OMSI Boys and Girls Science Club
A Remedial Evaluation Report: 2002-2003

Prepared for

OMSI
OREGON MUSEUM OF SCIENCE AND INDUSTRY

by
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OJJDP

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Executive Summary

OMSI conducted the OMSI Boys and Girls Science Club (OBGSC) from September 2002 through May of 2003. The club provided participants a safe learning environment intended to inspire them to stay in school and seek professional careers.

Primary findings

1. Are boys and girls participating in the club?
    - OBGSC provided over 1882 participant-hours of program to at least 310 children.
    - 47% of these participant-hours were with girls, 53% were with boys.

2. Did the club influence participants' goals?
    - 75% of the participants gave some indication that the club influenced their plans for the future.

3. How comfortable are participants with science activities?
    - The group's mean level of comfort with science activities was about 3.5 on a scale from 1–4 (at a point between "a little comfortable" and "very comfortable").

4. How did the club help participants succeed in school?
    - 84% of the participants said the club helped them succeed in school by teaching them to work well with others.
    - 81% said the club helped them succeed in school by challenging them to learn more.

5. What did participants like about the club?
    - The issue of respect came up several times throughout the evaluation—it seems the participants associate the club with respect for oneself and for others.

6. What advice did the participants offer for improving the club?
    - Have a science party.

7. At the end of the club year, were participants satisfied with the program overall?
    - 78% gave some indication the club made them more curious about science.
    - 95% gave some indication they learned new things.
    - 96% gave some indication they had fun.
    - 96% gave some indication they would recommend the club to others.

Primary Recommendations

The evaluation results suggest that the 2002–2003 OMSI Boys and Girls Science Club had a successful year in many ways. Participants chose to attend at least 1882 hours of program. Results from evaluation suggest that the club helped participants succeed in school in more ways than expected and had a positive influence on many of the participants' plans for the future. The participants seem to perceive OBGSC as a place where individuals are respected and participants seem to have responded to that. That is, some participants implied OBGSC was a respite and many

mentioned learning to respect others and themselves through OBGSC. The club can continue to build on these and other strengths.

As the club continues, some areas may need reconsideration:

- Club staff identified a problem attracting and retaining teens. The club is in a position to overcome that problem within two or three years. That is, OBGSC currently has a group of very enthusiastic and invested 11- to 14-year-olds in the robotics and Academy of Engineering (AOE) program. Staff should plan a teen program to offer these students as they enter high school. The program should be different than the robotics/AOE program, but allow the participants to build on the knowledge, skills, and contacts they are acquiring now. The program could offer the participants more responsibility and opportunity.

- Consider addressing some of the suggestions offered by the focus group participants.
  - Can staff improve the consistency of participation by offering more and better incentives to completing long-term projects? The participants have requested pizza, club bucks, and field trips as rewards for accomplishment.
  - Can staff provide more games in more ways—updated computer-based experiences, full-body experiences, food-related experiences?
  - Can the negative impression of science and engineering be improved with science parties?

- Evaluation activities can be adjusted. In the next year more attention can be given to the specific program challenges identified by staff: overcoming a negative impression of science, attracting and retaining teens, and developing a more consistent participant base. In addition, the program can look at the confidence, skills, and knowledge gained through some of the popular long-term programs like gardening, robotics, or computer activities. Information gained on what makes these programs successful can inform the development of future programs.

Full Report

Introduction

This report contains the results of OMSI Boys and Girls Science Club (OBGSC) evaluation activities that occurred during the 2002–2003 club year. OBGSC is a program offered by the Oregon Museum of Science and Industry (OMSI) and is currently supported by funding from the Office of Juvenile Justice and Delinquency Prevention.

OMSI's goal for OBGSC was stated as:

> OMSI will provide at-risk students (6 to 18 years old) in North and Northeast Portland with a safe and stable learning environment that offers daily after-school access to positive role models, life skills, and hands-on, inquiry-based science activities. These programs will help students improve their self-esteem and to develop the skills necessary to stay in school and seek professional careers.

Specific objectives for OBGSC included:

1. One educator will run OMSI programs for at-risk youth at the OMSI Boys and Girls Science clubs during the year.
2. The OMSI educator will provide at least 3.5 hours per weekday of science programming.
3. The OMSI educator will offer programs in LEGO robotics, engineering, zoology, and gardening, in addition to other general science programs.
4. The educator will maintain a safe, stable, and supportive environment and promote healthy lifestyles to youth choosing to participate in the program.

