IDEA COOPERATIVE:

SELECT FINDINGS FROM THE DESIGN TEAM EXIT SURVEY

April, 2011

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Overview

All youth in the Kitty Andersen Youth Science Center (KAYSC) are invited to complete a web-based exit survey upon leaving their current team. The survey is the same across all KAYSC teams, with the addition of some questions specific to a team's experience and outcomes. This report includes select data from the Design Team's exit survey and is meant to compliment the summative evaluation conducted by the Institute for Learning Innovation[1]. Findings from questions not included in this report will be analyzed in a future KAYSC study.

Throughout the course of the project, a total of 90 youth participated in the Design Team and 61 of these youth consented to participate in the evaluation activities lead by the Science Museum of Minnesota's Department of Evaluation and Research in Learning. Of those 61 youth, 29 completed an exit survey for a 48% completion rate. Throughout the report, the "n" value is the number of youth out of 29 that responded to that particular question.

Results & Discussion

Overall Design Team Experience

Youth were asked what their favorite thing was about their Design Team experience. As illustrated in Table 1, youth enjoyed a variety of aspects of the program. Youth talked about meeting new people and forming relationships with their fellow crewmembers. One youth even talked about the Design Team as a *"second family."* Close to a third talked about the projects their team worked on. *"One of my favorite things about being on the Design Team was being able to create things that I thought I'd never ever create in my whole life! I enjoyed the Pico-Crickets and electronic bling because they dealt with electronics and I have an interest in creating things that are kind of with wire/electricity."* A quarter talked about the new knowledge and skills they learned from their experience in the Design Team. Most of these youth talked about learning new things in general. However, one youth specifically talked about learning different types of software such as the jitterbugs and 3D printer, stating that they were his/her favorites because *"I get to learn more about technology for the future ahead, especially when I am thinking about learning more about the field of technology. Specifically, I want to learn more about different types of software and how to use them. I thought that the Design Team would help me on a road to college. So far, it is going well."* Additional things youth liked about the Design Team included working together with their teammates, going on field trips, and leading outreach activities with kids. Only one youth said he/she did not have a favorite thing about the Design Team.

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[1] Fraser, J., Maust-Mohl, M., Morrison, R., & Kessler, C. (2011). *IDEA Cooperative program: Summative evaluation*. Edgewater, MD: Institute for Learning Innovation.

Table 1: Youths' favorite thing about the Design Team (n = 29)

Theme	Percent of Youth
Meeting new people/relationships	41%
Doing projects	31%
Learning new knowledge and skills	24%
Working as a team	17%
Going on field trips	14%
Outreaches	7%
Other	24%
Didn't have a favorite	3%

Note. Some youth mentioned more than one favorite thing.

Youth were also asked about their least favorite aspects of the Design Team. As illustrated in Table 2, youth's least favorite aspects of the program varied. Youth mentioned a dislike of certain program activities, issues with the meeting time, a lack of cohesion with fellow crewmembers, and issues related to the food available in the KAYSC. Since youths' responses varied within each theme, their quotes are included in Appendix A. Seven of the youth said they didn't have a least favorite aspect of the Crew.

Table 2: Youth's Least Favorite Aspects of the Design Team (n=29)

Theme	Percent of Youth
Aspects of certain program activities	31%
Issues with meeting time	17%
Lack of cohesion with crewmembers	10%
Food	7%
Other	10%
Nothing	24%

Note. Some youth mentioned more than one least favorite thing.

Youth were asked what they learned from their experience on the Design Team. As illustrated in Table 3, youth mentioned a variety of skills and knowledge. Teamwork skills were most frequently mentioned, with half the youth stating that they learned how to work in a group with others. *"I learned how to work in a team and build and test out our thoughts that we had for our project. I learned the importance of teamwork."* Youth also talked about engineering-related skills and knowledge; specifically learning how to build things, how to use engineering-related software, engineering and design concepts, and how to use engineering-related tools. One youth said, *"I learned how to build a prototype of a project then build the actual size."* Another youth talked about the computer skills he/she gained. *"I have never learned what the different types of (computer) programs were in the computer and have never touched them until I was in Design Team. I have never liked computer programming, but now I do."* Additional skills youth mentioned included communication skills, leadership skills, and social skills.

Table 3: What youth learned from their experience on the Design Team (n =28)

Theme	Percent of Youth
Teamwork skills	50%
How to build things	39%
How to use new software	36%
Communication skills	25%
Engineering and design concepts	25%
How to use a variety of engineering-related tools	11%
Leadership skills	7%
Social skills	7%
Other	14%
Other life skills	11%

Note. Many youth mentioned more than one thing they learned.

