

2012



Evaluation Report

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The Ohio Junior Science and Humanities Symposium (hereafter referred to as OJSHS) is an annual event in which Ohio students in grades 7 to 12 “compete for scholarships and recognition by presenting the results of their original research efforts before a panel of judges and an audience of their peers”¹. The OJSHS is part of the national Junior Science and Humanities Symposia Program, which is jointly sponsored by the United States Departments of the Army, Navy, and Air Force, in cooperation with leading research universities throughout the nation. The 2012 OJSHS took place on March 21 – 23 at Bowling Green State University, who hosted and sponsored the event along with the NWO Center for Excellence in STEM Education. The purpose of this report is to present the findings of the 2012 OJSHS evaluation. The report will begin a description of evaluation methods, followed by a description of the 2012 OJSHS participants. The report will then summarize the perceptions of the 2012 OJSHS participants before concluding with recommendations for future Ohio Junior Science and Humanities Symposia.

EVALUATION METHODS

The 2012 OJSHS was evaluated using an online survey that was made available to the participants at the end of the last day of the event. The link to the survey was included in the participants’ registration packet. The link was also e-mailed to the participants one week after the end of the event.

The evaluation survey included several items that asked participants to rate the quality of several aspects of the 2012 OJSHS, including the keynote presentation, the poster and paper judges, the organization of poster presentation space, and the awards ceremony. The survey also asked participating students to rate how effective the OJSHS was at increasing their interest in STEM research and careers. The survey included several closed-ended multiple-choice items (nine for students and four for non-students) and several open-ended items (three for students and four for non-students) that asked participants to write about their perceptions of the 2012 OJSHS and give suggestions regarding how it could be improved. See Appendix A for the 2012 OJSHS Evaluation Survey.

¹ Cited from the national Junior Science and Humanities website – www.jshs.org



2012 OJSHS PARTICIPANTS

A total of 105 students and 91 non-students participated in the 2012 OJSHS. Students could participate in the 2012 OJSHS as paper presenters, poster presenters, or delegates (who did not present any research). Non-students included teachers, parents, paper and poster judges, OJSHS staff/volunteers (e.g., session presiders), and other guests. The attendance numbers are displayed in the table below. Attendance data from both the 2012 and 2011 events are included in the table for comparative purposes.

Participant	2012 Attendance	2011 Attendance
Student Presenting a Paper	25	24
Student Presenting a Poster	75	90
Student Delegate	5	6
Parent of a Participating Student	20	11
Teacher of a Participating Student	10	9
Paper Judge	6	4
Poster Judge	21	32
OJSHS Staff and Volunteers	30	20
Other Guests	4	5
Total	196	201

Demographic information was collected from the participating students via the 2012 OJSHS Evaluation Survey. Most of the students were participating in the OJSHS for the first time in 2012, and a majority of the students were White with the gender ratio being almost equal. The demographic information is displayed in the table below.



Demographic Variable	Values	N	%
Number of years (including 2012) participating in the OJSHS (n=67)	One	44	66%
	Two	16	24%
	Three	6	9%
	Four	1	1%
Gender (n=68)	Female	33	49%
	Male	35	51%
Racial/Ethnic Background (n=73)	American Indian or Alaskan Native	2	3%
	Asian	21	29%
	Black or African American	3	4%
	Hispanic	2	3%
	Middle Eastern	5	7%
	Native Hawaiian or Other Pacific Islander	2	3%
	White, non Hispanic	38	52%

Note: Not all students completed each demographic item. The number in parentheses indicates the total number of responses for each demographic item.

Like the student participants, most of the non-students (31%) were participating in the OJSHS for the first time in 2012. The majority of these “first-timers” were parents and poster judges. A few (15%) of the non-students reported participating in the OJSHS for the sixth (or more) time in 2012; most of these non-students were teachers and paper judges. The remaining non-students reported participating in the OJSHS for the second (26%), third (10%), fourth (13%), and fifth (5%) time in 2012.

