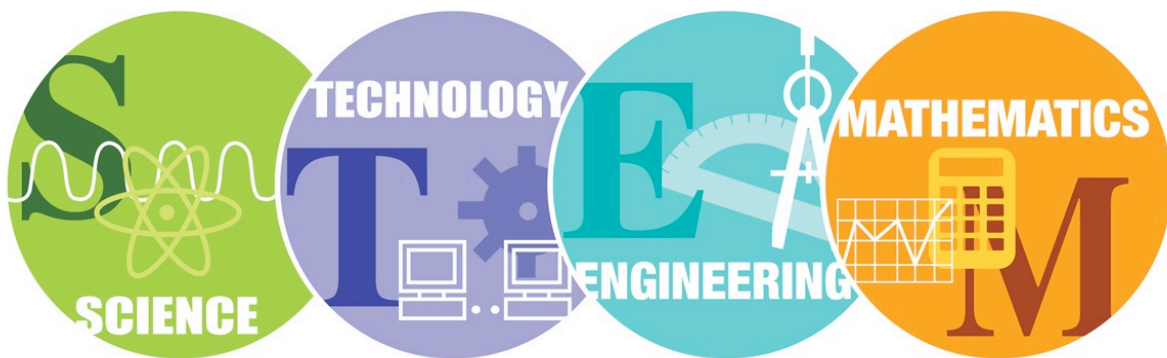


2012



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

Evaluation Report

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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 ninth annual NWO Symposium was held on October 27, 2012 at Bowling Green State University. The 2012 Symposium began at 8:00 A.M. and concluded at 3:40 P.M. The sixteen vendor/exhibitor tables were open from 8:00 A.M. until 12:40 P.M.

This report describes the findings of the 2012 NWO Symposium evaluation. The report begins with a description of the 2012 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 2013 NWO Symposium.

2012 NWO Symposium Attendance

A total of 412 participants (attendees, presenters, vendors, staff and volunteers) attended the 2012 NWO Symposium. Table 1 displays a detailed summary of the attendance at the 2012 NWO Symposium as well the attendance numbers from the previous three NWO Symposia.

Table 1. NWO Symposium attendance from 2009 to 2012

Participants	2009	2010	2011	2012
Attendees				
PK-12 Teacher	238	85	118	130
Pre-service Teacher	157	58	41	157
Higher Ed. Faculty	25	10	9	28
School Administrator	5	4	2	2
Other	16	11	4	2
Total Attendees	441	168	174	319
Presenters & Vendors	127	141	81	71
NWO Staff & Volunteers	20	13	12	22
TOTAL	588	322	267	412

As demonstrated in the table above, the total attendance at the 2012 NWO Symposium was 54% higher than the attendance at the 2011 Symposium, and was the highest it has been since the introduction of the attendee registration fees in 2010. While the number of presenters, vendors, and staff remained the same (n = 93), the number of attendees was dramatically higher,

especially pre-service teachers and higher education faculty. The increase in pre-service teacher attendance may be attributed in part to the fact that the event was held at BGSU, since a majority of the pre-service teachers were students at BGSU. The convenience of the location coupled with the strong efforts of the NWO Faculty Team to recruit and encourage their students to attend likely resulted in the 282% increase in pre-service teacher attendance at the 2012 Symposium. The increase in faculty attendance can be attributed to the special “faculty-specific” sessions offered at the 2012 NWO Symposium, and the corresponding marketing efforts targeted at local institutions of higher education. The number of preK-12 teachers also increased by 10% from 2011. There was almost an even split among preK-12 teachers regarding the grade levels with which the teachers worked; about a third of the teachers each taught preschool to grade 4, grades 5 to 8, and grades 9 to 12.

