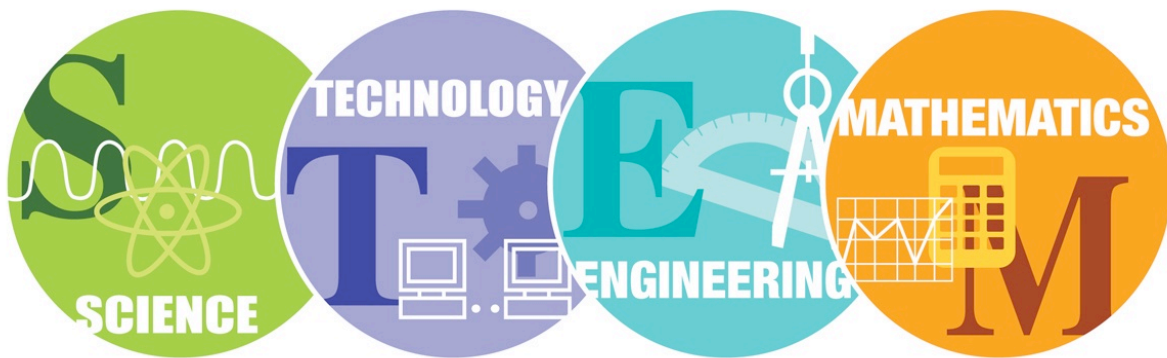


2014



Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching

Evaluation Report

Prepared By:
Jacob Burgoon



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The Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching (hereafter referred to as the NWO Symposium) is a regional conference held by the Northwest Ohio Center for Excellence in STEM Education (NWO) for STEM educators in northwest Ohio. The eleventh annual NWO Symposium was held on November 1, 2014 at Bowling Green State University. The 2014 Symposium began at 7:30 A.M. and concluded at 3:40 P.M. The eight vendor tables were open from 8:00 A.M. until 12:40 P.M.

This report describes the findings of the 2014 NWO Symposium evaluation. The report begins with a description of the 2014 NWO Symposium participants and sessions, continues with an analysis of the attendee and presenter/vendor perceptions of the event, and ends with several recommendations for the 2015 NWO Symposium.

2014 NWO Symposium Attendance

A total of 272 participants (attendees, presenters, vendors, staff and volunteers) attended the 2014 NWO Symposium. Table 1 displays a detailed summary of the attendance at the 2014 NWO Symposium as well the attendance numbers from the previous three NWO Symposia.