The evaluation objectives for 2002–2003 were to:

1. Describe the logistics of the club,
2. Record the extent to which boys and girls were participating in the club,
3. Learn more about participants' goals and the clubs' influence on those goals,
4. Learn more about participants' comfort with science activities and the clubs' influence on those comfort levels,
5. Learn more about how the club supported participants' successes in school,
6. Learn more about the club activities that participants valued most, and
7. Determine if participants were satisfied with the program overall.

Data collection activities included:

1. Year-end notes provided by the program staff;
2. Attendance records;
3. Pre-club and post-club surveys of participants' comfort with science, expectations for the club, and goals;
4. Post-club survey of participants' satisfaction with the club; and
5. Post-club focus groups for participants to review club activities.

Samples of the surveys used to collect information throughout the year are provided in Appendices A and B.

The following report is organized to reflect these data collection activities. The sections of the report are:

1. Description of the clubs,
2. Participant attendance,
3. Participant goals: pre-club and post-club,
4. Strides in science and school: pre-club and post-club,
5. Participant review of club and activities, and
6. Participant satisfaction.

The report concludes with a summary of the primary findings and recommendations.

Description of the club

OBGSC is located within the Blazer Boys and Girls Club. The Blazer Boys and Girls Club operates on a drop-in basis for members from 6 to 18 years old. Within this structure, OBGSC also operates on a drop-in basis for 6- to 18-year-olds between the hours of 2:30 and 8 p.m. on Monday through Friday.

A typical day of the Science Club includes five different sessions. During the first session, from 2:30 to 4:00 p.m., participants have the opportunity to do homework or play chess. Each successive hour between 4:00 and 8:00 p.m., OMSI offers activities from various program areas. The program areas include:

- Journey to the Planet Earth (targeting all ages)
  - Biology
  - Geology
  - Climate
  - Space Science
  - Chemistry
- Homework Hour and Chess Club (targeting all ages)
- Open Time (targeting all ages)
- General Science (targeting 6- to 11-year-olds)
  - Gardening
  - Live animals
- Robotics (targeting 9- to 14-year-olds)
- Physics (targeting all ages, but focusing on 9 years and older)
- Academy of Engineering (targeting all ages, but focusing on 10 years and older)

The club staff members have identified three ongoing challenges to running the club. First, they have to overcome children's negative impression of science. Second, they find it is difficult to attract and retain teen members. Third, because the club operates on a drop-in basis, attendance can fluctuate greatly and children can attend inconsistently. One strategy the staff have used to help all of these issues is to offer a variety of program options. That is, some OBGSC activities are long-term while others are completed in one 60-minute session. Some activities are age specific while others are for any age.

The club staff members have identified two program areas that have really flourished this past year. The first program area is gardening. Many children have been consistently involved and genuinely excited about the program. The other program area that has flourished is the homework session. Children have found this time to be helpful and many have taken advantage of the opportunity to do their homework in the OMSI room.

Participation and attendance

OMSI has participation and attendance records for most of the days the club was held, but not all days. For instance, during winter and spring school-breaks it is too difficult for staff to record the names of

participants because of the high number of children that drop in. Table 1 contains records for 142 program days across nine months (September 2002 through May 2003).

The club provided at least 1882 participant-hours of service during the 2002–2003 club year. The daily average attendance seemed to fluctuate between about 25 and 50 participant-hours. Forty-three percent (43%) of these participant-hours were attended by girls, 57% were attended by boys.

The attendance records indicate that at least 310 children participated in the club throughout the year. These children were between the ages of 6 and 17 years old—most of the children were 6 through 11 years old (Table 2). Forty-one percent (41%) of these children were girls, 59% were boys. It is not known how these numbers and gender proportions compare to the numbers and gender proportions of the Blazer Boys and Girls Club membership.

Table 1. Number of hours participants attended OBGSC between September 27–December 30 (data is missing for some days).

Gender	Sept. 9 days of attendance	Oct. 22 days	Nov. 18 days	Dec. 19 days	Jan. 16 days	Feb. 14 days	Mar. 15 days	Apr. 12 days	May 17 days	Total Hours recorded	**Percent of hours attended by girls & boys**
Number of hours girls attended	159	420	335	410	161	142	133	133	193	2086	**43%**
Number of hours boys attended	191	456	395	529	322	228	236	195	252	2804	**57%**
Total hours that attendance was recorded	**350**	**876**	**730**	**939**	**483**	**370**	**369**	**328**	**445**	**4890**	
Average number of participant-hours provided per day	**39**	**40**	**41**	**49**	**30**	**26**	**25**	**27**	**26**		

Table 2. Ages of participants. This data is from attendance records.