Although some of the attendees at the 2012 NWO Symposium had attended in previous years, most were attending for the first time. In fact, over 70% of attendees (not presenters and vendors) who completed the evaluation survey reported that 2012 was their first year attending the NWO Symposium. Many of the presenters and vendors (who completed the evaluation survey) were also participating for the first time in 2011 – 20% (n = 10) of presenters and vendors who completed the evaluation survey reported that 2012 was their first year participating in the Symposium. However, a majority of the presenters and vendors (28%) reported that 2012 was their third year participating in the NWO Symposium. Most (60%) had participated in previous NWO Symposia as presenters, while some also previously participated as vendors (26%), or as attendees only (36%). According to the results of the evaluation survey, most of the 71 total presenters and vendors were preK-12 teachers (40%), college or university faculty (30%), or employees of non-profit educational institutions (13%).

Participants who completed the online evaluation surveys reported learning about the 2012 NWO Symposium in several ways, but most reported learning about the Symposium by e-mail or from a 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 2012 NWO Symposium

Method	Percentage of Participants (n = 216)
E-mail message from NWO/COSMOS	48.6% (105)
University professor/instructor	32.4% (70)
Told by a friend or colleague	14.8% (32)
Flyer	11.6% (19)
NWO newsletter	9.7% (21)
Postcard	6.0% (13)
NWO Inquiry Series	2.8% (6)
OSLN (Ohio STEM Learning Network) website	1.4% (3)
NWO Resource Center	1.4% (3)

When asked what they were hoping to learn or acquire at the 2012 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, the most common reason for participating in the Symposium was to share their work (e.g., classroom activities, organizational programs, research) with other educators in the region.

2012 NWO Symposium Sessions

The 2012 NWO Symposium began with a keynote address by chalk artist and inspirational speaker Kelly Croy (watch him in action at www.nwocenter.org/nwoSymposium). Five one-hour blocks of sessions followed the keynote address with a break for lunch provided after the second block. A total of 57 sessions were offered during the NWO Symposium, with an average of 13 sessions being offered every block. Seven sessions were “double sessions”, meaning they lasted for two hours instead of one. Most of the sessions were well attended, with attendance ranging from 2 to 63, and an average attendance of 18 (up from 12 the year before). The sessions this year were offered within seven 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. One of the most consistent suggestions from past NWO Symposium participants has been to increase the number of mathematics and technology

sessions. The 2012 Symposium saw an increase in both technology and mathematics sessions (a special thanks to the (CO)²RES project for supplying presenters for 10 of the 13 mathematics sessions).

Table 3. Content addressed by sessions at the 2012 NWO Symposium

Strand	Session Examples	Number and Percentage of Sessions (n = 57)
Inquiry in the College Classroom: Enhancing the Undergraduate Experience	Meeting The Challenges of Beginning STEM Majors - It's All About Engagement	2% (1)
Integrating Technology in the Classroom	iPads, STEM, & Challenge Based Learning	18% (10)
Putting Creativity to Work: Teaching STEM With Innovation	What exactly IS Project-Based Learning and why should I care?	19% (11)
Teaching and Learning in Science	Trip, Trap, Trip, Trap. . . Who Is That Under the Bridge?	23% (13)
Teaching and Learning in Mathematics	Examining Model Curriculum in Mathematics: 2nd Grade	23% (13)
STEM in the Community: Thinking Outside the Classroom	Toledo Zoo's Learning through Play	12% (7)
Teaching and Learning in Engineering	Playing with Parachutes	3% (2)

Changes in the Implementation of the NWO Symposium

Several changes were made to the design and implementation of the 2012 NWO Symposium in response to participant and staff feedback about the 2011 NWO Symposium. The major changes are outlined below:

1. The format of the event was returned to that of previous events, with a keynote at the beginning, and five blocks of sessions thereafter. In addition, vendor tables were open all morning and through lunch as opposed to just two hours during lunch. This format was successful in the past, but for strategic and often uncontrollable reasons had not been implemented the previous two years.

2. The event was held at BGSU as opposed to Penta Career Center, where it had been held the previous three years.
3. Sessions were offered within seven unique strands, including one specifically for higher education faculty. Also, no sessions were offered specifically for pre-service teachers this year. (In the past, two sessions were offered specifically for pre-service or first year teachers.)
4. Onsite registration was completed electronically (using an iPad) as opposed to on paper as had been the practice in the past.