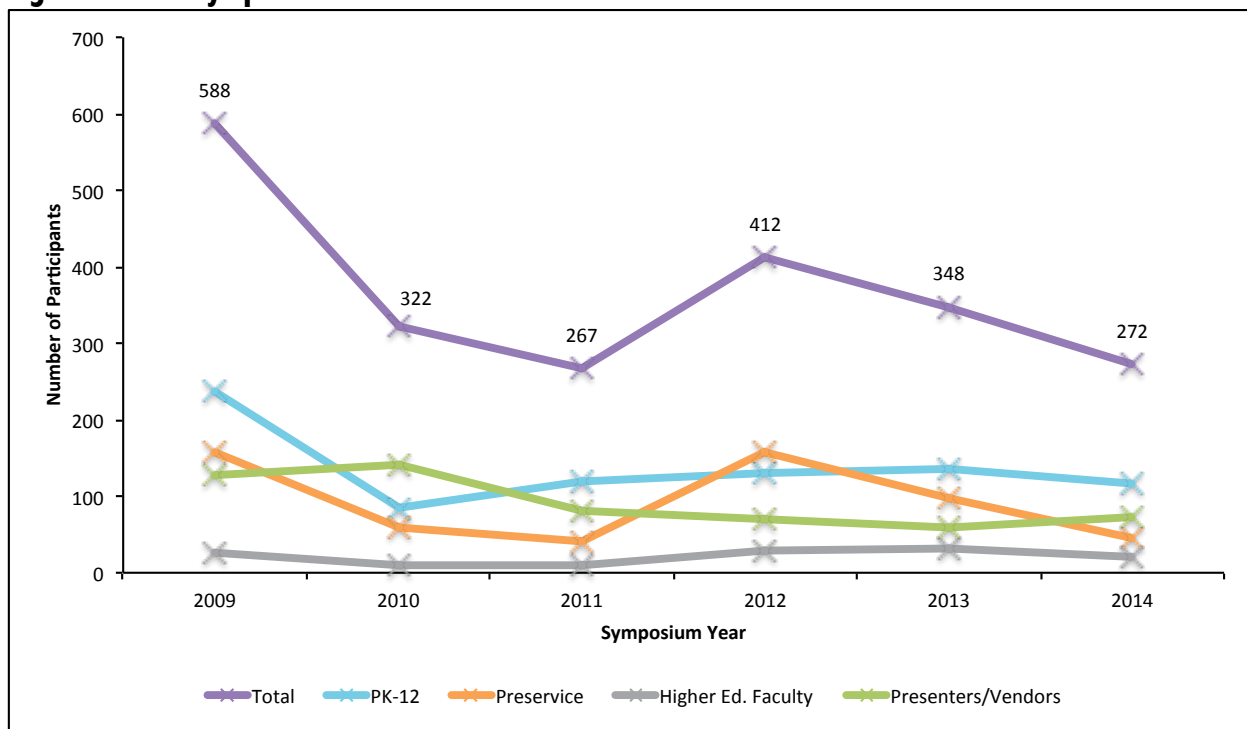
Table 1. NWO Symposium attendance from 2011 to 2014

Participants	2011	2012	2013	2014
Attendees				
PK-12 Teacher	118	130	136	117
Pre-service Teacher	41	157	97	46
Higher Ed. Faculty	9	28	33	21
School Administrator	2	2	5	1
Other	4	2	11	1
Total Attendees	174	319	282	186
Presenters & Vendors	81	71	59	74
NWO Staff & Volunteers	12	22	7	12
TOTAL	267	412	348	272

The total attendance at the 2014 NWO Symposium was 21% lower than the attendance at the 2013 Symposium. In fact, attendance was the lowest it has been since 2011. Decreased attendance was observed across all attendee categories, the largest being a 53% decrease in the number of pre-service students.

Attendance at the NWO Symposium has fluctuated heavily since 2010, when registration fees were first put in place. Figure 1 illustrates the trends in attendance for PreK-12 and pre-service teachers, higher education faculty, presenters and vendors, as well as for overall attendees. According to the figure, the strongest parallel to total attendance has been pre-service attendance—the two lines mirror each other almost perfectly. When total attendance was high in 2012, pre-service teachers made up 50% of the attendee population. This year, as in 2011, pre-service teachers made up 25% of the attendee population. All other attendance categories have been mostly stable since the initial drop in attendance in 2010. In fact, the number of attending PK-12 teachers and higher education faculty had increased every year until 2014. NWO staff should consider the desired percentage of attendees from each category, and direct their recruiting efforts accordingly.

Figure 1. NWO Symposium attendance from 2009 to 2014



In contrast to previous years, most of the attendees who attended the 2014 Symposium had attended in previous years. Only 46% of attendees were attending for the first time. Over half of presenters and vendors (who completed the evaluation survey) were also participating for the first time in 2014. However, many of the presenters and vendors (17%) reported that 2014

was their second year participating in the NWO Symposium and almost 20% reported participating for five or more years. According to the Symposium registration data, most of the 70 total presenters and vendors were preK-12 teachers (36%) or college or university faculty (25%).

Most participants (attendees, presenters, and vendors) reported learning about the Symposium by e-mail (60%), with another significant portion (47%) learning from a university professor/instructor, friend, or colleague. Table 2 shows the percentage of participants who reported learning about the Symposium by each of the nine methods listed on the surveys.

