



Evaluation Report

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◆ INTRODUCTION ◆

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 2011 OJSHS took place on March 23 – 25 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 2011 OJSHS evaluation. The report will begin a description of evaluation methods, followed by a description of the 2011 OJSHS participants. The report will then summarize the perceptions of the 2011 OJSHS participants before concluding with recommendations for future Ohio Junior Science and Humanities Symposia.

◆ EVALUATION METHODS ◆

The 2011 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 2011 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

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



write about their perceptions of the 2011 OJSHS and give suggestions regarding how it could be improved.

See Appendix A for the 2011 OJSHS Evaluation Survey.

◆ 2011 OJSHS PARTICIPANTS ◆

A total of 120 students and 81 non-students participated in the 2011 OJSHS. Students could participate in the 2011 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.

Participant	Attendance
Student Presenting a Paper	24
Student Presenting a Poster	90
Student Delegate	6
Parent of a Participating Student	11
Teacher of a Participating Student	9
Paper Judge	4
Poster Judge	32
OJSHS Staff and Volunteers	20
Other Guests	5
Total	201

Demographic information was collected from the participating students via the 2011 OJSHS Evaluation Survey. Most of the students were participating in the OJSHS for the first time in 2011, and a majority of the students were female and White. The demographic information is displayed in the table below.



Demographic Variable	Values	N	%
Number of years (including 2011) participating in the OJSHS	One	56	70.0%
	Two	20	25.0%
	Three	4	5.0%
Gender	Female	47	58.8%
	Male	33	41.3%
Racial/Ethnic Background	American Indian or Alaskan Native	0	0.0%
	Asian	17	21.3%
	Black or African American	1	1.3%
	Hispanic	1	1.3%
	Middle Eastern	3	3.8%
	Native Hawaiian or Other Pacific Islander	0	0.0%
	White, non Hispanic	57	71.3%

Note: The total sample included 80 students

Like the student participants, most of the non-students (38.5%) were participating in the OJSHS for the first time in 2011. The majority of these “first-timers” were parents and poster judges. Almost a quarter (23.1%) of the non-students reported participating in the OJSHS for the sixth (or more) time in 2011; most of these non-students were teachers and paper judges. The remaining non-students reported participating in the OJSHS for the second (7.7%), third (11.5%), fourth (7.7%), and fifth (11.5%) time in 2011.

◆ PERCEPTIONS OF THE 2011 OJSHS ◆

Student Perceptions

A total of 80 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	24	21	87.5%
Poster Presenter	90	58	64.4%
Delegate	6	1	16.7%
Total	120	80	67.7%

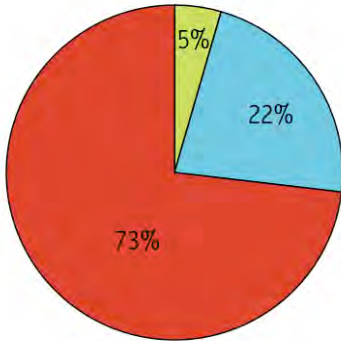
The students were asked to rate the quality of several components of the 2011 OJSHS. The 2011 OJSHS included several daytime and evening events throughout its three-day duration. However, many of the participating students only attended the last day of the OJSHS, which was the day on which the students 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. The figure on the next page illustrates the distribution of the students’ responses.

OJSHS Component	n	Mean
Wednesday and Thursday evening activities	67	3.69
Keynote presentation	69	3.81
Paper and poster judges	79	2.96
Organization of the poster presentation space	69	2.97
Organization of the paper presentation space(s)	65	3.68
Awards ceremony	68	3.38
T-shirts	78	3.28
2011 OJSHS Overall	80	3.70

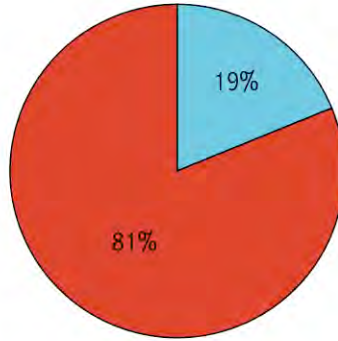
Note: 1=Poor, 2=Average, 3=Good, 4=Excellent