Age (years)	Girls (#)	Boys (#)	Number of children that participated in the club at each age
6 years old	17	14	31
7	12	20	32
8	17	25	42
9	13	21	34
10	13	18	31
11	10	23	33
12	3	4	7
13	2	2	4
14		1	1
15		2	2
16		1	1
17		1	2
Unrecorded age	40	50	90
Total	**(41%) 128**	**(59%) 182**	**310**

Participant goals: pre-club and post-club

Pre-club information on goals

Results from the front-end research reveal that participants in OMSI's North Portland Science Club have ambitious professional and personal goals. For example, the majority of the students expect to complete college by the age of 25 (Table 3). In fact, most of their career goals *require* higher education (Table 4). In addition, the majority of the participants also expect to be starting families by the age of 25 (Table 5).

Table 3. Number of club participants that expect each level of school to be the highest level of schooling they will complete by the age 25 (n = 64). This data is from the pre-club questionnaire in Appendix A.

	Girls (#)	Boys (#)	**Total**
Elem or Middle*	2	2	**(6%) 4**
High School		1	**(2%) 1**
College	23	36	**(92%) 59**
Total	25	39	**64**

* We recommend the teacher try to learn more about why these children responded this way.

Table 4. Club participants planning to pursue each career (n = 61).
This data is from the pre-club questionnaire in Appendix A.

Career	Girls (#)	Boys (#)	**Total**
Teacher	6	4	**10**
Athlete	1	8	**9**
Doctor	1	3	**4**
Lawyer	2	2	**4**
Toy/Game Retail Sales	1	2	**3**
Veterinarian	1	2	**3**
Performer	3		**3**
Scientist		3	**3**
Firefighter		2	**2**
Police Officer	1		**1**
Dentist	1		**1**
Artist	1		**1**
Rich/Famous	1		**1**
Astronaut		1	**1**
Nurse	1		**1**
Pharmacist	1		**1**
Secretary	1		**1**
Computers		1	**1**
Construction Worker		1	**1**
Video Game Designer		1	**1**
More than one	1	5	**6**
Don't know	1	2	**3**
Total	24	37	**61**

Table 5. Participants' plans for family by the age of 25 (n = 63).

	Girls (#)	Boys (#)	Total
No family	11	15	**(41%) 26**
Some family (have a spouse and/or children)	14	23	**(59%) 37**
Total	25	38	**63**

Post-club information on goals

Thirty of the participants that completed the pre-club questionnaire on goals also completed the post-club questionnaire on goals. The post-club questionnaire asked participants about education and career goals but did not ask about family goals. The results of the post-club survey were not surprising for this age group—most participants' education goals did not change, but their career goals did change. These findings are described further in the following paragraphs.

Of the thirty participants that completed both the pre-club questionnaire and the post-club questionnaire, only three changed their expectations from the fall. Two of the participants expected to complete a lower level of education and one expected to complete a higher level of education.

Only 43% of the thirty participants that completed both the pre-club and post-club questionnaire maintained their same career goals. The other 57% changed their career goals in some way. Table 6 lists the career goals of all the participants that completed the post-club questionnaire.

Table 6. Club participants planning to pursue each career (n = 62).
Data is from the post-club questionnaire in Appendix B.

Career	Girls (#)	Boys (#)	**Total**
Athlete		16	**16**
More than one	7	4	**11**
Doctor	4	1	**5**
Performer	3	2	**5**
Police Officer	1	4	**5**
Computers		3	**3**
Don't know	2	1	**3**
Teacher	1	1	**2**
Lawyer	1	1	**2**
Veterinarian	2		**2**
Scientist		2	**2**
Judge	1	1	**2**
Rich/Famous		1	**1**
Nurse	1		**1**
Professional		1	**1**
Banker	1		**1**
Toy/Game Retail Sales			
Firefighter			
Dentist			
Artist			
Astronaut			
Pharmacist			
Secretary			
Construction Worker			
Video Game Designer			
Total	24	38	**62**

In the post-club questionnaire, participants were asked if the Science Club influenced their plans for the future. The respondents had the option of answering, "No way!," "Not really," "I think so," or "Yes!" While this is probably a difficult question for many young participants to answer, the majority of the respondents (75%) said, "I think so" and "Yes!" (Table 7).

Table 7. The percentages of participants that chose each response to the question, "Did this club influence your plans for the future?" Data is from the post-club questionnaire in Appendix B.

