



## Evaluation Report

Prepared by:

Justin Shelton

and Jacob Burgoon

Northwest Ohio Center for Excellence in STEM Education



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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”<sup>1</sup>. 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 2014 OJSHS took place on March 19 – 21 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 2014 OJSHS evaluation. The report will begin a description of evaluation methods, followed by a description of the 2014 OJSHS participants. The report will then summarize the perceptions of the 2014 OJSHS participants before concluding with recommendations for future Ohio Junior Science and Humanities Symposia.

## ◆ EVALUATION METHODS ◆

The 2014 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 2014 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

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<sup>1</sup> Cited from the national Junior Science and Humanities website – [www.jshs.org](http://www.jshs.org)



write about their perceptions of the 2014 OJSHS and give suggestions regarding how it could be improved.

See Appendix A for the 2014 OJSHS Evaluation Survey.

### ◆ 2014 OJSHS PARTICIPANTS ◆

A total of 101 students and 94 non-students participated in the 2014 OJSHS. Students could participate in the 2014 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	2014 Attendance	2013 Attendance	2012 Attendance
Student Presenting a Paper	24	24	25
Student Presenting a Poster	71	53	75
Student Delegate	6	7	5
Parent of a Participating Student	22	16	20
Teacher of a Participating Student	13	11	10
Paper Judge	6	6	6
Poster Judge	26	19	21
OJSHS Staff and Volunteers	13	25	30
Other Guests	14	8	4
<b>Total</b>	<b>195</b>	<b>169</b>	<b>196</b>

Demographic information was collected from the participating students via the 2014 OJSHS Evaluation Survey. Most of the students were participating in the OJSHS for the first time in 2014, and a majority of the students were female and White. The student demographic information is displayed in the table below.



Demographic Variable	Values	N	%
Number of years (including 2014) participating in the OJSHS (n=53)	One	35	66.0%
	Two	12	22.6%
	Three	3	5.6%
	Four	2	3.8%
	Five	1	1.9%
Gender (n=53)	Female	29	54.7%
	Male	24	45.3%
Racial/Ethnic Background (n=62)	American Indian or Alaskan Native	1	1.6%
	Asian	20	32.3%
	Black or African American	3	4.8%
	Hispanic	1	1.6%
	Middle Eastern	3	4.8%
	Native Hawaiian or Other Pacific Islander	2	3.2%
	White, non Hispanic	32	51.6%

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

Like the student participants, many of the non-students (32%) were participating in the OJSHS for the first time in 2014. The majority of these first-timers were parents and poster judges. Over a quarter (35%) of the non-students reported participating in the OJSHS for the sixth (or more) time in 2014; most of these non-students were teachers and paper judges. The remaining non-students reported participating in the OJSHS for the second (8%), third (8%), fourth (5%), and fifth (8%) time in 2014.



## ◆ PERCEPTIONS OF THE 2014 OJSHS ◆

### *Student Perceptions*

A total of 58 students completed the evaluation survey. The response rates to the evaluation survey are listed in the table below.

Student Type	Total Attendance	Completed Evaluation Survey	Response Rate
Paper Presenter	24	21	87.5%
Poster Presenter	71	36	50.7%
Delegate	6	1	1.7%
Total	101	58	57.4%

The students were asked to rate the quality of several components of the 2014 OJSHS. The 2014 OJSHS included several daytime and evening events throughout its three-day duration. However, many of the participating students only attended the second 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 on the following page contains the students’ mean response for each item. The figure on page 6 of this report illustrates the distribution of the students’ responses.



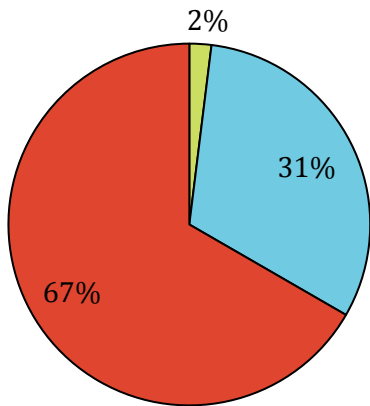
OJSHS Component	n	Mean
Wednesday and Thursday evening activities	51	3.65
Keynote presentation	51	3.45
Paper and poster judges	50	3.06
Organization of the poster presentation space	45	2.96
Organization of the paper presentation space(s)	42	3.55
Awards ceremony	46	3.48
T-shirts	51	3.29
2014 OJSHS Overall	53	3.58

