



2015 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 52nd annual OJSHS took place on March 18 – 20, 2015 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 2015 OJSHS evaluation. The report begins with a description of evaluation methods, followed by a description of the 2015 OJSHS participants. The report then summarizes the perceptions of the 2015 OJSHS participants before concluding with recommendations for future Ohio Junior Science and Humanities Symposia.

EVALUATION METHODS

The 2015 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 2015 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-

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

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 2015 OJSHS and give suggestions regarding how it could be improved.

See Appendix A for the 2015 OJSHS Evaluation Survey.

2015 OJSHS PARTICIPANTS

A total of 92 students and 83 non-students participated in the 2015 OJSHS. Students could participate in the 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	2015 Attendance	2014 Attendance	2013 Attendance	2012 Attendance
Student Presenting a Paper	24	24	24	25
Student Presenting a Poster	64	71	53	75
Student Delegate	4	6	7	5
Parent of a Participating Student	23	22	16	20
Teacher of a Participating Student	12	13	11	10
Paper Judge	6	6	6	6
Poster Judge	26	26	19	21
OJSHS Staff and Volunteers	13	13	25	30
Other Guests	3	14	8	4
Total	175	195	169	196

Attendance has remained mostly constant over the past four years, with the major variable being the number of students presenting a poster. Notably, the smallest difference in this number was between 2014 and 2015.

Demographic information was collected from the participating students via the 2015 OJSHS Evaluation Survey. Most of the students were participating in the OJSHS for the first time in 2015, 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 2015) participating in the OJSHS (n=41)	One	21	51%
	Two	13	32%
	Three	5	1%
	Four	1	>1%
	Five	1	>1%
Gender (n=41)	Female	30	73%
	Male	11	27%
Racial/Ethnic Background (n=42)	American Indian or Alaskan Native	0	0%
	Asian	13	31%
	Black or African American	2	5%
	Hispanic	0	0%
	Middle Eastern	0	0%
	Native Hawaiian or Other Pacific Islander	0	0%
	White, non Hispanic	27	64%