No way! (%)	Not really (%)	I think so (%)	Yes! (%)
13	12	23	52

Some of the students that said the club influenced their plans for the future provided an explanation. Here are some of those comments:

Helped me decide which school to choose.
I'm in airway science so I am going to learn how to fly airplanes.
I know I can be what I want.
They taught me how to respect others and believe in myself.
It showed me to respect others and to be helpful.
It helped me do my work in school.
By teaching me all kinds of stuff.
So I can be smart.
You get to learn about science.
It is a good influence and it teaches you.
To be confident when I'm in front of people.
The club keeps me out of trouble.
Help me not fight with others.

Strides in science and school: pre-club and post-club

Pre-club and post-club information on "comfort with science"

The pre-club survey revealed that many of the club participants felt comfortable completing science activities upon the beginning of the school year. On a scale of 1 to 4 in which 1 meant "very uncomfortable" and 4 meant "very comfortable," participants had an average comfort level of 3.4. This data is from the pre-club questionnaire in Appendix A. This high level of comfort is not surprising since participation in this science club is voluntary. In fact, an analysis of the data revealed that age and gender did not seem to be a factor influencing comfort level with science.

The post-club questionnaire again asked the participants about their comfort level with science. It simply confirmed that the participants have a very high level of comfort with science. In this case, the mean level for the group was 3.7 on a scale from 1 to 4. This data is from the post-club questionnaire in Appendix B. Again, neither age nor gender seemed to influence participants' comfort level with science.

Pre-club and post-club information on "help for succeeding in school"

In a pre-club survey, club participants were asked how they wanted the OMSI Science Club to help them succeed in school. They were provided with a checklist of seven options to choose from and were given the opportunity to provide other reasons. The seven options OMSI provided were:

1. Teach me about science,
2. Teach me to work well with others,
3. Show me how to use scientific tools and materials,
4. Show me ways to find answers to problems,
5. Show me how science can be fun,
6. Help build my confidence, and
7. Provide activities that challenge me to learn more.

The pre-club questionnaire results suggested that most participants expected OBGSC to help them succeed in school by teaching them about science (Table 8). That is, 75% of the students checked "teach me about science." It is interesting to note that a much smaller percentage of the participants expected the club to help them succeed in school by fostering the general areas of confidence and working with others.

The post-club questionnaire results suggested that the majority of the participants felt the club did teach them more about science. Importantly, the results also suggest that the club exceeded participants' expectations on each of the six other options (Table 8). That is, most of the participants said that the club helped them succeed in all seven ways. In fact, the item that received the most affirmative responses from the participants was "taught me to work well with others."

Table 8. Percentage of members that wanted the club to help them succeed in school in each way. Pre-club data is from the questionnaire in Appendix A, post-club data is from the questionnaire in Appendix B.

	Pre-club % of total (n=65)	Post-club % of total (n=68)
Teach (Taught) me about science	75	77
Show(ed) me how to use scientific tools and materials	63	77
Show(ed) me how science can be fun	60	77
Provide(d) activities that challenge me to learn more	57	81
Show(ed) me ways to find answers to problems	52	79
Teach (Taught) me to work well with others	43	84
Help(ed) build my confidence	35	75

Some of the respondents wrote in their own words how the club helped them succeed in school this past year. Their comments included:

To be a leader and role model.
How to treat people good.
How to share.
Homework.
Help us type.
Showing me new things.
To make a rocket.
Showed me how to solve math problems.
Helped me to do more math.

They helped me learn a lot more.
They taught me to concentrate on my work.
Having experiments.
Have fun.
To read more.
Help when you need help.
Teach me right and wrong.
Helped me with friendships, positive behavior, and maturity.

Participant review of club and activities

OMSI staff discussed the option of having OBGSC participants keep portfolios of their activities throughout the year, but because OBGSC operates on a drop-in basis it was not feasible to maintain individual participant portfolios. Instead, the instructor decided to maintain a club portfolio that contained pictures and samples from the different activities. This club portfolio was intended to serve as a visual aid during post-club evaluation so that participants could reflect on all the activities they had done throughout the year.

The post-club portfolio review occurred at three different focus groups. Ultimately, the portfolio itself was not particularly useful during the focus groups because the groups tended to say they liked just about everything in the portfolio. Regardless, the focus groups did yield other useful information about the activities and the club.

Individuals were chosen to participate in the focus group by the OBGSC instructor. His criteria for selection were that the participants had been active throughout the year and were able to articulate their opinions and sit through a meeting.

One focus group was held with eight 6- through 8-year-olds. A second focus group was held with eleven 8- through 10-year-olds. A third focus group was held with seven 11- through 14-year-olds. See Table 9 for further details on the focus group participants.

Table 9. Description of focus group participants. This data was collected during focus groups.