PERCEPTIONS OF THE 2012 OJSHS

Student Perceptions

A total of 76 students completed the evaluation survey. The response rates to the evaluation survey are displayed in the table below.



Student Type	Total Attendance	Completed Evaluation Survey	Response Rate
Paper Presenter	25	30*	100%
Poster Presenter	75	45	60%
Delegate	5	1	20%
Total	105	76	68%

* It is likely that five paper presenting students took the survey twice

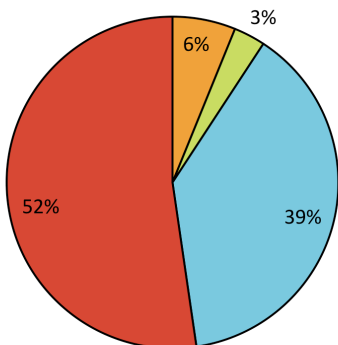
The students were asked to rate the quality of several components of the 2012 OJSHS. The 2012 OJSHS included several daytime and evening events throughout its three-day duration. However, many of the participating students only attended the last day of the OJSHS, which was the day on which the students presented their papers and posters. For this reason, a “this does not apply to me” option was included on the evaluation survey. Therefore, the number of responses (n) for each item reflects only those students who actually participated in or interacted with the OJSHS component in question. The table below contains the students’ mean response for each item. Data from the 2011 event are also included for comparative purposes. The figures on the next page illustrate the distribution of the students’ responses.

OJSHS Component	n	2012 Mean	2011 Mean
Wednesday and Thursday evening activities	67	3.37	3.69
Keynote presentation	68	2.60	3.81
Paper and poster judges	67	3.18	2.96
Organization of the poster presentation space	67	2.99	2.97
Organization of the paper presentation space(s)	67	3.09	3.68
Awards ceremony	67	2.88	3.38
T-shirts	66	2.80	3.28
OJSHS Overall	67	3.37	3.70

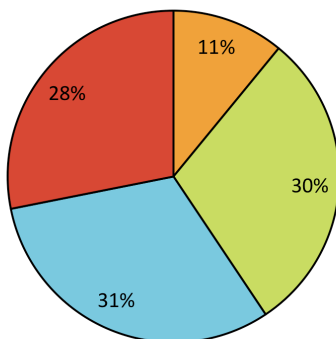
Note: 1=Poor, 2=Average, 3=Good, 4=Excellent



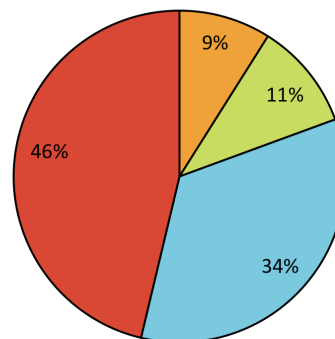
Wednesday and Thursday evening activities



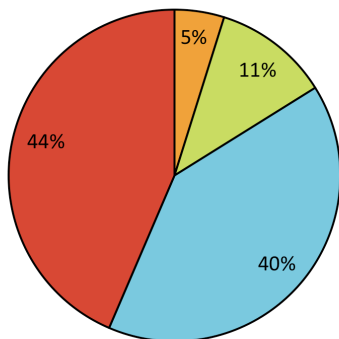
Keynote Presentation



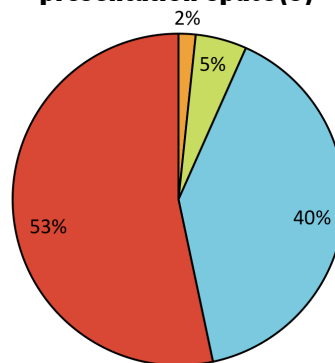
Paper and Poster Judges



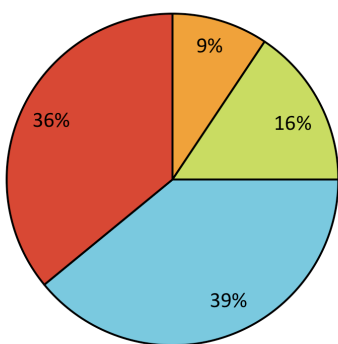
Organization of the poster presentation space