Evaluation of the 2012 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 2012 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 session evaluation survey consisted of five statements about the session (e.g., “the session was engaging”, “I learned something new from the session”), to which the participants rated their level of agreement by circling Disagree, Somewhat Disagree, Somewhat Agree, or Agree. The survey also provided participants an opportunity to offer comments about the session and/or presenter. The attendees were asked to complete one survey for each session they attended. Five surveys – one for each session – were provided to the attendees in an envelope at registration. Attendees were asked to complete the surveys, put them back in the envelope, and return the envelope at the end of the day. This year, only about half of the attendees completed an evaluation for the sessions they attended. The average response rate (number of completed evaluations/number of attendees) for all of the sessions was 51%. The Symposium staff should work to improve the session evaluation response rate for the 2013 Symposium.

The attendee evaluation survey was administered online and consisted of 17 items regarding the attendees' demographic information (e.g., professional status, teaching

information) and perceptions of the 2012 NWO Symposium. The attendees' perceptions of the Symposium sessions were measured with five items measured on a four-point Likert scale with - 2 = Disagree, - 1 = Somewhat Disagree, 1 = Somewhat Agree, and 2 = Agree. This scale allows for practical interpretations of the results, since 0 indicates a "neutral" attitude, positive numbers indicate a positive attitude and negative numbers indicate a negative attitude. Sample items include, "The sessions I attended were engaging" and "I will incorporate the information/resources from the Symposium into my professional practices (e.g., teaching, administration, etc.)". The attendees were also asked to rate the vendors, food, program book and venue using a four-point Likert scale with 1=Poor, 2=Average, 3=Good, and 4=Excellent. The survey also included several open-ended items to solicit attendees' comments and suggestions about the NWO Symposium. A total of 166 attendees completed the survey, and therefore the overall response rate for the attendee evaluation survey was 52%. This response rate is lower than last year, and is mostly the result of a low response rate (35%) from the participating pre-service teachers.

The presenter and vendor evaluation survey was administered online and consisted of 16 to 19 items (depending on the whether the respondent was a presenter, vendor, or both) regarding the presenters' and vendors' perceptions about the success of the NWO Symposium, and the overall quality of the NWO Symposium. The items regarding the participants' perceptions were mostly open-ended. The items regarding the overall quality of the NWO Symposium were measured on a four-point Likert scale with 1=Poor, 2=Average, 3=Good, 4=Excellent. The survey also included several open-ended items to solicit the presenters' and vendors' comments and suggestions about the NWO Symposium. A total of 50 presenters and vendors completed the survey, and therefore the overall response rate for the presenter and vendor survey was 70%.

Attendees' Perceptions of the 2012 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 (n = 466)
The session was engaging	1.41
The information presented during the session was valuable for my professional practice.	1.51
I learned something new from the session	1.50
I will share the information presented during the session with my colleagues.	1.37
The session motivated me to try innovative teaching techniques/materials.	1.40
The presenter(s) were organized and well prepared.	1.63
Total	1.47

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 nine sessions had an average evaluation score greater than one. Moreover, of all the 466 individual session surveys collected during the Symposium, only 34 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 2012 NWO Symposium to be a high-quality professional development experience. Table 5 shows the responses to some of the items on the survey.

Table 5. Attendees' responses on the online evaluation survey

Survey Item	Responses (n=164)				Average Score
	Disagree	Somewhat Disagree	Somewhat Agree	Agree	
The sessions I attended were engaging	1% (1)	3% (5)	43% (71)	53% (86)	1.45
The information presented during the Symposium was important to me	0% (0)	3% (5)	41% (66)	56% (91)	1.50
I will incorporate the information/resources from the Symposium into my professional practices (e.g., teaching, administration, etc.)	0% (0)	3% (5)	38% (62)	59% (95)	1.52
I learned something new from the sessions I attended	0% (0)	5% (9)	27% (44)	68% (111)	1.57
As a result of the NWO Symposium, I feel more excited about the teaching and learning of science, math, and/or technology	1% (1)	6% (9)	34% (55)	59% (94)	1.46

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

Attendees also ranked the 2012 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 Table 6. In general, attendees rated the 2012 NWO Symposium higher than the 2011 event, particularly regarding the food and the overall event.