	Girls (#)	Boys (#)	Average number of years the focus group attendees had participated OBGSC
6- to 8-year-olds	5	3	1.8
8- to 10-year-olds	5	6	1.7
11- to 14-year-olds	1	6	1.9

All three focus groups were held in the OBGSC room at the Blazers Boys and Girls Club. The discussion was facilitated and recorded through notes by two OMSI evaluation staff members. The OBGSC instructor was not in the same room. After the focus groups, participants received thank you tokens from the OMSI Science Store or they received a Regal Theaters movie pass.

Attendance at the focus groups was high and participants were enthusiastic. The type of information collected varied from group to group as a result of each group's interest in different questions and their ability to concentrate.

The group of youngest participants (6–8 years old) was asked, "Why do you participate in OBGSC?" They mentioned computers, games, LEGOs, and flubber. In addition, they mentioned their friends in the club and the chance to build stuff. They also really liked the garden and the club's fish. This group said they were disappointed when they were excluded from activities targeting older kids, but they admitted that some activities, like "free building," were too difficult for them to do.

The group of 8- to 10-year-old participants was asked, "Which activities do you like the best?" They mentioned many activities including:

anything with computers,
flubber,
nutrition,
chromatography,
gardening,
gravel,
pH,
crystal creation,
motion commotion, and
rocketry.

During this discussion it was very clear that computers, flubber, rocketry, and gardening were very popular.

The group of oldest participants (11- to 14-year-olds) commented on how the Blazer Boys and Girls Club was organized differently this year than it was last year. Last year, the Blazer Boys and Girls Club was organized so that all members had to follow an hourly rotation schedule through the activities housed in the Blazer Boys and Girls Club. This rotation schedule was organized by age-group. This year, the Blazer Boys and Girls Club was organized so that members could do whatever activity they wanted to each hour. The activities housed in the club include an art room, a gymnasium, pool tables, and OBGSC.

This group of older children was asked, "Do you prefer how the Blazer Boys and Girls Club was organized this year or how it was organized last year?" These members said they preferred how it was this year—because they got to choose their activities. However, they clearly said the new system changed the atmosphere of the Blazer Boys and Girls Club because this year there was less structure. These members thought that this year it was a rowdier place and some individual children were not as well behaved. Interestingly, these members liked attending OBGSC in part because it was a respite from the rowdier environment of the larger club.

This same group of older children liked attending OBGSC for several other reasons. Not only did OBGSC provide some structure and a chance to engage in an activity, but these particular children were also part of an ongoing program offered by OBGSC. This program focuses on robotics and an adapted program called, Academy of Engineering (AOE). These children, and the instructor, consider the robotics and Academy of Engineering program to be somewhat elite within OBGSC.

This group of children is motivated by the challenges and rewards offered by the robotics and AOE program. Several were motivated to join because the instructor individually invited them. Many said that the chance to compete was a key attraction to this program. This group participated in a regional robotics competition and had great success. In 2002–2003 they received third place for table performance at the Regional First LEGO Robotics Tournament.

This group meets every day for 60 minutes and the consistent attendance allows the group to engage in more goal-oriented, participant-driven projects. That is, not only has this group been involved as a team in the robotics competition, but they also decided to make an animated movie using digital technologies. Several focus group members mentioned that making the movie was very fun.

All focus group participants were asked what they would change about OBGSC to make it better.

- The youngest participants suggested some food-based activities like making pizza or chocolate. One boy specifically suggested playing a math game like he played at his school—the details were not clear, but it seemed to be a full-body math activity. These children suggested more computer-based games.
- The 8- to 10-year-old group suggested having a science party (which would involve pizza and conducting experiments). They also expressed a great interest in earning "club bucks." In fact, they suggested having a point system to keep track of how many club bucks they had earned.
- The oldest participants suggested having some updated computer-based games and more field trips. One participant specifically asked that OBGSC purchase a second LEGO RCX unit to interact with the club's existing RCX unit.

All focus group participants were asked, "Will you attend the Science Club next year?" About half of the group members immediately said, yes. The majority of the other half said, "I don't know." Interestingly, most of the "I don't know's" were qualified with a comment that they may be moving. For instance, one boy thought he might be living with a different parent in a different town next year. The two boys that said they would not be coming back next year were foster children. They said their foster family thought the Blazer Boys and Girls Club environment was exposing the children to bad habits. This was not directed at OBGSC, but this information is important for OBGSC staff to know.

Participant satisfaction

Post-club information on satisfaction

At the end of the club year, participants were asked how satisfied they were with the club. The four satisfaction-related questions were based on OMSI's value-driven organizational plan. That is, these questions were stated to directly connect the participant experience to the mission of OMSI. The four questions were:

1) Has the club made you more curious about science?
2) Are you learning new things?
3) Are you having fun?
4) Would you recommend the club to others?