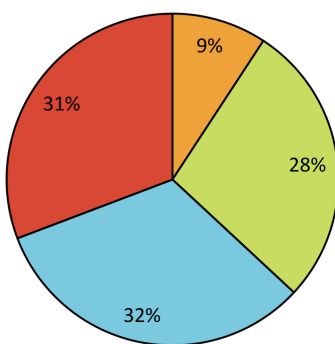
Organization of the paper presentation space(s)



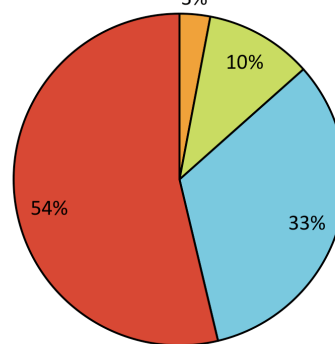
Awards Ceremony



T-Shirts



2012 OJSHS Overall



Poor

Average

Good

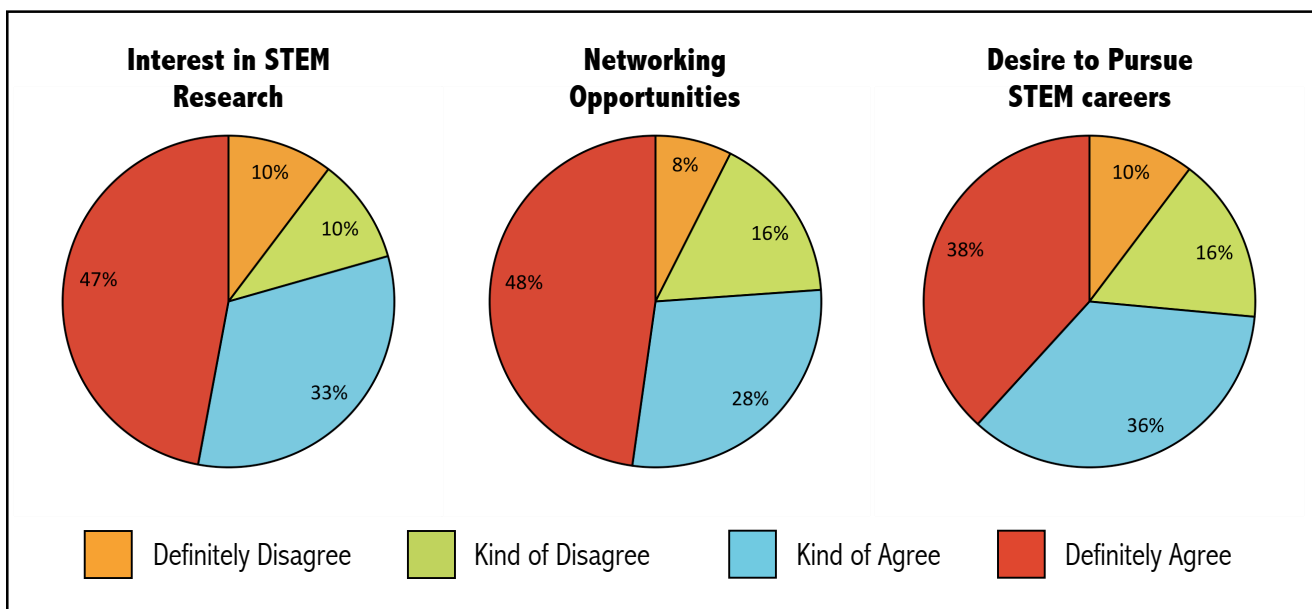
Excellent

Students were asked to write comments to explain their responses to the survey questions represented in the table and figures above. The majority of students' comments were positive, indicating that students had a positive experience at the 2012 OJSHS. The table and figures above indicate that students rated the keynote presentation lower than any other aspect of the 2012 OJSHS. However, students did not provide much if any feedback as to what they did not like about the presentation or what they would change.