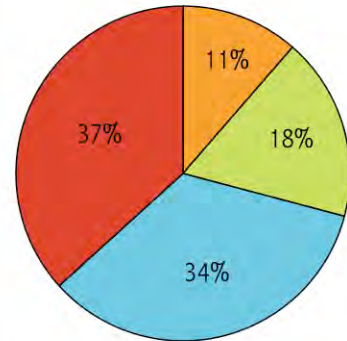
Wednesday and Thursday evening activities



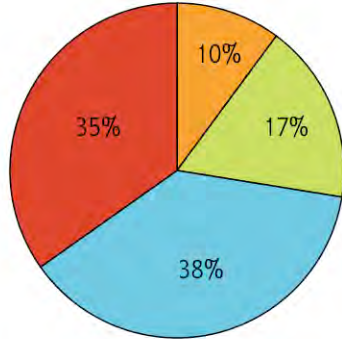
Keynote Presentation



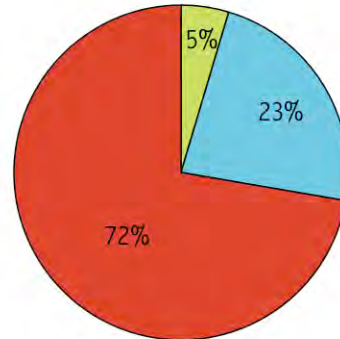
Paper and Poster Judges



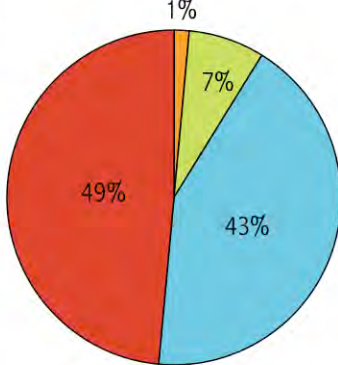
Organization of the poster presentation space



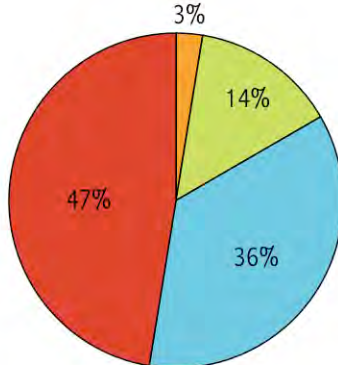
Organization of the paper presentation space(s)