Table 2. Methods by which participants learned about the 2014 NWO Symposium

Method	Percentage of Participants (n = 169)
E-mail message from NWO/COSMOS	60% (102)
University professor/instructor	25% (43)
Told by a friend or colleague	22% (38)
NWO newsletter	14% (23)
Postcard	11% (19)
Flyer	4% (7)
NWO Inquiry Series	4% (6)
NWO Resource Center	2% (4)
OSLN (Ohio STEM Learning Network) website	2% (3)
Other	6.6% (20)

When asked what they were hoping to learn or acquire at the 2014 NWO Symposium, most attendees responded that they wanted new ideas and resources (e.g., for their classroom), and many expected to learn about the new science and mathematics Revised/Common Core Standards. For the presenters and vendors, most reported participating in the Symposium so they could share information with teachers in the area.

2014 NWO Symposium Sessions

The 2014 NWO Symposium began with a keynote address by NASA engineer Kobie Boykins, entitled “Exploring the Red Planet: Engineering, Innovation, and Perseverance.” Five fifty-minute blocks of sessions followed the keynote address with a break for lunch provided after the second block. A total of 72 sessions were offered during the NWO Symposium, with an average of 17 sessions being offered every block. This represents a 30% increase in total sessions from last year’s Symposium. Ten sessions were “double sessions”, meaning they lasted for two hours instead of one. Most of the sessions were well attended, with attendance ranging from 1 to 27, and an average attendance of 9. The sessions this year were offered within six unique strands representing important topics within STEM education. Table 3 shows the number of sessions that were offered within each strand, as well as an example of a session from each.

Table 3. Content addressed by sessions at the 2014 NWO Symposium

Strand	Session Examples	Number and Percentage of Sessions (n = 72)
Teaching and Learning in Mathematics	How Do I Find Enough Time to Teach All the Math Standards?	29% (21)
Teaching and Learning in Science	Modeling Physical Science	21% (15)
Integrating Technology in the Classroom	Prepare Your Students for Next Generation Science Testing with Virtual Labs!	12% (9)
Putting Creativity to Work: Teaching STEM With Innovation	Planting Seeds of Science in Growing Minds	12% (9)
Teaching and Learning in Engineering	How to Integrate STEM Concepts in a K-8 Building	11% (8)
STEM in the Community: Thinking Outside the Classroom	Exploring Rain Gardens and Water Quality through Science and Civics	10% (7)
Inquiry in the College Classroom	Engaging Students in First Year Chemistry at the University of Toledo	4% (3)

Evaluation of the 2014 NWO Symposium

The purposes of the evaluation were to: (1) determine the quality and impact of the NWO Symposium, primarily indicated by the participants' perceptions regarding the value and usefulness of the Symposium, (2) document changes made to the 2014 event, and determine the impact of those changes on the quality of the NWO Symposium, and (3) identify ways in which future NWO Symposia might be improved. These purposes were accomplished by analyzing data from the session evaluation surveys, the attendee evaluation survey, and presenter and vendor evaluation survey. The response rates were 65% for the session surveys, 62% for the online attendee survey, and 73% for the online presenter/vendor survey.

Attendees' Perceptions of the 2014 NWO Symposium

Overall, the responses on the session evaluation surveys indicated that attendees perceived the sessions to be engaging and valuable. Table 4 shows the average score for each item on the survey when all of the sessions are taken together.

Table 4. Attendees' average responses on the session evaluation surveys

Survey Item	Average Score (from 72 sessions)
The session was engaging	1.37
The information presented during the session was valuable for my professional practice.	1.42
I learned something new from the session	1.48
I will share the information presented during the session with my colleagues.	1.24
The session motivated me to try innovative teaching techniques/materials.	1.30
The presenter(s) were organized and well prepared.	1.58
Total	1.39