Table 6. Attendees' perceptions of several aspects of the 2012 NWO Symposium

Survey Item	2012 Responses (n=160)				Average Score 2012	Average Score 2011**	Average Score 2010*
	Poor	Average	Good	Excellent			
Keynote: Kelly Croy	0% (0)	4% (7)	14% (22)	82% (131)	3.8	N/A	N/A
Vendor Exhibits	3% (4)	28% (45)	55% (88)	14% (23)	2.8	2.6	2.8
Program Book	0% (0)	11% (18)	46% (73)	43% (69)	3.3	3.3	3.6
Food	4% (7)	14% (23)	48% (77)	33% (53)	3.1	2.3	2.9
Venue	1% (1)	6% (10)	38% (62)	54% (87)	3.5	3.5	3.7
Overall	0% (0)	7% (11)	46% (73)	47% (76)	3.4	3.0	3.5

Note: 1=Poor, 2=Average, 3=Good, 4=Excellent

* From the 2010 NWO Symposium Evaluation Survey (n=114)

** From the 2011 NWO Symposium Evaluation Survey (n=116)

The attendees' qualitative responses were mostly positive. Of the 126 qualitative responses provided by attendees, 67% were positive in nature and another 21% were neutral (mostly consisting of "positive, but" statements wherein attendees state something they liked followed by something they would have liked to see done differently). The qualitative responses mostly served to validate the quantitative responses described above. The high rating for the keynote speaker was supplemented by several positive comments about the keynote. In fact, many reported feeling engaged and inspired by Kelly Croy's address. In addition, many attendees reported coming away from the NWO Symposium with new ideas or resources to implement in their classrooms. Some of the participants wrote:

I learned many new ideas that I am excited to try in my classroom.

I came with an open mind hoping to find learn ways of implementing STEM and was impressed with what I left with at the end of the Symposium.

I learned a lot of valuable information that I will be using in my classroom.

Every year I go, I pick up something new or different. I've learned over the years that I can always use what I have seen, learned, or experienced some way or some how in my classroom.

When asked if they would attend again, most attendees (76%) reported they would be very or moderately likely to attend next year, and 19% reported they would be a little likely to attend next year. Only 4% reported they would be not at all likely to attend next year.

Presenter and Vendor Perceptions of the 2012 NWO Symposium

Most of the online presenter and vendor survey respondents participated in the 2012 NWO Symposium as presenters (76%), while a smaller percentage participated as vendors (10%) and both presenters and vendors (10%). Overall, the presenters as vendors perceived their participation to be worthwhile. Most of the participants reported that their participation was either definitely (80%) or moderately (18%) worthwhile. One respondent (2%) reported that his/her participation was very slightly worthwhile, and none of the respondents reported that their participation was not at all worthwhile. Most of participants who reported that their participation was worthwhile provided an explanation that had something to do with the number

and receptivity of the teachers at their session/exhibit. Those 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. Others mentioned that participating in the NWO Symposium allowed them to network with teachers and other educators in the area.

The respondents were asked to rank the 2012 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 below in Table 7. 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 2012 Symposium were generally similar to previous years, with the exception of exhibit space. Several vendors commented on the “spread-out nature” of the vendor tables, and suggested that less people visited their table as a result. The vendors suggested that a more centralized vendor area be developed for next year.

Table 7. Presenter and vendor perceptions of several aspects of the 2011 NWO Symposium