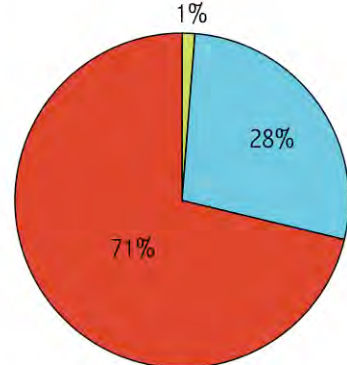
Awards Ceremony



T-Shirts



2011 OJSHS Overall



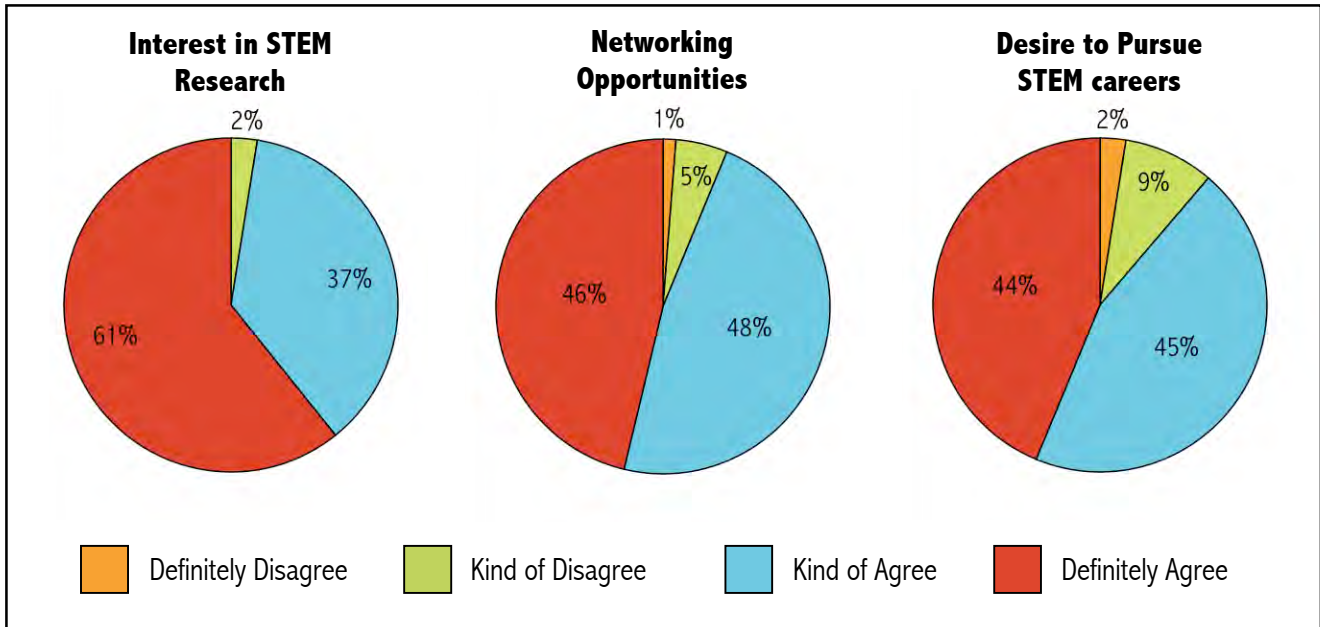
Students were asked to write comments to explain their responses to the above questions. The majority of the students' comments were positive, indicating that the students had a positive experience at the 2011 OJSHS. *The table and figures above indicate that students rated the "paper and poster judges" and the "organization of the poster presentation space" lower than any other aspect of the 2011 OJSHS.* Accordingly, many of the students' responses addressed the judges and the poster space. Three students mentioned that a larger variety of judges (in terms of expertise) would have improved the paper and poster judging. Several students noted that the space for poster presentations was too small, and a few students further commented that some students had more space than others.

In addition to rating the quality of the 2011 OJSHS, students were also asked to rate the *impact* of the 2011 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.	79	3.58
The OJSHS provided me with valuable opportunities to network with other students and STEM professionals.	80	3.39
The OJSHS increased my desire to pursue a career in STEM.	80	3.30

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 2011 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 2011 OJSHS. Some of the students wrote:

I liked the opportunity to meet other students and listen to the research that they were conducting.

I liked being able to meet new people and make some friends.

I loved getting to know people who have similar interests in STEM education.

I liked meeting and talking to people my own age about our projects and interests.

Another major theme, related to the first, regarding students' experiences at the 2011 OJSHS was learning from others. Many students mentioned that they enjoyed looking at and talking about other students' projects. Students reported learning more about science and becoming more interested in science as a result of interacting with other students at the 2011 OJSHS. Some students wrote:

It was great to see such a high quality of projects and know what others were capable of doing work at such a high level. It really inspired me.

I really enjoyed seeing other people's projects and research. There are many fields that I found very interesting and never would have thought to explore.

I loved that I was being exposed to other people that did research in levels higher than me because it helped me create ideas of projects that I could do.

My experience at the 2011 OJSHS has made me even more interested in science, and it was very inspiring watching the paper presenters and has made me start thinking of a bigger, more advanced project for next year.

Most of the students who commented about the non-presentation activities (i.e., ice skating, curling, lab tours) mentioned that they enjoyed them, although there were a few students who suggested that the lab tours be made optional. ***One theme that emerged regarding 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 maybe like to be back at the hotel a little earlier to have time spent relaxing, but the activities were enjoyable.

I did not like the lack of freedom given during the days to what we want.

I did not like the fact that we did not have a lot of down time to interact with [other students].