Youth were asked if what they learned and experienced on the Design Team helped them in school in any way. Of the 27 youth that responded to the question, the over two thirds (70%) said their Design Team experience helped them in school. These 19 youth were then asked to explain how the IDEA Coop helped them in school. Seventeen youth responded and their responses are listed below. Youth most frequently talked about gaining communication skills, increasing their teamwork skills, and enhancing their understanding of STEM subject matter.

- _It helped me take opinions from others, as well as listening to new ideas._

- _It helped me in school because I learned how to listen to teachers in subjects that I don't like._

- _It help me to communicate with other student and work with other student._

- _It gave me the confidence to ask other students that I don't know for help and get to know them as a friend._

- _I talked more._

- _Well, it tells me that when you teamwork [it] is more easier to find the solution, and more quicker. So when I teamwork in classes, my group gets stuffs and things done first._

- _Working with partners in group activities and projects._

- _It helped me because when ever I need to work in a team at school I have past experience from Design Team._

- _Well in certain projects I needed to be a leader and Design Team has helped me do that._

- _It helped by helping me understand more about science._

- *We learned about the flow of electricity.*

- *I understand shapes better and lines for geometry.*

- *Some simple machines I thought of helped with equations and stuff.*

- *Talking about the 3-D printer, and knowing what it was, it helped me a lot in science when the teacher was talking about what it was. Knowing how to use a hammer, I was also able to apply it to my after-school program because we were nailing down nails onto woods.*

- *Projects, tests.*

- *Time management.*

- *Help me to have fun, work.*

Youth were asked why they were leaving the Design Team. A majority of the youth (61%) were leaving because the IDEA Cooperative program was ending. Over a quarter (29%) were leaving because they aged out of the Design Team, since it was only for middle school youth. Two youth (7%) cited scheduling conflicts as their reason for leaving. Only one youth gave another reason for leaving the Design Team saying, "*The main reason was because my dad didn't want me to be part of this program anymore.*"

Engineering Course Enrollment

Design Team youth attended one of five schools; Battle Creek Middle School, Hazel Park Middle School Academy, Washington Technology Secondary School, Crosswinds Arts and Science School, and Highland Park Junior High School. Three of the middle schools (Battle Creek, Hazel Park, and Washington) offered a class called Gateway to Engineering. Youth were asked if they had heard about the class or other engineering-related classes, if they had taken the classes, if they planned to take the classes, and if their experience in the IDEA Coop influenced their decision to enroll in an engineering-related class. See Appendix B for results broken down by school and individual classes.

Design Team youth have high enrollment in engineering and engineering-related courses while in high school. As illustrated in Table 4, most of the youth have taken or plan to take at least one engineering course. Of these 21 students, over half (57%) said the IDEA Coop influenced their decision to take at least one engineering related course.

Table 4: Youths' enrollment in engineering courses and the influence of IDEA Coop on their enrollment

	Battle Creek (n=11)	Hazel Park (n=9)	Washington (n=4)	Crosswinds (n=1)	Highland Park (n=1)
Took or plan to take at least one engineering or engineering-course	8	9	3	1	0
IDEA Coop influenced decision to take at least one engineering related course	5	4	2	1	0

Youth were asked to explain how IDEA Coop influenced their decision to take an engineering-related course. Listed below are youths' responses.

- *Seeing all the engineering things in there that amazed me and encouraged me to keep going on with my engineering dream.*

- *Even if I wasn't in the Design Team, I would've decided to take this class, but the Design Team made it funner to learn more about engineering.*

- *I wasn't really in to this but Design Team showed me how fun it could be.*

- *Well, it makes building fun and enjoyable.*

- *[I] like to build.*

- *I like to make stuff now.*

- *Building things.*

- *I liked working with new people and figuring out how to work with new tools.*

- *Because to use electric or natural oil to work you have to thing a lot. I like it…Design team activity is kind of challenge to me and I very like challenge activity.*

- *I want to work in wood shop.*

- *The IDEA Coop has led and gave me a heads up about what engineering and volunteering is. IDEA coop has been an influence and has helped guide me.*

- *This program influenced me because it exposed me to ideas, opportunities and experiences that inspired me and made me think about the world.*

Post-Secondary Education
All but one of the Design Team youth plan to go on to post-secondary school after they graduate from high school. As illustrated in Table 5, most youth plan to go college, with close to two thirds (63%) hoping to go on to graduate or professional school. A limitation of this question, however, is that it is unknown if these middle school youth understand what it means to go on to graduate or professional school.