In addition to rating the quality of the 2012 OJSHS, students were also asked to rate the *impact* of the 2012 OJSHS on their interest in STEM (science, technology, engineering, and mathematics) research careers. The table and figure below contain the students' mean response and distribution of responses for each item, respectively.

Item	n	Mean
Participating in the OJSHS increased my interest in STEM research.	68	3.16
The OJSHS provided me with valuable opportunities to network with other students and STEM professionals.	67	3.16
The OJSHS increased my desire to pursue a career in STEM.	68	3.01

Note: 1=Definitely Disagree, 2=Kind of Disagree, 3= Kind of Agree, 4=Definitely Agree



The students were asked to describe their experience at the 2012 OJSHS in their own words. One of the main themes that emerged from the students' responses was the opportunity for student-student interaction. Many students wrote about meeting new people at the 2012 OJSHS. Some of the students wrote:

Being able to meet new people from other schools was a great experience!

I really liked meeting new people and making new friends.

I enjoyed the opportunity to meet with other students from Ohio who have similar interests as me and are pursuing projects that are both difficult and relevant to society.

Another major theme, related to the first, regarding students' experiences at the 2012 OJSHS was the enjoyment they received from the extracurricular activities. Many students mentioned that they enjoyed eating at The Oaks as well as ice skating and curling. Students reported that they enjoyed spending time with their classmates as well as being able to interact with students from other schools in a fun, relaxed setting. A couple students commented that they appreciated that the lab tours were omitted this year. Some students wrote:

I liked the organization and ice-skating very much.

I liked the ice-skating and the curling. I really had a fun time with my classmates and got to interact with other students from other schools.

Lunch at The Oaks was a great part of the experience.

I had so much fun! I really did not want to leave! I enjoyed being able to walk around campus and be with all my friends. I also enjoyed the evening events that were planned for us.

Another theme that emerged from students' responses about the non-presentation activities was a desire for more free time. Although most students mentioned that they



enjoyed the activities, many indicated that they would have liked more free time to do what they wanted. Some students wrote:

I would change the freedom allowed to students. If some students would rather stay at the hotel and practice their presentations or rest they should be allowed to do so.

More freedom.

The success of the event is also reflected in students' desire to return to the event in 2013. Most of the students (60%) who are eligible to return next year (i.e., not 12th graders) reported that is very or moderately likely that they will be involved with the OJSHS next year.

Non-Student Perceptions

A total of 40 non-students completed the evaluation survey. The response rates to the evaluation survey are displayed in the table below.

Non-student Type	Total Attendance	Completed Evaluation Survey	Response Rate
Parent	19	7	37%
Teacher	10	9	90%
Paper Judge	6	3	50%
Poster Judge	21	13	62%
OJSHS Staff/Volunteer	30	8	27%
Total	86	40	47%

Like the students, the non-student participants were asked to rate several components of the 2012 OJSHS. Many of the non-student participants (e.g., poster and paper judges) only participated in one or two days of the 2012 OJSHS. Therefore, the responses to “online registration process,” “Wednesday and Thursday evening activities,” “keynote presentation,” and “awards ceremony” mostly represent teachers and parents of



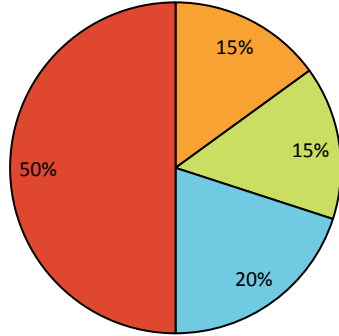
participating students. The table below contains the non-students' mean response to each item. The 2011 data are included for comparative purposes. The figures on the next page illustrate the non-students' distribution of responses for each item.