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

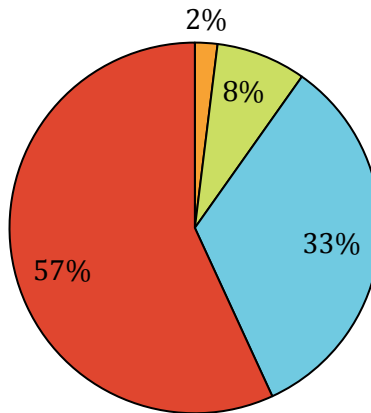
Students were asked to write comments to explain their responses to the above questions. The majority of the students' comments were positive, indicating that the students had a positive experience at the 2014 OJSHS. However, the student responses indicate that "paper and poster judges" were rated lower than any other aspect of the 2014 OJSHS. Accordingly, many of the students' responses addressed the judges and the poster space. Four students mentioned feeling that their judge was not adequately familiar with their particular field of research, which may have impacted their overall evaluation of the student's poster or paper. 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.



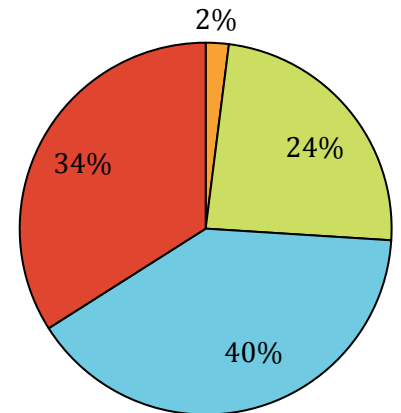
**Wednesday and Thursday evening activities**



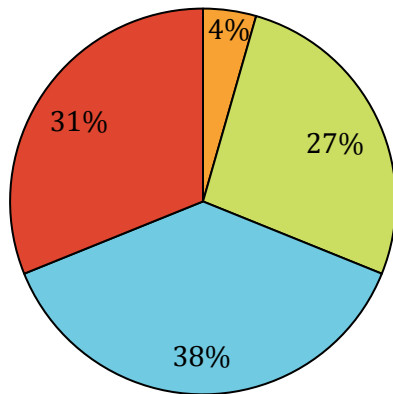
**Keynote presentation**



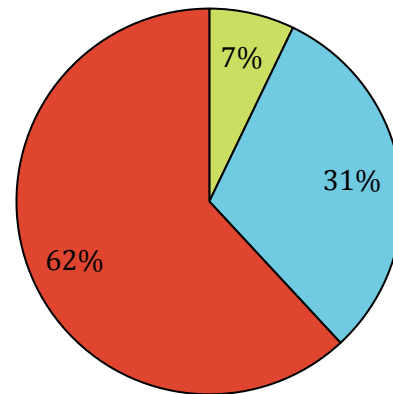
**Paper and poster judges**



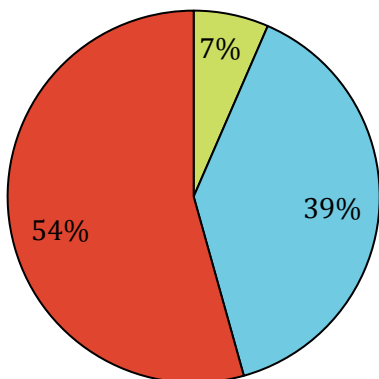
**Organization of the poster presentation space**



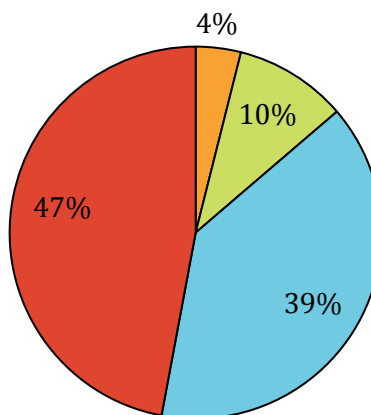
**Organization of the paper presentation space(s)**