Table 5: Youths' educational plans after high school (n=29)

	Percent of Youth
I'm not sure if I'll finish high school.	0%
I plan to finish high school but don't think I'll go to college.	3%
I'd like to go to a trade school or vocational school after high school.	0%
I'd like to go to college after high school.	30%
I'd like to go to college and then go on to graduate or professional school.	63%

Youth leaving the Design Team are interested in studying a variety of areas during their post-secondary education, including STEM topics[2]. Over three quarters of the youth (71%) said they are interested in possibly studying in a STEM–related area. As illustrated in Table 6, youth mentioned a variety of areas of study. Only 12% were unsure what they would like to study. Some youth mentioned both a STEM and non-STEM area of study, as reflected below.

Table 6: Youths' potential post-secondary area of study (n= 17)

Area of Study	Percent of Youth
Science in general	24%
Medicine (doctor, nurse, health)	18%
Design	18%
Computer science or engineering	12%
Other STEM career (architect, astronomy)	12%
Non-STEM career	24%
Not sure	12%

Note. Some youth mentioned more than one area of study.

Youth were also asked if their involvement in the Design Team had an effect on their future school decisions. Of the 17 youth, three of the crewmembers said their experience had an impact. See their responses below.

- *Yes, I want to go to college now.*

- *It influenced me by giving me ideas about engineering and designing.*

- *Yes because I've been exposed to more science and engineering*

Career Plans
Youth talked specifically about the job or career they expect to have at the age of 30[3]. As illustrated in Table 7, over half of the youth mentioned at least one STEM related career. Only five youth were unsure about what he/she would like to be doing at age 30. When looking at Table 8, of the 16 youth that mentioned STEM careers, over half (9 youth) said a field of engineering or design.

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[2] This question was added to the exit survey later in the program so only 17 out of the 29 youth responded to this question.

[3] This question was taken from: U.S. Department of Education, National Center for Education Statistics. (2002). *Education Longitudinal Study of 2002: Student questionnaire. Base year 10th grade.* Washington, DC: Author.

Table 7: Job or career youth plan to have when they are 30 (n=29)

Type of Career	Percent of Youth
STEM related career	55%
Non-STEM related career	31%
Not sure	17%

Note. Some youth mentioned both a STEM and non-STEM career.

The youth were asked if their IDEA Coop experience influenced their future job or career plans. Of the 16 youth who mentioned a STEM career, half talked about how the IDEA Coop did or did not influence their plans (see Table 8). Of these nine youth, two indicated that their involvement with the Design Team had a positive influence on their future job decisions and one said his involvement did not directly impact his future job decisions, but did give him "*tools to make my future better.*"

Table 8: Youths' future STEM careers plans and how the Design Team influenced those plans (n=16)

STEM related career at 30	How Design Team affected future job decisions
Plan to be working as an electrical engineer and close to retirement.	Yes, because the projects we've done here are things I like and could be pursued as a career.
Being a Structural Engineer	No response
Jobs that I'm considering on would be an agricultural engineer, electrical engineer, chef, or a contractor.	No response
An Engineer. I really don't know what kind yet, but I'm sure I'm going into that field.	No response
Engineer or scientist or doctor.	No response
Electrical Engineer	No response
As a Designer.	Yes, it helped me visualize what I want to do in the future. And helped me prepare for my life time job.
I would like to work at 3m as a designer	No response
Computer Engineering	Nope (Design Team didn't influence)
Something with computer science.	None. (Design Team didn't influence)
Computer Programming	No response
In thirty years I don't know where I'll be, but I do plan to be working in the science or medical fields.	Design team hasn't affected my future plans but it gave me tools to make my future better.
I want to be animal rescue or a vet.	No it has not. (Design Team didn't influence)
Architect	None. (Design Team didn't influence)
Landscape Architect	No response
Job I plan on having in 30 years are in the KAYSC.	No response

Appendix A

Youth's Least Favorite Aspects of the Design Team (*n* = 29)

Certain program activities

- My least favorite thing about being in Design Team is the hard projects we had to do, because it took a lot of work but at the end it was all worth it.

- I didn't like making some things on the computer sites because it was confusing and I didn't have a lot of help.