The survey required members to respond to questions by circling one of four provided options. The response options were: "No way," "Not really," "I think so," and "Yes." The majority of the participants responded, "I think so" or "Yes!" to each question (Table 9).

Table 9. Percentage of participants responding either "Yes" or "I think so" to each of the questions. The data is from the post-club questionnaire in Appendix B.

Question	Percentage of participants responding either "Yes" or "I think so" to each question. (N = 69)
1. Has the club made you more curious about science?	78
2. Are you learning new things?	95
3. Are you having fun?	96
4. Would you recommend the club to others?	96

Primary findings

1. Are boys and girls participating in the club?
   - OBGSC provided over 1882 participant-hours of program to at least 310 children.
   - 47% of these participant-hours were with girls, 53% were with boys.

2. Did the club influence participants' goals?
   - 75% of the participants gave some indication that the club influenced their plans for the future.

3. How comfortable are participants with science activities?
   - The group's mean level of comfort with science activities was about 3.5 on a scale from 1–4 (at a point between "a little comfortable" and "very comfortable").

4. How did the club help participants succeed in school?
   - 84% of the participants said the club helped them succeed in school by teaching them to work well with others.
   - 81% said the club helped them succeed in school by challenging them to learn more.

5. What did participants like about the club?
   - The issue of respect came up several times throughout the evaluation—it seems the participants associate the club with respect for oneself and for others.

6. What advice did the participants offer for improving the club?
   - Have a science party.

7. At the end of the club year, were participants satisfied with the program overall?
   - 78% gave some indication the club made them more curious about science.
   - 95% gave some indication they learned new things.
   - 96% gave some indication they had fun.
   - 96% gave some indication they would recommend the club to others.

Primary Recommendations

The evaluation results suggest that the 2002–2003 OMSI Boys and Girls Science Club had a successful year in many ways. Participants chose to attend at least 1882 hours of program. Results from evaluation suggest that the club helped participants succeed in school in more ways than expected and had a positive influence on many of the participants' plans for the future. The participants seem to perceive OBGSC as a place where individuals are respected and participants seem to have responded to that. That is, some participants implied OBGSC was a respite and many mentioned learning to respect others and themselves through OBGSC. The club can continue to build on these and other strengths.

As the club continues, some areas may need reconsideration:

- Club staff identified a problem attracting and retaining teens. The club is in a position to overcome that problem within two or three years. That is, OBGSC currently has a group of very enthusiastic and invested 11- to 14-year-olds in the robotics and AOE program. Staff should plan a teen program to offer these students as they enter high school. The program should be different than the robotics/AOE program, but allow the participants to build on the knowledge, skills, and contacts they are acquiring now. The program could offer the participants more responsibility and opportunity.

- Consider addressing some of the suggestions offered by the focus group participants.
    - Can staff improve the consistency of participation by offering more and better incentives to completing long-term projects? The participants have requested pizza, club bucks, and field trips as rewards for accomplishment.
    - Can staff provide more games in more ways—updated computer-based experiences, full-body experiences, food-related experiences?
    - Can the negative impression of science and engineering be improved with science parties?

- Evaluation activities can be adjusted. In the next year more attention can be given to the specific program challenges identified by staff: overcoming a negative impression of science, attracting and retaining teens, and developing a more consistent participant base. In addition, the program can look at the confidence, skills, and knowledge gained through some of the popular long-term programs like gardening, robotics, or computer activities. Information gained on what makes these programs successful can inform the development of future programs.

Appendix A

Pre-club questionnaire

Because OMSI's North Portland club operates on a drop-in basis, these data reflect only a *sample* of the club participants. These data were collected between November 23, 2002, and January 3, 2003.

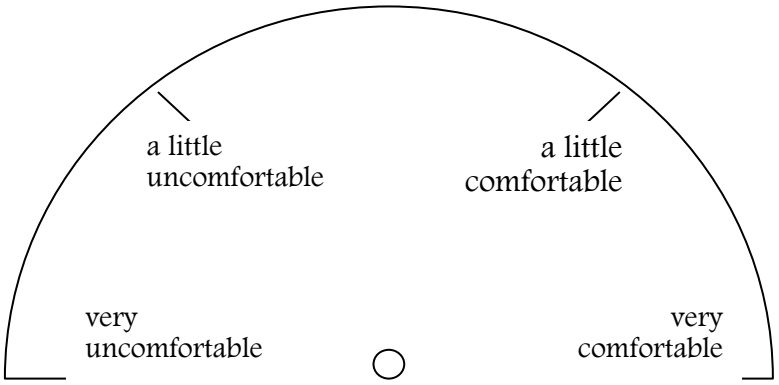
Surveys were completed by 25 girls and 39 boys (Table 3). They are primarily between the ages of 8 and 11, however the entire sample ranges from 8 to 16 years old.