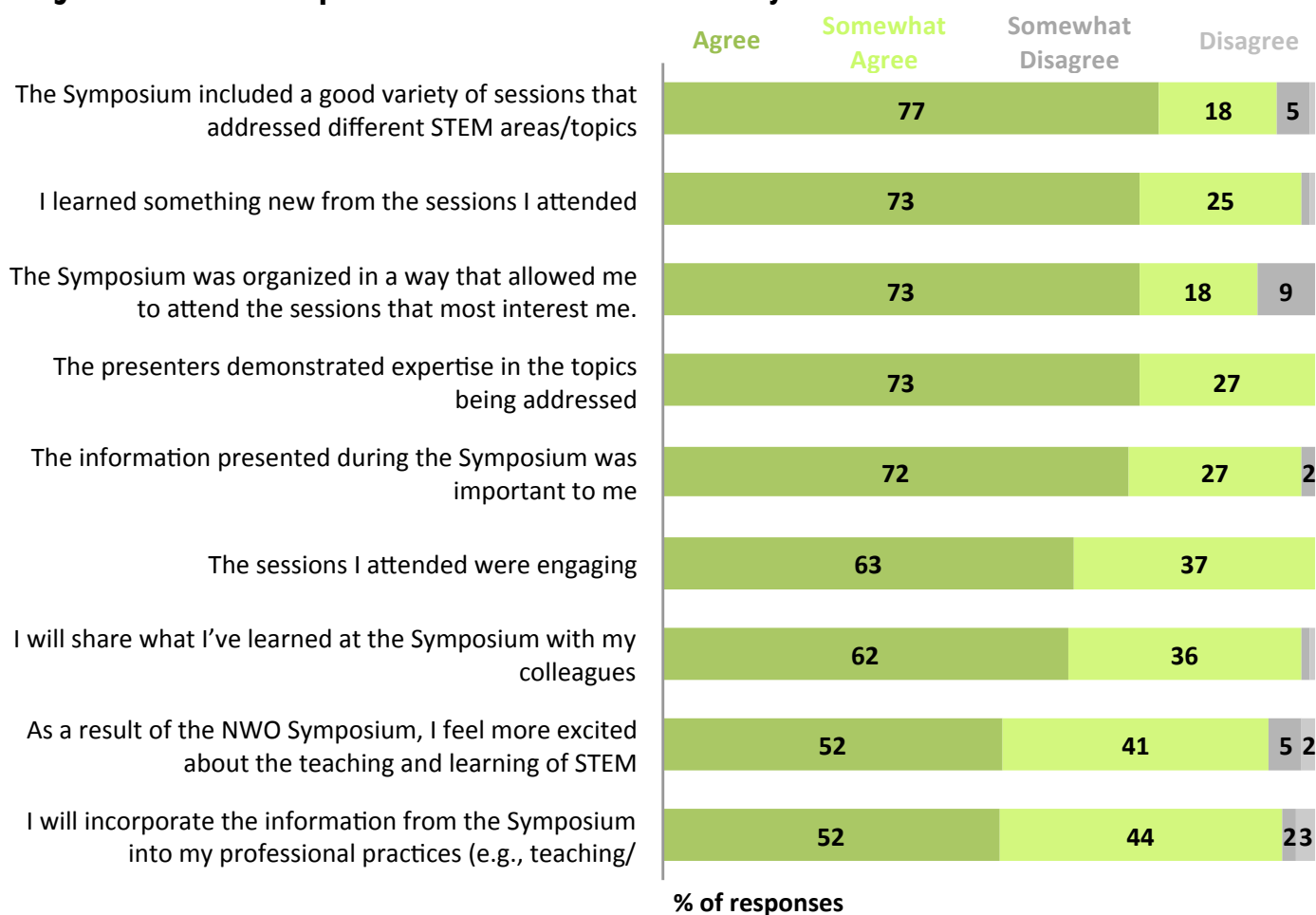
Note: - 2 = Disagree, - 1 = Somewhat Disagree, 1 = Somewhat Agree, 2 = Agree

Individually, the sessions received positive responses from the attendees. All but two of the sessions had an average evaluation score greater than zero (indicating a generally positive attitude toward the session), and all but eleven sessions had an average evaluation score greater

than one. Moreover, of all the 458 individual session surveys collected during the Symposium, only 42 had an average score less than zero, which means that most individual evaluation surveys reflected an overall positive session experience.