- My least favorite thing in Design Team is making things in sketch up because I don't know how to make 3D things.

- The chain reaction because it was too hard and I didn't like my partner.

- My least favorite thing about Design Team was when we were doing some projects, like when we created some project/ideas for the ice shanty, because it just wasn't that interesting.

- Making kites, b/c they kept on breaking.

- My least favorite thing was the planning of the events and then we didn't get much done that we thought we planed on doing.

- My least favorite thing was planning and not being able to actually use the tools.

- The surveys because they took so long to do and i didnt like the reflections we had to do until we stared doing them on Prezi.

Issues with meeting time

- That the hours are pretty short so we did not have much time to do our project.

- Overall I liked every thing but if had to choose any thing I would pick not being able to come every day the more time I could spend here the better not coming here is bad.

- Trying to get to Design Team, sometimes its snowing and hard get here.

- Coming to after school.

- Some time I cannot come on time.

Lack of cohesion with crewmembers

- Not enough team co-op.

- Sometimes, I just wished that the interview of getting into the Design Team was just a bit harder because sometimes the students aren't acting maturely. The lack of communication

caused us to not get far into Design Team plans. So I was disappointed in that. It was really hard for the students to learn.

- Sharing and stuff.

Food

- The food because they remind me of school lunch.

- My least favorite thing being in the Design Team was the food because it didn't have enough time to eat.

Other

- My least favorite thing about being on Design Team was that at times, some of the meetings were really really boring and it made me not want to come back, but I did anyways.

- Traveling.

- My least favorite thing was how the program manager would get mad at me constantly.

Nothing

- There was nothing that I really didn't like about Design Team.

- I don't think I had a least favorite.

- I actually don't have a least favorite thing about Design Team.

- Well I like everything.

- There is nothing that I don't like in the Design Team.

- Didn't have any.

- I don't have anything that I dislike in the Design Team.

Appendix B: Engineering Course Enrollment by School

Table 9: Battle Creek Middle School engineering classes (n=11)

	Gateway to Engineering	Other Engineering-related Classes
Heard of course	1/11	-
Took course	0/11	6/11[a]
Plan to take course	3/11	
IDEA Coop influenced or kind of influenced enrollment	1/3	5/6

a. For other courses, students were asked in one question if they had taken or plan to take any other courses. For this reason the data is grouped together.
Note. The numerator is the number of youth who positively responded to the question. The denominator is the number of youth the question applied to.

The "other engineering-related courses" students are taking or plan to take are listed below.

- _Small engines._
- _In high school - Intro to Engineering- Project Lead the Way, 3M._
- _I'm going to take an engineering and design class._
- _I am planning to take computer engineering._
- _I'm not sure._

Table 10: Hazel Park Middle School Academy engineering classes (n=9)

	Gateway to Engineering	Other Engineering-related Classes
Heard of course	2/7[a]	-
Took course	0/7	7/9[b]
Plan to take course	5/7	
IDEA Coop influenced or kind of influenced enrollment	3/5	3/7

a. Two youth did not answer the questions about Gateway to Engineering.
b. For other courses, students were asked in one question if they had taken or plan to take any other courses. For this reason the data is grouped together.
Note. The numerator is the number of youth who positively responded to the question. The denominator is the number of youth the question applied to.

The "other engineering-related courses" students are taking or plan to take are listed below.

- *Computer programming and design.*
- *I don't know but I know that I'll join an engineering class sometime.*
- *IB class.*
- *Auto technology.*
- *Wood shop.*
- *Wood shop or design and modeling.*

Table 11 : Washington Technology Secondary School engineering classes (n=4)

	Gateway to Engineering	Other Engineering-related Classes
Heard of course	1/4	-
Took course	0/4	3/4[a]
Plan to take course	3/4	
IDEA Coop influenced or kind of influenced enrollment	2/3	1/3

a. For other courses, students were asked in one question if they had taken or plan to take any other courses. For this reason the data is grouped together.
Note. The numerator is the number of youth who positively responded to the question. The denominator is the number of youth the question applied to.

The "other engineering-related courses" students are taking or plan to take are listed below.

- *I actually haven't heard of the other engineering classes so in the near future if there is an opportunity for me i will certainly join.*
- *Mechanics*
- *Robotics*

Table 12: Crosswinds Arts and Science School engineering classes (n=1)

	Other Engineering-related Classes
Took or plan to take course	1/1[a]
IDEA Coop influenced or kind of influenced enrollment	1/1

a. The student didn't indicate the name of the other engineering-related class(es).
Note. The numerator is the number of youth who positively responded to the question. The denominator is the number of youth the question applied to.