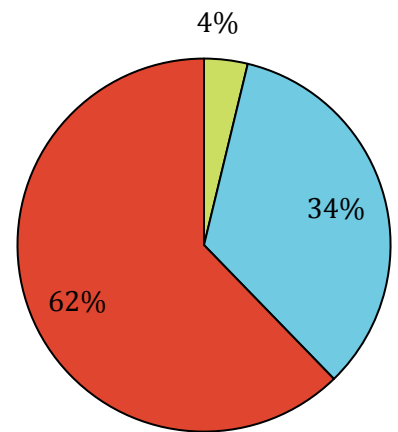
**Awards ceremony**



**T-shirts**



**2014 OJSHS Overall**



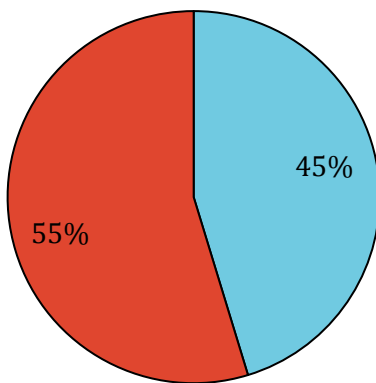


In addition to rating the quality of the 2014 OJSHS, students were also asked to rate the *impact* of the 2014 OJSHS on their interest in STEM (science, technology, engineering, and mathematics) research careers. The table and figure below contain the students' mean response and distribution of responses for each item, respectively.

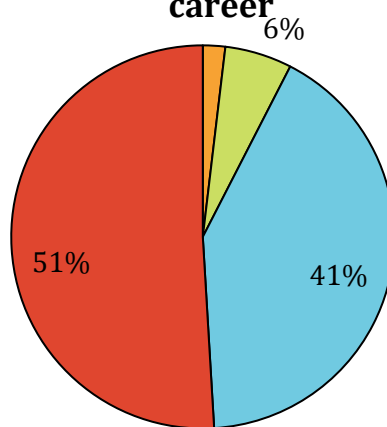
Item	n	Mean
Participating in the OJSHS increased my interest in STEM research.	53	3.54
The OJSHS provided me with valuable opportunities to network with other students and STEM professionals.	53	3.41
The OJSHS increased my desire to pursue a career in STEM.	53	3.36

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

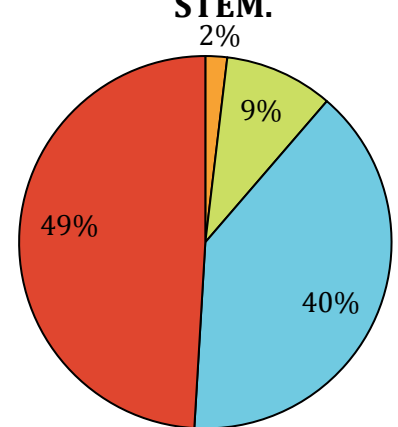
**Interest in STEM research.**



**Desire to pursue a STEM career**



**Desire to pursue a career in STEM.**



Definitely Disagree
  Kind of Disagree
  Kind of Agree
  Definitely Agree

The students were asked to describe their experience at the 2014 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 2014 OJSHS. Some of the students wrote:

*I like being able to discuss science topics with peers my own age and enjoyed the wide range of topics being discussed.*

*I made some really good friends. would of liked more networking with professionals.*

*Liked meeting kids from other schools and view other projects..*

Many students also responded that they thoroughly enjoyed the keynote speaker. Many students reflected positively on the keynote presenter and presentation, indicating this to be one of the high points of the overall experience. Two students wrote:

*I enjoyed meeting new people and the keynote presentation..*

*I loved the keynote speaker!*

Most of the students who commented about the non-presentation activities (i.e., ice skating, curling, lab tours) mentioned that they enjoyed them, with a specific interest in the ice skating portion. One theme that emerged regarding from students' responses about the non-presentation activities was a connection between the ice skating event and student interaction. Many students felt the ice skating event was enjoyable and some commented on the interactions and connections made with other students during the event:

*I enjoyed the ice skating event and banquet.*

*I liked the herpentology and marine lab visits! The ice skating I enjoyed as well!*

*I enjoyed all aspects of the trip and have no parts I disliked. My favorite part however was the ice skating.*

Finally, almost every student who was eligible to return next year (i.e., not 12<sup>th</sup> graders) reported that it would be very or moderately likely that they will be involved with the OJSHS next year.