The responses to the online evaluation survey also indicated that the attendees perceived the 2014 NWO Symposium to be a high-quality professional development experience. Figure 2 shows the responses to some of the items on the survey.

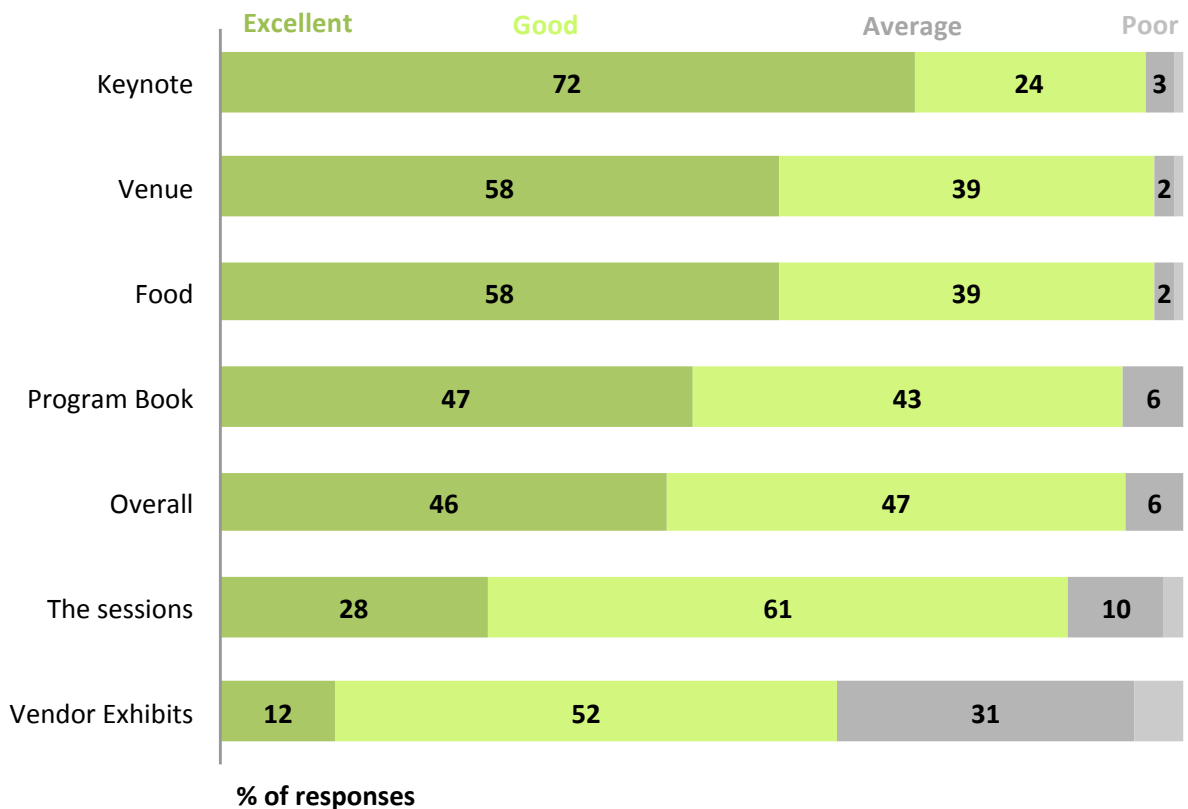
Figure 2. Attendees’ responses on the online evaluation survey



According to their written comments, attendees perceived the morning sessions as more useful and interesting than the afternoon sessions. One attendee wrote that “the best sessions were clustered in the morning,” and several others agreed. One way to address this issue might be to use evaluation data to predict which sessions are likely to be the most popular, and duplicate them in the afternoon so more people get a chance to attend.

Attendees also ranked the 2014 NWO Symposium on several factors, including the vendor exhibits, the program book, the food, the venue, and the NWO Symposium overall. The responses to these items are shown in Figure 3. In general, ratings for the 2014 Symposium were similar to previous years. The keynote was rated higher than last year, and food ratings have increased in each of the last two years.