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

PERCEPTIONS OF THE 2015 OJSHS

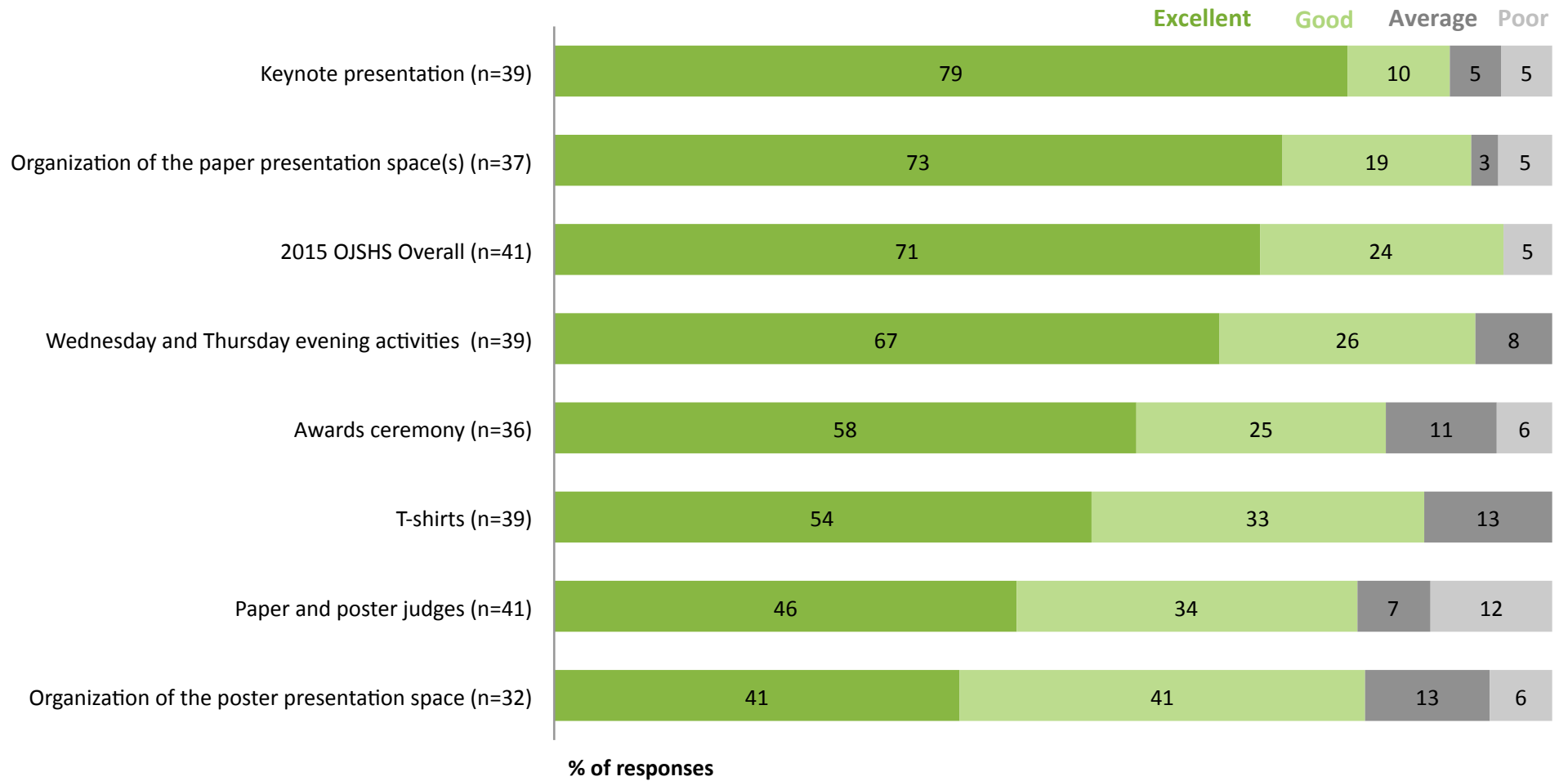
Student Perceptions

A total of 58 students completed the evaluation survey. The overall response rate to the evaluation survey was 53%, similar to previous years.

The students were asked to rate the quality of several components of the 2015 OJSHS. The 2015 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 figure on the next page illustrates the distribution of the students’ responses.

Students' overall ratings of the 2015 OJSHS were positive

The Keynote received the most "Excellent" ratings



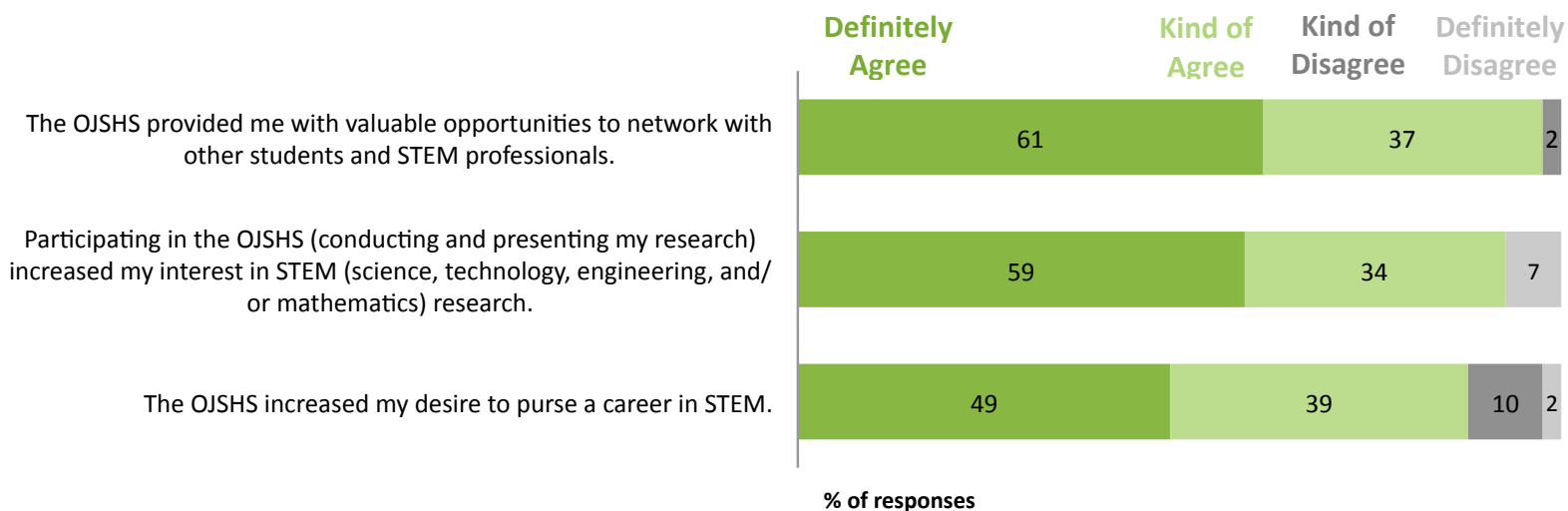
Students were asked to write comments to explain their responses to the above questions. The majority of the students' comments were positive, indicating that the students had a positive experience at the 2015 OJSHS. However, some students made constructively critical comments about the judging, feeling specifically that some judges were evaluating presentations that were out of their field. Some of the students wrote:

Every thing was awesome, though during the poster presentations some of the judges were judging projects irrelevant to their field of study

Judges did not seem to be judging projects that were entirely in their field.