Table 10. Number of pre-club survey respondents from the OBGSC.

Age (years)	Girls	Boys	Total
8	7	6	13
9	6	9	15
10	4	7	11
11	7	9	16
12	1	3	4
13		2	2
14		1	1
15		1	1
16		1	1
Total	**25**	**39**	**64**

Name: _____ Age: _____

a) When I do science activities I am… (draw a line on the meter below)



b) How do you want this club to help you succeed in school?

____ Teach me about science.

____ Teach me to work well with others.

____ Show me how to use scientific tools and materials.

____ Show me ways to find answers to problems.

____ Show me how science can be fun.

____ Help build my confidence.

____ Provide activities that challenge me to learn more.

____ Other ways: _____

____ Other ways: _____

____ Other ways: _____

What do you expect your life to be like when you are about 25 years old?

d) My job will be…

e) I will have finished this much school… (circle all that apply)

Elementary

Middle

High school

College

f) My family will include… (circle all that apply)

mother father brothers or sisters

husband or wife aunts or uncles

sons or daughters grandparents cousins

others_____

Appendix B

Post-club questionnaire

These data were collected between May 5 and May 30, 2003. Sixty-seven participants completed the survey. Thirty of these participants also completed the pre-club survey.

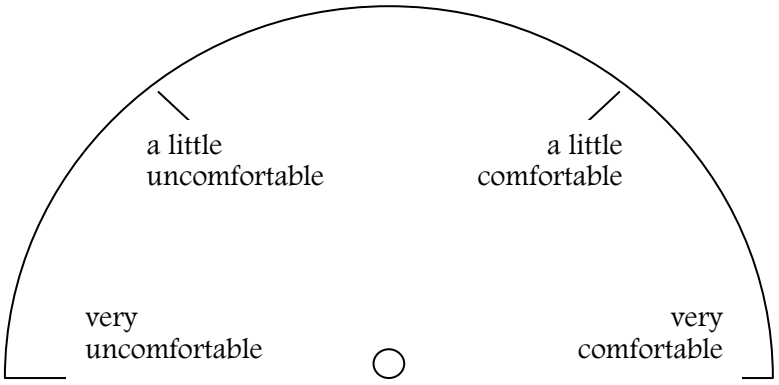
Table 11. Number of post-club survey respondents from OBGSC.

Age (years)	Girls	Boys	Total
6		2	2
7	3	1	4
8	9	9	18
9	4	11	15
10	3	4	7
11	4	8	12
12	1	1	2
13	1	2	3
14			
15		2	2
16			
17	1	1	2
Total	**26**	**41**	**67**

Name: _____ Age: _____

Club: _____ I am a (circle one) GIRL BOY

a) When I do science activities I am… (draw a line on the meter below)



b) In which ways, if any, did this club help you succeed in school this year?

____ Taught me about science.

____ Taught me to work well with others.

____ Showed me how to use scientific tools and materials.

____ Showed me ways to find answers to problems.

____ Showed me how science can be fun.

____ Helped build my confidence.

____ Provided activities that challenge me to learn more.

____ Other ways: _____

____ Other ways: _____

____ Other ways: _____

What do you expect your life to be like when you are about 25 years old?

d) My job will be…

e) I will have finished this much school… (circle all that apply)

Elementary

Middle

High school

College

f) My family will include… (circle all that apply)

parents brothers or sisters husband or wife aunts or uncles

cousins sons or daughters grandparents others_____

f) Has this club influenced your plans for the future? (circle one)

No way! Not really I think so YES!

If YES, in what ways?

g) Has this club made you more curious about science? (circle one)

No way! Not really I think so YES!

h) Did you learn new things? (circle one)

No way! Not really I think so YES!

i) Did you have fun? (circle one)

No way! Not really I think so YES!

j) Would you recommend this club to others? (circle one)

No way! Not really I think so YES!

Appendix C

Focus Group Notes

Focus Group 1: May 28, 2003, 4:00 p.m.

Participants
Eleven participants 8–10 years old. Five had been in the OMSI club for 1 year, four had been in the OMSI club for two years, and two had been in the OMSI club for three years.

Discussion notes
1a. Which activities did you like? (Flipping through binder.)