Figure 3. Attendees' perceptions of several aspects of the 2014 NWO Symposium



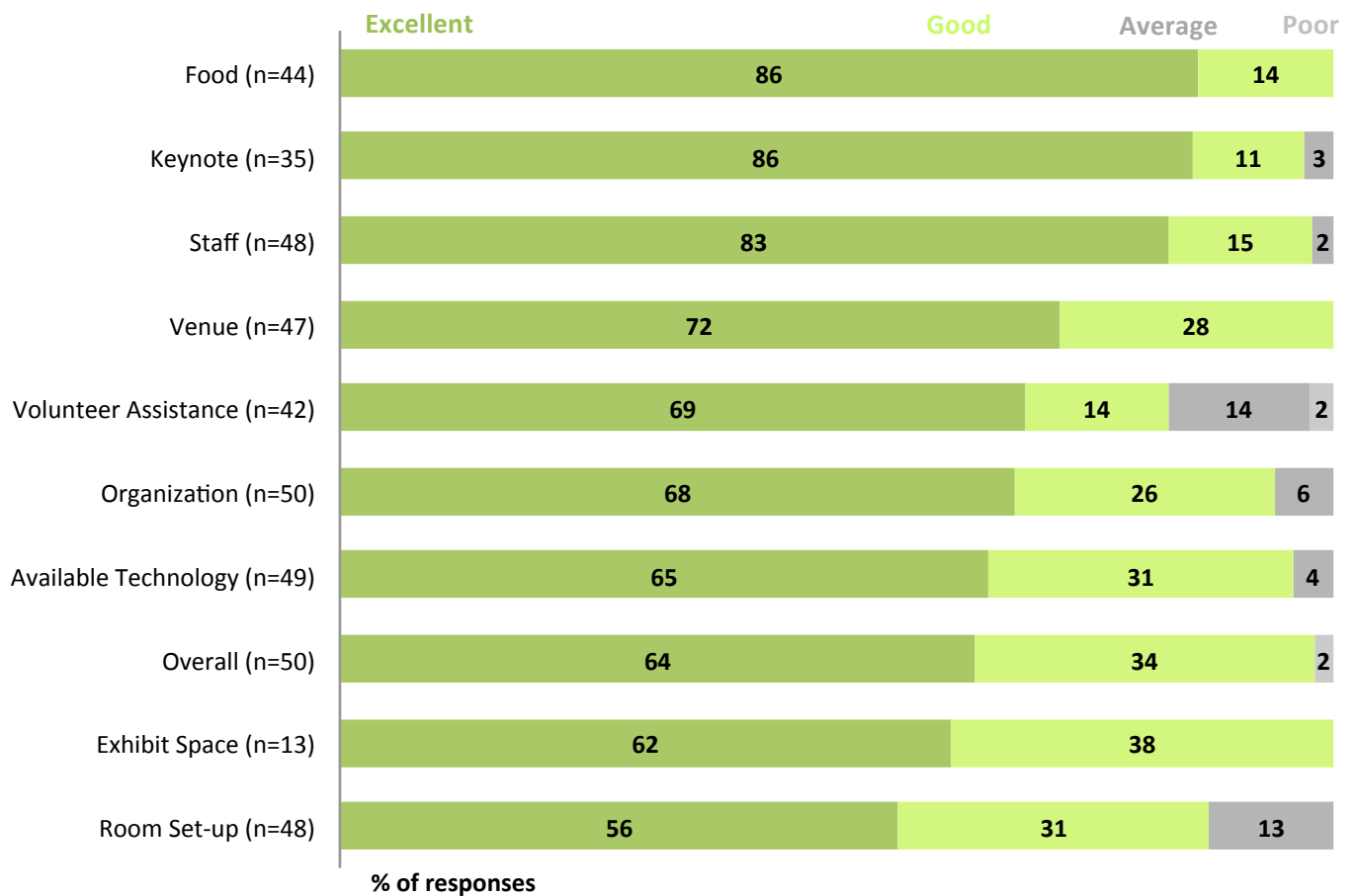
When asked if they would attend again, most attendees (90%) reported they would be very or moderately likely to attend next year, and 9% reported they would be a little likely to attend next year. Only 1% reported they would be not at all likely to attend next year.