The paper judges are not from a wide enough range of fields and are not qualified to critique all of the projects that are presented.

In addition to rating the quality of the 2015 OJSHS, students were also asked to rate the *impact* of the 2015 OJSHS on their interest in STEM (science, technology, engineering, and mathematics) research careers. The figure below illustrates the distribution of responses for each item.



The students were asked to describe their experience at the 2015 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 2015 OJSHS. Some of the students wrote:

But I wasn't only limited to getting to know my classmates but people all around Ohio who shared the same experiences and interests that lead them to be able to attend OJSHS like me

The other students were polite and enjoyed the conversation of others.

The activities were fun, and I liked getting the chance to talk to students from other school districts who also have an interest in science and engineering.

OJSHS is an incredible experience that provides an opportunity to interact with and listen to some of Ohio's brightest students.

In general, students were highly positive about their experience, and often mentioned how much the event impacted their personal and academic development.

Students wrote:

I feel like this whole trip was a way for me to learn more about myself as a scientist and about ways I can improve myself, as a person in general.

I love the fact that we are able to receive feedback from people who are experts in their fields. OJSHS has given me a platform to learn about and possibly pursue a STEM career

It was an overall great experience that enriched my interest in STEM fields.

OJHS was a very great learning experience this year and has been in the past as well. I have some new ideas for a project next year and have a better understanding of weaknesses in my project next year.

OJSHS has always been the highlight of my high school years, and was definitely one of the best ways to round off my senior year.

Finally, 85% of students who are eligible to return next year (i.e., not 12th graders) reported that it would be very or moderately likely that they will be involved with the OJSHS next year.

