



OREGON MATHEMATICS, ENGINEERING, SCIENCE ACHIEVEMENT

ETIC Pre-Engineering and Applied Science Digital Design Lab Evaluation Report

August 2013

About Education Northwest

Education Northwest was founded more than 45 years ago as a nonprofit corporation to build capacity in schools, families, and communities through applied research and development.

This report summarizes the evaluation findings from Oregon Mathematics, Engineering, and Science Achievement's (MESA) Digital Design Lab (D2L) workshops, a series of three intensive courses—the D2L Mini, D2L Core, and D2L Advanced—in computer science and imbedded computing, where high school students plan, program, and create digitally interactive electronics projects. These workshops were held at MESA's headquarters at Portland State University's (PSU) College of Engineering and Computer Science.

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Executive Summary

Oregon Mathematics, Engineering, and Science Achievement's (MESA) Digital Design Lab (D2L) is a series of three intensive courses—the D2L Mini, D2L Core, and D2L Advanced—in computer science and imbedded computing, where high school students plan, program, and create digitally interactive electronics projects. The D2L series was offered between March 2012 and May 2013.

Based on students' perceptions of what they learned and how their skills had developed, MESA achieved its goals during the D2L workshops. Students (N=70) reported in surveys and focus groups that their interest, knowledge, and skills in computer science had increased after participating in a workshop. Parents (N=34) affirmed their students' positive experience in the D2L and their interest in pursuing higher education.

Goal: Increase student interest in pursuing additional computer science-related activities.

MESA met its goal of increasing student interest in computer science-related activities during the D2L. Most participants were interested in attending other MESA or D2L workshops, and all, or nearly all, participants agreed that:

- Engineers and computer scientists help people (100%)
- They would choose to take an elective class in engineering (97%)

Finally, many participants reported that they could see themselves as engineers or computer scientists (84%), and could handle its more difficult challenges (83%).

Goal: Improve student computational and innovation skills related to: thinking creatively, working in a team based environment, analyzing and solving problems, and communicating with others.

MESA also met its project goal of improving student skills related to thinking creatively, working in a team-based environment, and analyzing and solving problems. Most D2L participants agreed that they felt more comfortable:

- Working in teams (91%)
- Problem-solving with others (96%)
- Thinking creatively about engineering or science problems (93%)

Goal: Boost student technology literacy and development skills.

MESA's goal of increasing skills and understanding of computer technology was met during the D2L. Many students indicated that they had increased their skills in:

- Creating a circuit (87%)
- Use of Arduino programming language (85%)

Students also reported that their understanding of engineering and computer science concepts had grown. Many students felt that they had increased their:

- Understanding of circuits (79%)
- Understanding of the purpose of programming (68%)
- Understanding of how programming relates to hardware (75%)

Goal: Increase student knowledge of computer science-related majors and careers and provide a clear pathway for each student to obtain computer science education

MESA met its goal of increasing knowledge about of computer science-related majors and careers. All students showed very positive attitudes toward their education, and reported that they:

- Planned to attend college (100%)
- Felt their parents expected them to do well in school (100%)

However, nearly half of students (43%) disagreed that they had learned, during the D2L Core, about applying for college and the process of getting a degree; showing students clear pathways to an education in computer science may have been D2L's biggest challenge.

Introduction

This report summarizes the evaluation findings from the Oregon Mathematics, Engineering, Science Achievement (MESA) Digital Design Lab (D2L) workshops. MESA is an academic program for middle and high school students to learn about science, technology, engineering, and mathematics (STEM).

The D2L is a series of three intensive courses—the D2L Mini, D2L Core, and D2L Advanced—in computer science and imbedded computing, where high school students plan, program, and create digitally interactive electronics projects.

D2L Mini. A total of 21 students attended one of two single-day introductory D2L Mini workshops. Session I was held on Saturday March 24, 2012 and was attended by 11 students and Session II was held on Saturday April 14, 2012 with 10 students. Surveys were completed by all students at the end of each workshop.

D2L Core. Two D2L Core workshops were attended by a total of 36 students, some of whom attended the D2L Mini. Session I occurred daily between August 7 and August 10, 2012, and was attended by 21 students. Session II took place on most Saturdays between December 1, 2012 and February 2, 2013, with 15 students participating. All students completed surveys and participated in focus groups at the end of each workshop. Surveys were also administered to 34 parents or family members.

D2L Advanced. 15 students attended the D2L Advanced workshop, all of whom attended the D2L Core. It took place on Saturdays between April 20 and May 18, 2013. All students participated in focus groups at the end of each workshop, and 13 students completed surveys.

This report examines the findings from three sources—student surveys, student focus groups, and parent evaluation forms—to determine the degree to which the D2L workshop series achieved MESA’s four goals and forecasted outcomes. The four goals are:

1. Increase student interest in pursuing additional computer science-related activities
2. Improve student computational and innovation skills related to: thinking creatively, working in a team based environment, analyzing and solving problems, and communicating with others
3. Boost student technology literacy and development skills
4. Increase student knowledge of computer science-related majors and careers and provide a clear pathway for each student to obtain computer science education

Student surveys were administered online. The surveys were completed by 70 students who were asked to report on their growth retrospectively. That is, they responded to questions on the last day of the workshop, rating their skills and understanding both before and after attending the workshop. The retrospective pretest method has some advantages over the traditional pre-test and post-test survey method as it allows it to be “visibly clear where the workshop has succeeded, where materials were redundant, or where work remains to be done” with decreased risk of participants rating themselves too high at the start, without room for improvement (Lamb & Tschillard, 2005). However, since these are self-reported data, with no comparison group, we cannot know for sure that the growth reported was authentic.