Presenter and Vendor Perceptions of the 2014 NWO Symposium

Most of the online presenter and vendor survey respondents participated in the 2014 NWO Symposium as presenters (85%), while a smaller percentage participated as vendors (9%) and both presenters and vendors (6%). Overall, the presenters as vendors perceived their participation to be worthwhile. Most of the participants reported that their participation was either definitely (60%) or moderately (26%) worthwhile, but 9% reported their participation as very slightly worthwhile, and 4% as not at all worthwhile. These results stand in contrast to last year's results, wherein no presenters or vendors reported their participation as less than definitely or moderately worthwhile. Presenters and vendors who reported low attendance or limited interaction at their session/exhibit tended to rate their experience as less worthwhile than those with high attendance and interaction. Lower attendance was mentioned more often this year.

The respondents were asked to rank the 2014 NWO Symposium on several factors, including organization of the event, room set-up (for presenters), exhibit space (for vendors), available technology, volunteer assistance, the venue, the food, the Symposium staff, and the Symposium overall. The results from these items are shown in Figure 4. The responses to these items indicate a positive overall experience. Presenters/vendors and attendees provided similar ratings for the keynote, food, and venue, while the presenters/vendors rated the overall Symposium a little higher than the attendees. In addition, presenter and vendor ratings for the 2013 Symposium were generally similar to previous years, with the exception of exhibit space.

Figure 4. Presenter and vendor perceptions of several aspects of the 2014 NWO Symposium



The presenters and vendors were also asked to comment about the success of their sessions and/or exhibit. Many presenters and vendors did not perceive their sessions/exhibit as successful due to the low attendance. Those who did believe their session/exhibit to be successful commented on the engagement and interest observed in the people who attended or visited their session/exhibit.

When asked about their participation in next year’s NWO Symposium, most presenters and vendors reported they would either be very likely (46%) or moderately likely (22%) to participate. Only 14% reported that they would be a little likely to participate, and 18% reported that they would be not at all likely to participate.

Conclusions and Suggestions for the 2015 NWO Symposium

The overall perception of the 2014 NWO Symposium was positive. Attendees perceived the event to be valuable and applicable to their professional practice, and presenters and vendors perceived the event to be valuable and appreciated the opportunity to share their work. The individual sessions were rated highly by the attendees, and the keynote address received many positive comments. However, participant feedback indicated that low attendance had a negative effect on many participants' experience.

The NWO staff should consider the following recommendations in regard to attendance:

- As previously mentioned, staff should discuss the “target” distribution and total number of attendees at the Symposium, and recruit accordingly. (See page 1 and 2.) In previous years, there were almost as many pre-service teachers as in-service teachers (and in 2012, there were more pre-service than in-service teachers).
- Staff should plan for a maximum of 10 sessions per hour. The high number of sessions per hour (up to 18) certainly contributed to lower attendance in each session.
- Staff should consider the possibility of removing vendors from the event. The number of vendors has been decreasing over the past few years, and vendors and attendees alike agree that the exhibits are not being organized effectively.

Staff should also consider the following recommendations in regard to session content and format (based on attendee suggestions and program history):

- Reduce or eliminate “double-sessions”. Teachers often do not stay for the entire session, as intended.
- Consider panel discussions about key issues related to the keynote topic (or other “hot” topics). At a minimum, teachers should be given opportunities to discuss the content they heard about during the keynote.
- Consider “pre-service-specific” sessions, especially if a high number of pre-service teachers will be recruited.
- Sessions on testing/assessments, technology (often in conjunction with testing), and engineering were most suggested by attendees. A few teachers also suggested sessions about special education, and more sessions with classroom-ready resources.