Finally, 83% of students 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 26 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	11	2	18.2%
Teacher	9	7	77.8%
Paper Judge	4	3	75.0%
Poster Judge	32	9	28.1%
OJSHS Staff/Volunteer	20	5	25.0%
Total	76	26	34.2%

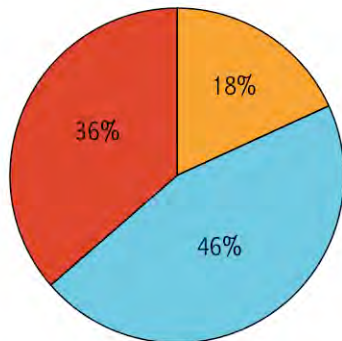
Like the students, the non-student participants were asked to rate several components of the 2011 OJSHS. Many of the non-student participants (e.g., poster and paper judges) only participated in the last day of the 2011 OJSHS. Therefore, the responses to “online registration process,” “Wednesday and 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 figure on the next page illustrates the non-students’ distribution of responses for each item.

OJSHS Component	n	Mean
Online registration process	11	3.00
Wednesday and Thursday evening activities	12	3.83
Keynote presentation	15	4.00
Organization of the poster presentation space	22	3.45
Organization of the paper presentation space(s)	17	3.82
Awards ceremony	12	3.58
2011 OJSHS Overall	22	3.77

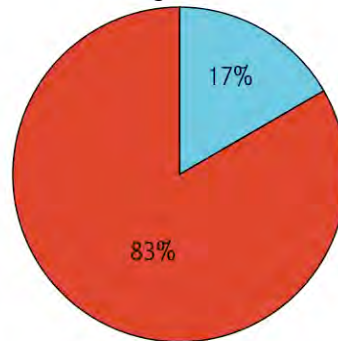
Note: 1=Poor, 2=Average, 3=Good, 4=Excellent



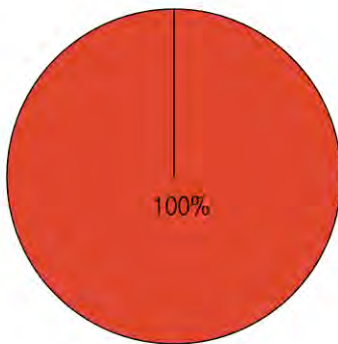
Online Registration



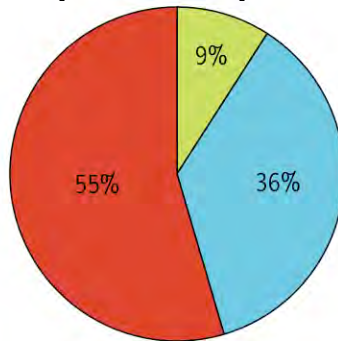
Wednesday and Thursday evening activities



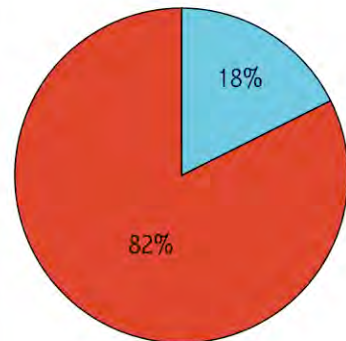
Keynote presentation



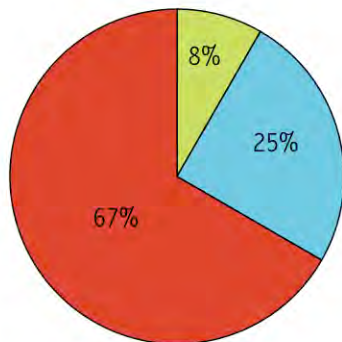
Organization of the poster presentation space



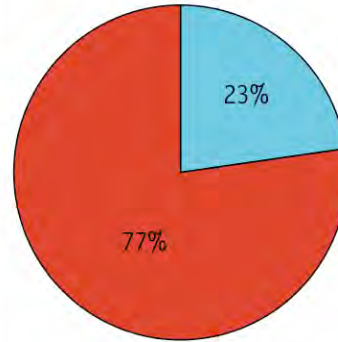
Organization of the paper presentation space(s)



Awards Ceremony



2011 OJSHS Overall



Non-student participants were asked to write comments to explain their responses to the above questions. ***The table and figures above indicate that non-students rated the “online registration” and the “organization of the poster presentation space” lower than any other aspect of the 2011 OJSHS.*** The comments explained that the “posters were a bit more crowded this year than in the past” and that there “needs to be better defined poster space for each participant”. The only comment about the online registration was that “teachers need a little more information to ensure that the students are registered”.