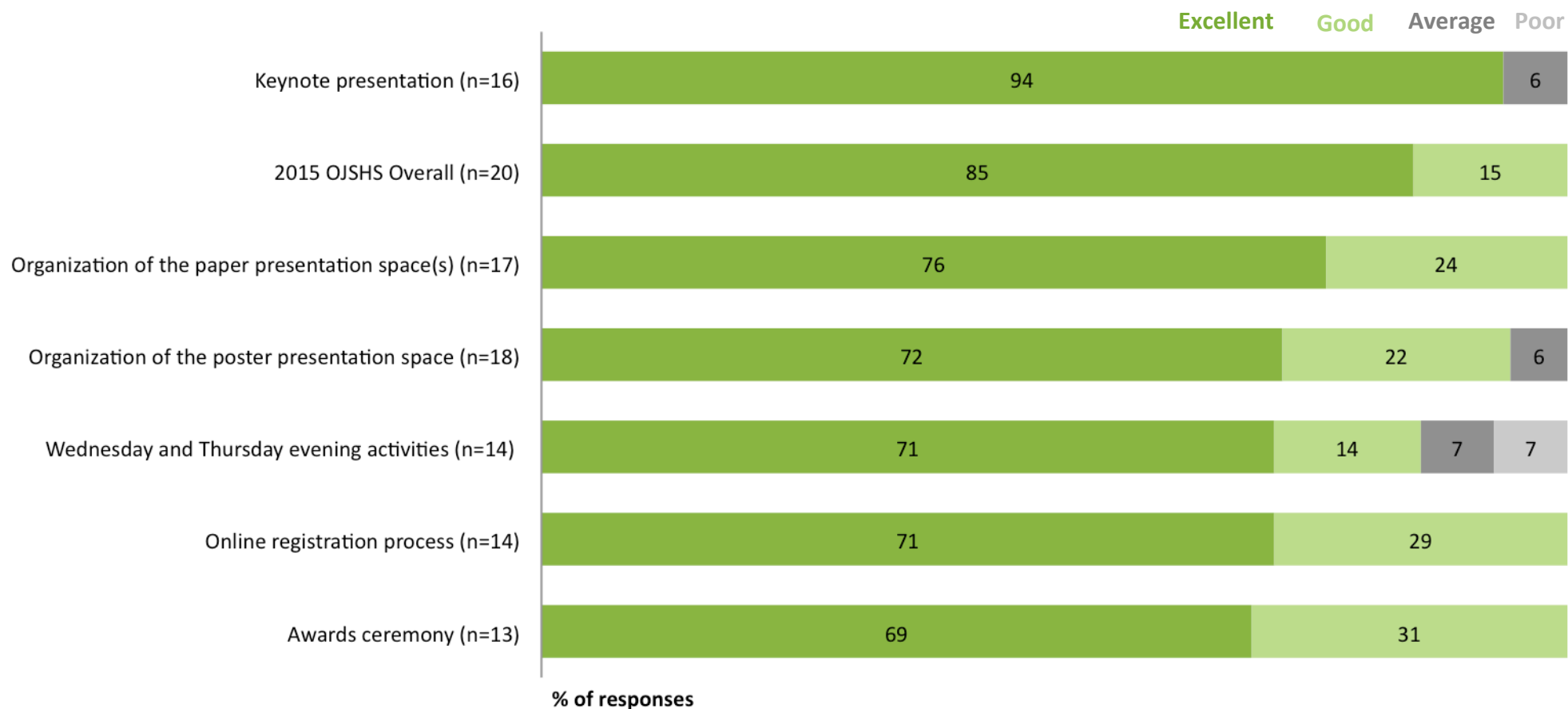
Non-Student Perceptions

A total of 25 non-students completed the evaluation survey. The overall response rate to the evaluation survey was 31%

Like the students, the non-student participants were asked to rate several components of the 2015 OJSHS. Many of the non-student participants (e.g., poster and paper judges) only participated in the second day of the 2015 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 figure on the next page illustrates the non-students’ distribution of responses for each item.

Non-students' overall ratings of the 2015 OJSHS were positive

The Keynote received the most "Excellent" ratings



In addition to rating the quality of the 2015 OJSHS, the non-student participants were also asked to describe the impact of the 2015 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:

My students always leave OJSHS inspired to improve their own research, to deepen their work.

I have students leave with a broader sense of how science is integrated into so many different aspects of their lives. They are further motivated to continue their own research and develop their projects to a higher level.

I think the overall impact on students interest is immeasurably large. I think there is an immediate impact on students motivation to continue research and explore careers in STEM fields. What is immeasurable is the long term interest, impact, career choices, and job performance that is influenced by participation in authentic research.

Their comments indicate that the OJSHS positively impacts students' interest and motivation through two interrelated processes—students' preparation for the event (i.e., conducting and writing up their research) and students' interactions during the event with peers and STEM professionals. Some of the participants wrote:

Preparing for and participating in this symposium is one of the major factors to cement my students' decision to enter the science/engineering field. Seeing excellent peer research just helps to increase the desire to enter STEM fields

Provided excellent opportunity to experience What it is like to be a STEM research. Great opportunity to meet with other like minded people.

Hearing the judges' perspective allows students to learn how scientists review and interpret scientific research, which I think gives them a greater understanding of the practice of science.

It gives them great opportunities to tell others about their work, to celebrate their achievements, to connect with other students with similar interests, and to interact with professionals in their field. All of that is likely to increase student interest and participation in these fields.

The non-student participants' comments about their experience at the OJSHS were positive. Many specifically commented about the high level of organization, and others echoed the comments of the students, emphasizing the role of OJSHS in fostering positive student-student interactions. All of the non-student participants who completed the survey reported that is moderately or very likely that they will be involved with the OJSHS next year.

SUGGESTIONS FOR FUTURE OJSHS

The findings from the 2015 OJSHS evaluation survey indicate that the 2015 OJSHS was perceived to be a high-quality and impactful event by student and non-student participants alike. The findings demonstrate that the 2015 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.

The following suggestions should be considered in the planning of future events:

- Some students suggested improvements to the lab tours, specifically that they be more “hands on”, and allow for exposure to more than one field of study
- As in the past, students and some non-students suggested that poster judges be assigned only to posters within their field.
- A few students suggested that more awards be offered for junior high students.
- The most commonly suggested topic for next year's keynote was biology. Some offered more specific topics like bioengineering, virology/immunology, and biomedicine.

APPENDIX A:
THE 2015 OJSHS EVALUATION SURVEY

OJSHS Evaluation Survey

We Hope You Enjoyed the 2015 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 2015 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 2015 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. Matt Laurent)	<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"/>
2015 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 2015 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. Matt Laurent)	<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"/>
2015 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 2015 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 2015 OJSHS Experience

Please describe your experience at the 2015 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!