- Nutrition (2)
- Chromatography (2)
- Gardening (2)
- Gravel
- pH
- Journey to the Center of the Earth
- Crystal Creation
- Computers
- Motion Commotion
- There was 1 comment that Toy Science sucks.
- There was a general enthusiastic response to Rocketry when it came up in the binder.

1b. Which activities helped you learn?
When asked why these particular activities helped them learn, most described the actual activity in detail.

- Flubber (2)
- Scavenger hunt
- Rocketry, nutrition
- Journey to the Center of the Earth
- Crystals

2. Which activities are the most fun?

- Computer lessons (4)—can do anything, didn't know before, but learned
- Flubber (2)—bounce or squish, funny
- pH—how it changed the water from blue
- Rocketry—balloon and straw

3. Will you come back next year?

- 6 "Yes": fun, likes animals, field trip to OMSI, flubber, computer, AOE
- 4 "Don't know's": not sure of schedule, too much robotics and not old enough to do it
- 1 in bathroom—no response

4. What would you change to make this club better?

- More animals and more time with animals (4)
- More LEGOs
- No staff so they can run around
- Clean for club bucks (3)
- More people
- More activities
- Air conditioner (it was broken that day)
- More parties—science party (make pizza and do experiments)
- No robotics people hogging computer
- Point sheets (for club bucks)

Focus Group 2: May 29, 2003, 4:00 p.m.

Participants
Seven participants 11–14 years old. They had each been in the OMSI Club for 1.5–3 years.

Discussion notes
1. Why did you choose to be in AOE?

- They used to be told where to go in the Blazers club, but this year they were allowed to choose for the first time. Six of the seven participants preferred being able to choose where to go.
- About four participants were asked specifically by Schuyler (OBGSC Science Instructor) to join AOE, and two others joined because their friends were in it. They like being an elite, special group.
- The club is calm and offers a quiet place to do homework and get away from the chaos of the rest of the building.
- Other things they like about the OMSI club: building stuff, computers, games, LEGOs, competing.

2a. What do you like/is the most fun about the club?

- 4—computers/computer games
- 3—competition
- 2—AOE
- 1—field trip to OMSI
- 1—when Schuyler dropped the TV
- 1—making a movie

2b. What do you dislike the most about the club?

- Rude or mean kids in the rest of the Blazers club, sometimes they come in the OMSI club and are mean.
- There were a couple of vague comments about not liking several other OMSI club participants.
- Some thought all the police with guns walking around outside the club were creepy.

- There were a lot of comments about how smelly it was when the fish in the tank died, but that is no longer a problem.

3. What activity did you do that you were surprised you learned something from?

- Cephalopods
- AOE
- Wedges
- Isosceles theory
- Journey to the Center of the Earth
- Build Hawaii
- Computer
- Building instead of just reading about it
- Challenging
- Schuyler helps and supports

4. Will you come back next year?

- 2—No, family reasons
- 4—Yes, Mars is theme next year, wants to learn more, compete, be with the club people again
- 1—Don't Know

5. What would you change to make this club better?

- Better computer games
- Upgrade computers
- Another LEGO RCX unit to interact with the first one
- More field trips

Focus Group 3: May 30, 2003, 4:00 p.m.

Participants

Eight participants 6–8 years old. Three had been in the OMSI club for 1.5 years, five had been in the OMSI club for two years.

Discussion notes

1. Why do you come to the OMSI club?

- Fun things (4)
- AOE (3)
- Play computer games (2)
- Other people in the club (2)
- Computers (2)
- Play games
- LEGO movie camera
- Robotics
- LEGOs
- See Schuyler

- Prizes
- Club bucks
- Flubber
- Build stuff
- Challenging—weight wrapped around a string and try to lift up

2a. Which two activities are the most fun?

There was a lot of enthusiastic hand waving on all of the activities from the binder.

- Computers (4)
- AOE (2)
- Flubber (2)
- Clay—make stuff
- Garden
- Fish

2b. Which two activities are the least fun?

- Older kids getting to do stuff we can't, like robotics (2)
- Getting kicked out (by other groups)
- Cleaning up
- Free building—hard to do, detailed

3. What would the room be like to be better?

- Chemistry lab—make chocolate and other stuff (3)
- Only we can be in the room all the time and use the computers (2)
- Fewer kids, less crowded (2)
- Computer stuff (2)
- Play monopoly
- Pizza
- Fun
- Learn about AOE and robotics
- Play a math game I played in school and get a prize
- More stuff to do
- More learning about science
- More science
- Have a rollercoaster

4. Will you come back next year?

- 1—No, moving away
- 3—Yes, fun, field trips, relative works there
- 3—Don't Know, not sure will be in town