Survey Item	n	Responses					Average Score 2012	Average Score 2011	Average Score 2010
		Poor	Average	Good	Excellent	N/A			
Keynote	43	0% (0)	2% (1)	9% (4)	35% (15)	53% (23)	3.7	N/A	N/A
Organization	43	0% (0)	0% (0)	19% (8)	81% (35)	0% (0)	3.8	3.7	3.8
Room Set-up	42	2% (1)	2% (1)	31% (13)	57% (24)	7% (3)	3.5	3.6	3.5
Exhibit Space	27	4% (1)	15% (4)	26% (7)	22% (6)	33% (9)	3.0	3.4	3.4
Available Technology	43	0% (0)	7% (3)	23% (10)	58% (25)	12% (5)	3.6	3.6	3.6
Volunteer Assistance	43	0% (0)	2% (1)	23% (10)	56% (24)	19% (8)	3.7	3.7	3.6
Venue	43	0% (0)	5% (2)	30% (13)	65% (28)	0% (0)	3.6	3.8	3.9
Food	42	2% (1)	17% (7)	31% (13)	31% (13)	19% (8)	3.1	2.7	3.0
Staff	43	0% (0)	0% (0)	16% (7)	84% (36)	0% (0)	3.8	3.8	3.8
Overall	43	2% (1)	0% (0)	28% (12)	70% (30)	0% (0)	3.7	3.5	3.6

Note: 1=Poor, 2=Average, 3=Good, 4=Excellent; N/A responses are not used to calculate the average score

The presenters and vendors were also asked to comment about the success of their sessions and/or exhibit. The vendors had mixed responses, with some reporting a very successful experience, and others reporting a slightly or moderately successful experience. Most of the difference had to do with the layout of the exhibitor tables, which is consistent with the low “exhibit space” ratings described above. Most of the presenters perceived their sessions to be successful based on the higher than expected attendance at their session, attendees’ engagement and interest in their activities, and the verbal feedback they received from the attendees.

When asked about their participation in next year’s NWO Symposium, most presenters and vendors reported they would either be very likely (62%) or moderately likely (23%) to participate. Only 15% reported that they would be a little likely to participate, and no one reported that they would be not at all likely to participate.

Conclusions and Suggestions for the 2013 NWO Symposium

The overall perception of the 2012 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 a 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. Most of the changes made in 2012 resulted in a better overall experience for participants at the Symposium. The return of a previously successful format (with a keynote address at the beginning and five blocks of sessions thereafter) and the increase in mathematics and technology sessions created a positive environment for all participants. In fact, several attendees positively commented about the number and variety of sessions this year. Furthermore, the changes in food this year resulted in higher ratings from all participants. One attendee wrote:

I have been coming for a number of years, and I thought this symposium overall was one of the best ones I've attended. The venue was great, the food classy and delicious, and the level of several of the presenters was top notch. I love that this symposium is available to those in the Toledo area.

Overall, the evaluation findings for the 2012 NWO Symposium were positive, but participants also suggested several changes to next year’s Symposium. The following two recommendations for the 2013 NWO Symposium are based on the comments and suggestions of

the 2012 NWO Symposium participants as well as the observations of the evaluator and NWO staff.

1. Keep a session strand dedicated to teaching in the university/college classroom.

In an attempt to increase the number of university and college faculty attending the Symposium, a special session strand was offered at the 2012 Symposium particularly for university and college faculty. Special recruiting efforts were undertaken to attract participants, and faculty were offered a special half-day rate to attend the two faculty-specific sessions in the morning. The resulting attendance was the highest it has been in four years. Furthermore, the faculty that completed the evaluation survey perceived the Symposium as worthwhile and reported that it was moderately or very likely they would attend again next year. Based on the increased attendance and positive evaluation findings, it is recommended that a faculty-specific session strand be developed for next year. And while standard lecture-style sessions may be included, other formats should also be considered. For examples, one attendee recommended that a roundtable or open-forum session be offered to allow faculty to discuss important teaching issues.

2. Offer more technology sessions, as well as sessions that focus on the new Ohio standards, special education, and problem-based learning.

This suggestion is based on the participants' responses to the following question: What educational issues/topics would be beneficial to address at the NWO Symposium next year? The most common responses were technology (especially how to use technology in class, and how to get technology via grants or related venues), the new science and mathematics standards, special education, and problem-based learning.

3. Remind attendees throughout the day to complete the session evaluations.

This year, the average response rate for the session evaluations was only 51%. To improve the response rate, the NWO Symposium staff should remind attendees throughout the day to complete the evaluations. The reminders could take several different forms, including an announcement at the beginning of the day, signage posted inside each of the session rooms, and verbal reminders from the session presenters.