In addition to rating the quality of the 2011 OJSHS, the non-student participants were also asked to describe the impact of the 2011 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:

The experience seems to greatly motivate the students to do more in the field. They want to research more and do higher quality work after watching the paper presentations.

The younger students especially were appreciative of feedback and showed marked interest in returning next year.

This event piques our students’ interests and has many interested in continuing research and returning next year!

The non-student participants were also asked to describe their experience of the 2011 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 enjoyed talking to the students. One poster judge wrote:

My experience as a poster judge was enjoyable and interesting. The students were very well-spoken, prepared and enthusiastic, and speaking to them was the best part of the experience.



Many of the non-student participants echoed the comments of the students, emphasizing the role of OJSHS in fostering positive student-student interactions. Two participants wrote:

It's more than a competition. It allows the students to interact with one another and share ideas. I love that aspect of it.

I enjoy the fact that for about 48 hours my kids can hang out together with other great kids and build relationships as well as learn better research skills.

Finally, 87.5% 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 2011 OJSHS evaluation survey indicate that the 2011 OJSHS was perceived to be a high-quality and impactful event by student and non-student participants alike. The findings demonstrate that the 2011 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 2011 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 MODIFY THE SYSTEM BY WHICH POSTERS ARE JUDGED

This general suggestion is actually comprised of two more specific suggestions about the poster judging system. Many of the participants (both students and non-students) commented on the poster judging, and suggested some ways that it could be improved.

One suggestion that came mostly from participating students was to ensure a greater variety among the judges in terms of their expertise. Some students perceived that most of the judges came from the “hard science” fields, and suggested that more judges be recruited from fields like psychology and other social sciences.

Another suggestion that was given by students and non-students alike was to have two judges evaluate each poster. This suggestion could be based on the fact the judging rubric contains several large scales that might be used differently by two different judges. Having a team of judges for each student might help to standardize the scoring process. Some of the participants wrote:

The judging system was perhaps a little too subjective – a structure with multiple judges per poster would help.

The subjectivity of the poster judging – each student evaluated by only one judge – may not be fair to all the students.

2 RE-ORGANIZE THE SPACE FOR POSTER PRESENTATIONS

Issues regarding the space for poster presentations were among the most commented on by the 2011 OJSHS participants. Both students and non-students believe that changes need to be made to improve the poster space. The greatest concern was the lack of space that students had to present their posters. One non-student participant suggested that a ballroom be used instead of the room that was used this year. Some of the participants wrote:

The only thing that was slightly negative was that posters were crammed very close next to one another, so there was little space to talk to the poster’s presenter.

Wish there was more space for poster presenters.



Another issue regarding the poster space was the lack of consistency in the amount of room that each student had to set up their poster. Since the poster space was made up of a series of tall panels, students who arrived early could potentially use more space than those who arrived late. One solution might be to establish measurement standards (for how tall and wide a poster can be) to which students must adhere. Not surprisingly, the poster presenters were the main source for this suggestion. Some of the students wrote:

I enjoyed everything I was involved in, but I just noticed that some students didn't have as much space as others in the poster judging.

I think it needs to be more strictly enforced about space for poster presentation. My project received about 2 feet less than it was supposed to in width due to others' space expandments [sic].

The space for the posters were varied. For example, I had about 1 and $\frac{3}{4}$ panels while the girl next to be only [had] 1 and $\frac{1}{4}$ panels. The two people next to her both took a little more than 2 panels for themselves. Both I and the girl next to me would have liked to have more space to lay stuff out.

3 CONTINUE TO OFFER ICE SKATING, CURLING, AND CAMPUS LAB TOURS

Many students provided positive comments regarding the non-presentation activities. Specifically, the students mentioned that they enjoyed ice skating, curling, and the campus lab tours. Some students, however, suggested that the lab tours be made optional or that students should be allowed to choose which lab(s) they tour. This would allow students to have more free time if they chose to, which was another common message among the students.