OJSHS Component	n	2012 Mean	2011 Mean
Online registration process	40	3.05	3.00
Wednesday and Thursday evening activities	40	3.61	3.83
Keynote presentation	40	3.35	4.00
Organization of the poster presentation space	40	3.57	3.45
Organization of the paper presentation space(s)	40	3.61	3.82
Awards ceremony	40	3.52	3.58
OJSHS Overall	40	3.61	3.77

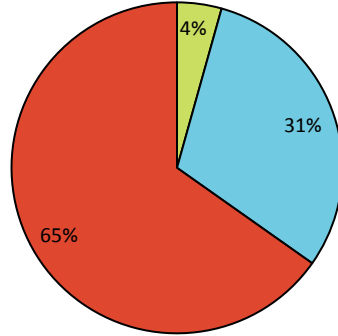
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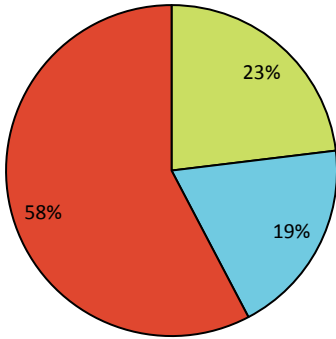
Online Registration



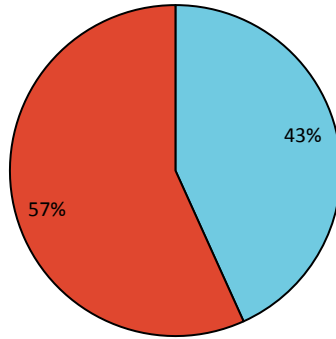
Wednesday and Thursday evening activities



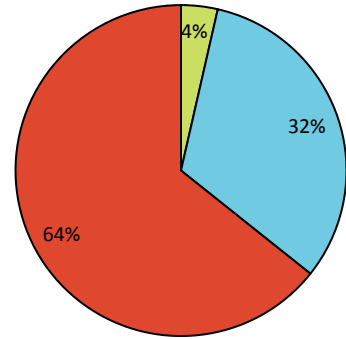
Keynote presentation



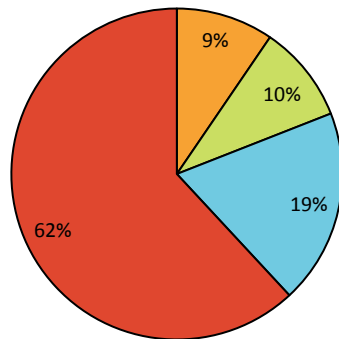
Organization of the poster presentation space



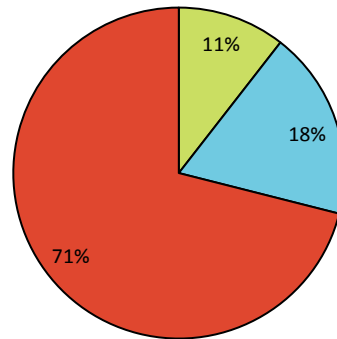
Organization of the paper presentation space(s)



Awards Ceremony



2012 OJSHS Overall



In addition to rating the quality of the 2012 OJSHS, the non-student participants were also asked to describe the impact of the 2012 OJSHS on students' interest in and understanding of STEM. Although it is likely that most of the participating students were already interested in STEM, many non-student participants suggested that the OJSHS provided students with motivation to continue learning and conducting research about STEM. Some of the participants wrote:

This symposium definitely enhanced the students' interest in the STEM disciplines where the environment for learning was electric as well as enjoyable.