## *Non-Student Perceptions*

A total of 35 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	22	8	36.4%
Teacher	13	7	53.8%
Paper Judge	6	4	66.6%
Poster Judge	26	12	46.2%
OJSHS Staff/Volunteer	13	4	30.8%
Total	80	35	43.8%

Like the students, the non-student participants were asked to rate several components of the 2014 OJSHS. Many of the non-student participants (e.g., poster and paper judges) only participated in the second day of the 2014 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 on the next page contains the non-students’ mean response to each item. The figure on page 11 of this report illustrates the non-students’ distribution of responses for each item.



OJSHS Component	n	Mean
Online registration process	20	3.75
Wednesday and Thursday evening activities	17	3.88
Keynote presentation	23	4.0
Organization of the poster presentation space	30	3.55
Organization of the paper presentation space(s)	20	3.85
Awards ceremony	16	3.81
2014 OJSHS Overall	28	3.93

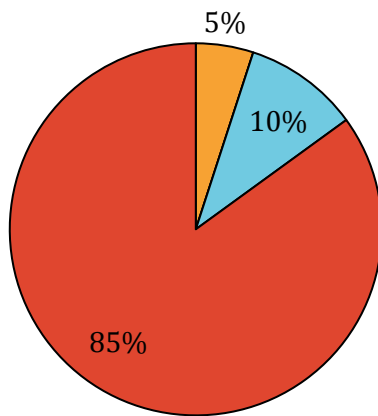
*Note: 1=Poor, 2=Average, 3=Good, 4=Excellent*

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 process” and the “organization of the poster presentation space” lower than any other aspect of the 2014 OJSHS. The comments explained that the poster presentation spaces were relatively cramped, which made listening to the student presenter, and viewing their poster, more difficult. One parent who commented on this said:

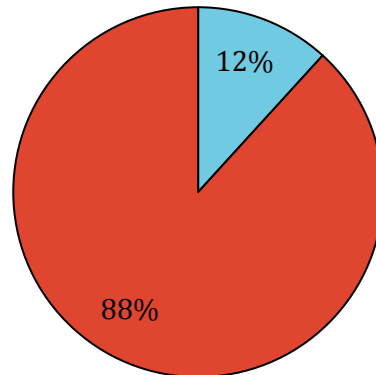
*Poster presenters were not given the space dimensions promised. The dimensions were not at all uniformly enforced.*



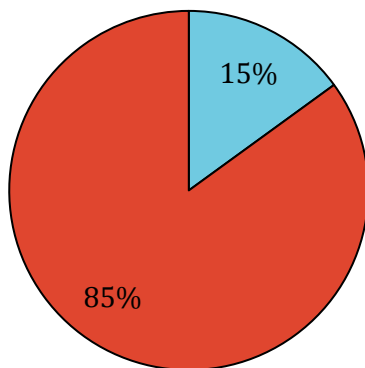
**Online registration process**



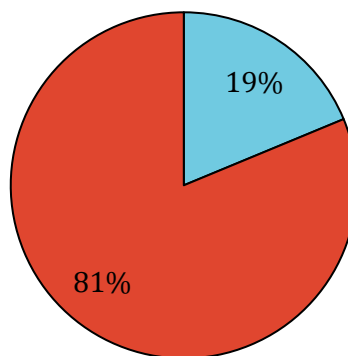
**Wednesday and Thursday evening activities**



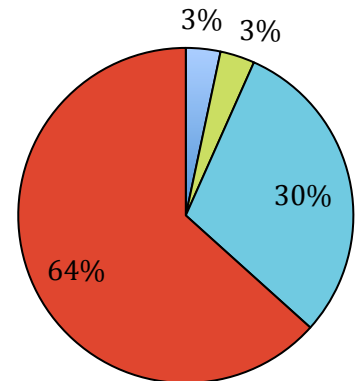
**Organization of the paper presentation space(s)**