APPENDIX A:
THE 2011 OJSHS EVALUATION SURVEY



2011 OJSHS Evaluation Survey

We Hope You Enjoyed the 2011 Ohio Junior Science and Humanities Symposium!

Members of the Ohio Junior Science and Humanities Symposium Program Evaluation Committee are always seeking ways to improve future Symposia. The best way to do this is to find out what participants think of the Symposium, and use their comments and suggestions to make future Symposia better.

Please take a few minutes to complete the following evaluation survey and tell us what you thought about the 2011 Ohio Junior Science and Humanities Symposium. We appreciate your cooperation!

Thank you for your assistance in improving the Ohio JSHS.

Which of the following describes you and your participation at OJSHS?

- Student - presented a paper
- Student - presented a poster
- Student delegate - did not present a paper or poster
- Parent of a participating student
- Teacher of a participating student
- Paper judge
- Poster judge
- OJSHS staff member
- Other (please specify)



Students, Tell Us What You Think!

How many years (counting this one) have you participated in the OJSHS?

- One (this is my first year)
- Two
- Three
- Four
- Five
- Six

What is your gender?

- Female
- Male

Which of following best describes the way you define your racial/ethnic background?

- American Indian or Alaskan Native
- Asian
- Black or African American
- Hispanic
- Middle Eastern
- Native Hawaiian or Other Pacific Islander
- White, non Hispanic



2011 OJSHS Evaluation Survey

Please rate the following aspects of the 2011 OJSHS.

	Poor	Average	Good	Excellent	This doesn't apply to me
Wednesday and Thursday evening activities (e.g., ice skating, banquet)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keynote Presentation (Gene Poor, "Searching for the AHA")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper and poster judges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization of the poster presentation space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization of the paper presentation space(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Awards ceremony	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
T-shirts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2011 OJSHS overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide some comments to further explain your above ratings.

Please rate your level of agreement/disagreement with the following statements.

Participating in the OJSHS (conducting and presenting my research) increased my interest in STEM (science, technology, engineering, and/or mathematics) research.

	Definitely Disagree	Kind of Disagree	Kind of Agree	Definitely Agree
Please select your choice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The OJSHS provided me with valuable opportunities to network with other students and STEM professionals.

	Definitely Disagree	Kind of Disagree	Kind of Agree	Definitely Agree
Please select your choice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The OJSHS increased my desire to pursue a career in STEM.

	Definitely Disagree	Kind of Disagree	Kind of Agree	Definitely Agree
Please select your choice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



2011 OJSHS Evaluation Survey

Please Tell Us What You Think

How many years (counting this one) have you been involved with the OJSHS?

- One (this is my first year)
- Two
- Three
- Four
- Five
- Six or more

Please rate the following aspects of the 2011 OJSHS.

	Poor	Average	Good	Excellent	This doesn't apply to me
Online registration process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday and Thursday evening activities (e.g., ice skating, banquet)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keynote presentation (Gene Poor, "Searching for the AHA")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization of the poster presentation space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization of the paper presentation space(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Awards ceremony	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2011 OJSHS overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide some comments to further explain your above ratings.

As a [Q1], what is your perception of the 2011 OJSHS's impact on students' interest in and understanding of STEM (science, technology, engineering, and mathematics)?



2011 OJSHS Evaluation Survey

We Want to Know About Your 2011 OJSHS Experience

Please describe your experience at the 2011 OJSHS in your own words. Include the the aspects of your experience that you liked as well as those that you didn't like.

What suggestions do you have for next year's OJSHS? Is there is anything that you definitely would want to see kept or removed? Is there anything you would change or add?

How likely is it that you will participate in/be involved with the OJSHS next year? Students in the 12th grade, please select "This does not apply to me".

- Not at all likely
- Very slightly likely
- Moderately likely
- Very likely
- This does not apply to me

THANK YOU VERY MUCH FOR YOUR COOPERATION!