OJSHS has a strong impact for our students in encouraging independent research ongoing in the high school! We actually had 100% more high school students participating in independent research over last year and look to see this gain again next year.

Many of the non-student participants believed that the students at OJSHS inspire each other to better their projects and further their STEM knowledge. Two participants wrote:

Our middle school students are always impressed with the paper presenters. I think it gives them an excellent example of what they can do at the high school level.

I think it [OJSHS] helped a lot. They [the students] got to see other students who are doing what they are doing and it can help them feel more comfortable with what they are doing on their own.

The non-student participants were also asked to describe their experience of the 2012 OJSHS in their own words. The overall tone of the responses was positive – many participants reported that they enjoyed different aspects of the event as well as the event in general. The poster judges specifically stated that they were very impressed by the students and their projects. One poster judge wrote:

The students I judged were creative and intriguing. The opportunity for them to express their research interest and get feedback from STEM educators and professors



had a profound impact of their confidence and gave them encouragement to continue their projects at a deeper level.

Finally, 87% of the non-student participants reported that is very likely that they will be involved with the OJSHS next year. The remaining 12.5% reported that it is not all likely that they will be involved with OJSHS next year.

SUGGESTIONS FOR FUTURE OJSHS

The findings from the 2012 OJSHS evaluation survey indicate that the 2012 OJSHS was a high-quality and impactful event for student and non-student participants alike. The findings demonstrate that the 2012 OJSHS provided many opportunities for students to interact with and learn from other students and STEM professionals, and helped stimulate more interest in students to learn about and conduct STEM research. These positive findings notwithstanding, there are still ways in which the OJSHS could be improved.

Any event such as OJSHS should continually seek to improve itself by soliciting suggestions from its stakeholders. In keeping with this philosophy, all 2012 OJSHS participants were asked to provide suggestions for how the OJSHS could be improved in the future. The suggestions that follow are based on the participants' reported suggestions as well as the participants' other responses and comments.

1 PROVIDE STUDENTS WITH A RUBRIC FOR POSTER JUDGING PRIOR TO OJSHS

Some students reported feeling like they were inadequately prepared for the judging process because they were not sure what the judges were looking for in their projects. One suggestion provided by some students was the provision of a rubric as to how the judges were going to score their posters. Some students felt that they could have gotten a better rating had they known how to modify their poster project for the OJSHS event. Some students stated:

I think there should be a rubric sent to all the participants about what is expected on the poster.



The judges need to communicate the poster guidelines clearly ahead of time so we know what their expectations are. My project was judged 'best of show' in Youngstown University and the judge here said it was too cluttered and marked it with the lowest score.

2 REINSTATE A COMPETITIVE RANKING SYSTEM FOR POSTER PROJECTS

Another suggestion given by many students was that the judges should choose winners and award prizes. The absence of a winner seemed to eliminate a certain level of healthy competition between the students. A few of the students even seemed less inclined to participate again without having a reward aspect to OJSHS. The students seem to desire the validation that comes with having a winner. There was also some negative feedback about the participant's choice award. A few of the students believed that it was biased and just not as fulfilling as an award chosen by the judges. Some of the participants wrote:

I really disliked that the poster presentations didn't get any prizes. Many of these presenters work hard on their projects and deserved some sort of recognition.

I think that poster awards should have been offered. I feel like the judging was just useless without them and I probably wouldn't have come if I knew there weren't going to be awards this year.

I think you should remove the participant's choice award and add actual awards for the poster presenters.

3 CONTINUE TO OFFER ICE SKATING, CURLING, AND ADD OTHER ACTIVITIES

Many students provided positive comments regarding the non-presentation activities. Specifically, the students mentioned that they enjoyed ice skating and curling. Many of the students would have liked to have more free time to either work on their projects or just relax. A couple of students actually suggested more events that would provide them time to bond with students from other schools such as ice breakers or team building activities.



APPENDIX A:
THE 2012 OJSHS EVALUATION SURVEY