Table 13: Highland Park Junior High School engineering classes (n=1)

	Other Engineering-related Classes
Took or plan to take course	0/1
IDEA Coop influenced or kind of influenced enrollment	-

Note. The numerator is the number of youth who positively responded to the question. The denominator is the number of youth the question applied to.

Design Team Exit Survey

We want to hear about your experience on the Design Team.
Let us know what you liked, didn't like, and how we can improve the program for other youth. Your responses will remain anonymous, meaning I will be the only one who will know what you said. Any information I share with IDEA Cooperative staff will not have your name associated with it. For this reason, you are encouraged to answer the questions honestly. If something didn't work well or you didn't like something about the program, we want to hear about it. This information is just as important as what you liked about the program.
Thank you for taking the time to complete this survey! - Amy Grack Nelson, IDEA Cooperative Evaluator

1. What was your favorite thing about being in the Design Team? Why was it your favorite?

2. What was your least favorite thing about being in the Design Team? Why was it your least favorite?

3. What specifically did you learn from your work on the Design Team?

4. What new skills and abilities have you developed in your time with the Design Team?

5. Did what you learned and experienced on the Design Team help you in school?
☐Yes
☐No

6. How did it help you in school? Give examples if you have any.

7. What advice would you give to a new Design Team member?

8. What can the IDEA Cooperative staff do to improve the experience teens have on the Design Team?

9. What was the main reason you decided to leave the Design Team?

10. Did you have anything else you would like to add about your Design Team experience, the St. Paul College site, or the KAYSC in general?

11. What middle school are you or were you in?
☐Battle Creak
☐Hazel Park
☐Washington
☐Crosswinds
☐Highland Park Junior High School

12. Your school offers Gateway to Engineering. Have you heard of this class?
☐Yes
☐No

13. Have you taken this class?
☐Yes
☐No

14. Do you plan to take this class in the future?
☐Yes
☐No

15. Did your experience in the IDEA Coop influence your decision to take this class?
☐Yes
☐No
☐Kind of

16. How did it help to influence your decision?

17. Have you or are you planning on taking any other engineering classes at your school?
☐Yes
☐No

18. What is the name of the other engineering related class or classes you have taken or are planning on taking?

19. Did your experience in the IDEA Coop influence your decision to take this class or classes?
☐Yes
☐No
☐Kind of

20. How did your experience in the IDEA Coop help to influence your decision?

21. Have you or are you planning on taking any engineering classes at your school?
☐Yes
☐No

22. What is the name of the engineering related class or classes you have taken or are planning on taking?

23. Did your experience in the IDEA Coop influence your decision to take this class or classes?
☐Yes
☐No
☐Kind of

24. How did your experience in the IDEA Coop help to influence your decision?

25. Which of these best describes your school plans?
☐I'm not sure if I'll finish high school.
☐I plan to finish high school but don't think I'll go to college.
☐I'd like to go to a trade school or vocational school after high school.
☐I'd like to go to college after high school.
☐I'd like to go to college and then go on after college to graduate or professional school.
Other (please explain)

26. If you plan to attend post-secondary school (college, vocational, or trade school), where do you plan to go?

27. What are you interested in studying there?

28. Has involvement in Design Team affected your future school decisions? (If yes, how has it influenced your decisions?)

29. Thinking about your future, what job or occupation do you plan on having in 30 years?

30. Has involvement in Design Team affected your future job plans? (If yes, how has it influenced your plans?)

Future Contact Information
We would like to keep in contact with you after you leave the KAYSC to invite you to future events and let you know about other opportunities. The information below will be reported to KAYSC staff separate from the rest of your survey answers. This means that everything you said in this survey will remain anonymous. Amy, the evaluator for IDEA Cooperative, will be the only one to see all of your responses. Anything she shares with IDEA Cooperative staff will not have your name associated with it.

31. Your name:
32. What is your permanent address?
Street Address
City State Zip

33. How can we keep in contact with you? Phone:
Email:

34. How would you like to stay involved in the KAYSC? Check all that apply.
☐Receive the KAYSC newsletter
☐Be invited to Youth-O-Ramas and End of the Year Celebrations
☐Participate in discussions for new teams or grants
☐Participate with other alumni to talk with KAYSC youth about your experience and life after the KAYSC
☐Other