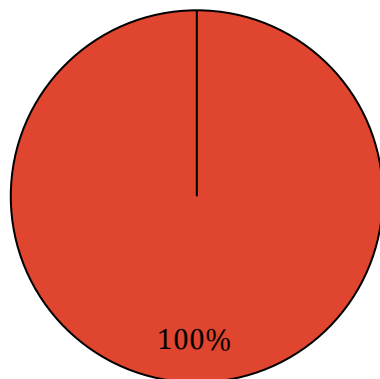
**Awards ceremony**



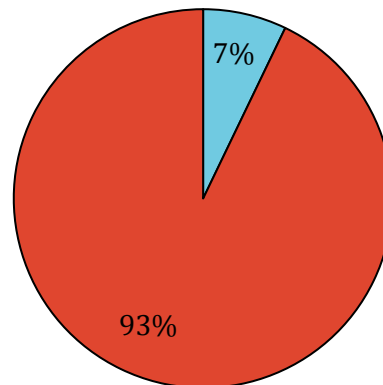
**Organization of the poster presentation space**



**Keynote presentation**



**2014 OJSHS Overall**



Poor



Average



Good



Excellent

In addition to rating the quality of the 2014 OJSHS, the non-student participants were also asked to describe the impact of the 2014 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 symposium definitely encourages students to learn more and increases their involvement in STEM fields.*

*I believe it acts as one motivator for the students--both the chance to be selected to present (or even win) as well as seeing the projects of their peers.*

*It was great that students were able to interact with other students interested in science and learn from each other.*

*OJSHS is incredible experience which has a MAJOR influence in sustaining these students' interest in STEM!!! Keep up the great work!*

The non-student participants were also asked to describe their experience of the 2014 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. Many of the non-student participants stated that they enjoyed watching the “next generation” of scientists in action. One participant commented:

*I enjoy interacting with the presenters every year. Their skill level and the quality of their research and presentation vary widely, but I can advise all of them and they all seem genuinely interested in learning from what I have to say.*

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



*This is an extremely unique opportunity for science students to interact with and learn from each others research in a supportive setting that encourages academic growth and provides an environment for constructive input into a student's research efforts. It is a top-notch program for all participating!*

Finally, 81% of the non-student participants reported that is very likely that they will be involved with the OJSHS next year, while 12% reported they were moderately likely to return. The remaining 7% reported they would not be likely to return to OJSHS next year.

### ◆ SUGGESTIONS FOR FUTURE OJSHS ◆

The findings from the 2014 OJSHS evaluation survey indicate that the 2014 OJSHS was perceived to be a high-quality and impactful event by student and non-student participants alike. The findings demonstrate that the 2014 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 2014 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

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 appeared frequently came mostly from participating students. These students felt there needed to be a greater variety among the judges in terms of their expertise. These students suggested that a more diverse variety of judges from a larger



range of scientific fields might be more appropriate. 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. One participant wrote:

*If possible, match judges up to particular topics that are more reliable areas of expertise.*

## **2 PAPER EVALUATION**

Many participants, both student and non-student, commented on the lack of feedback for paper presenters. Comments centered around the benefits students might gain from receiving an official evaluation from the judge and being able to understand why exactly they placed the way they did. One participant wrote:

*Next year it would be nice if the paper presenters could at least get comments from the judges since they don't get their score.*





**APPENDIX A:**  
**THE 2014 OJSHS EVALUATION SURVEY**



# OJSHS Evaluation Survey

We Hope You Enjoyed the 2014 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 2014 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/volunteer
- Other (please specify)

# OJSHS Evaluation Survey

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

# OJSHS Evaluation Survey

**Please rate the following aspects of the 2014 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 (Dr. Jodi Haney, "Roots to STEM")	<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"/>
2014 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.

**What topic or field (e.g., physics, computer science, biology) would you like to hear about during next year's keynote address?**

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"/>

# 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 2014 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 (Dr. Jodi Haney, "Roots to STEM")	<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"/>
2014 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.

### What suggestions do you have regarding a theme for next year's Symposium?

### As a [Q1], what is your perception of the 2014 OJSHS's impact on students' interest in and understanding of STEM (science, technology, engineering, and mathematics)?

# OJSHS Evaluation Survey

## We Want to Know About Your 2014 OJSHS Experience

**Please describe your experience at the 2014 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 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!**