The survey also collected demographic information, provided feedback to MESA to improve future offerings, and collected contact information from D2L Mini and Core participants who were interested in attending future workshops. The combined results of the survey, showing the responses to all common questions asked of D2L Mini, Core, and Advanced students, are provided in appendix A.

To analyze survey data we used descriptive statistics to describe the findings, and significance tests (Chi-Square, Student’s T-test or ANOVA) to identify differences between workshops and demographic groups, and to determine significant growth in student-reported skills and understanding. We did not find any significant differences in responses between boys and girls, or between different racial/ethnic groups. We did find some differences between workshops, which are discussed in the text.

Student focus groups were conducted with all D2L Core and Advanced students in groups of 12 or fewer. In focus groups, we asked students to discuss what they had learned about computer science, as well as working in a group, thinking creatively, and problem solving. We also asked them to talk about how the D2L affected their interest in engineering and computer science. Finally, we asked students to reflect on how girls and boys differ in their work in the workshop and in their attitudes towards engineering and computer science. We performed a content analysis on the focus group data, identifying recurring themes. The focus group protocols are reproduced in appendix B.

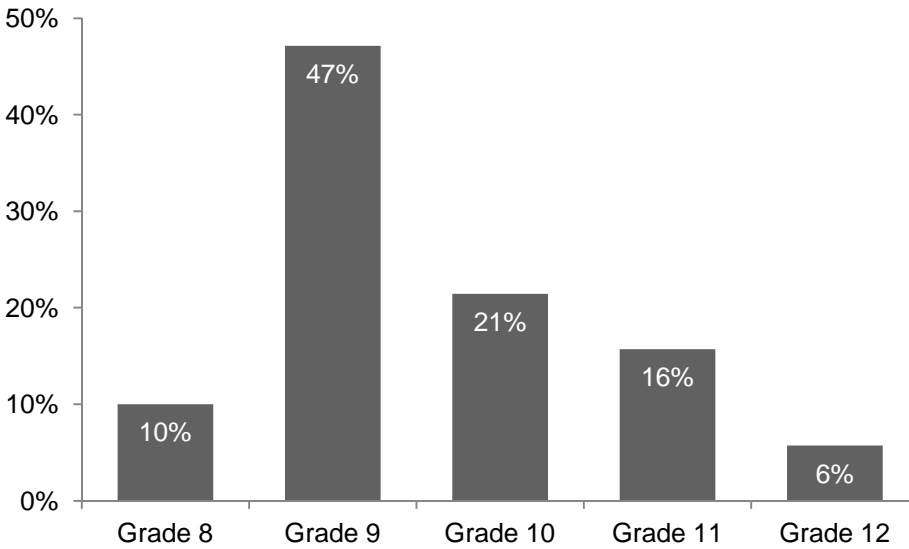
Parent evaluation surveys were administered to 34 individuals during the D2L Core parent events, on August 10, 2012 and February 2, 2013. Family members reflected on how they supported their student’s education, offered their opinions about their student’s experience in the D2L Core, and shared their outlook on their student’s educational future. We use descriptive statistics to describe the findings. Survey results are provided in appendix C.

This report is structured around the four goals of the D2L. We begin with a discussion of participant demographics, and then discuss how data from surveys and focus groups address each of these goals.

Participant Demographics

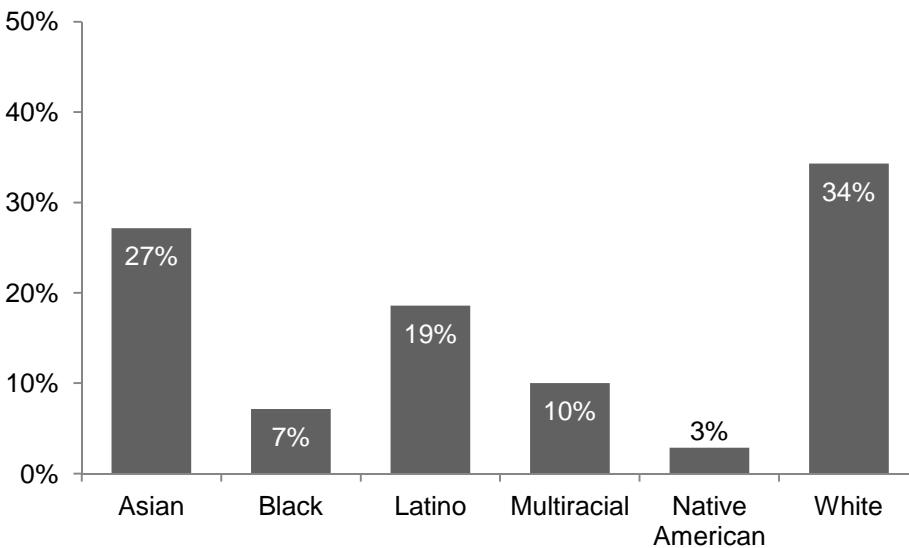
A total of 70 participants from the D2L series completed student surveys. Of these, three-quarters (76%) were male and one-quarter (24%) were female. Almost half of the participants (47%) were in the ninth grade (Figure 1).

Figure 1. Most students were in the ninth grade (N=70)



There were slightly more White students (34%) than Asian (27%) or Hispanic students (19%). Multiracial (10%), Black (7%), and Native American (3%) students were small minorities in the group (Figure 2).

Figure 2. Most students were Whites, Asian, or Latino (N=70)



Goals and Outcomes

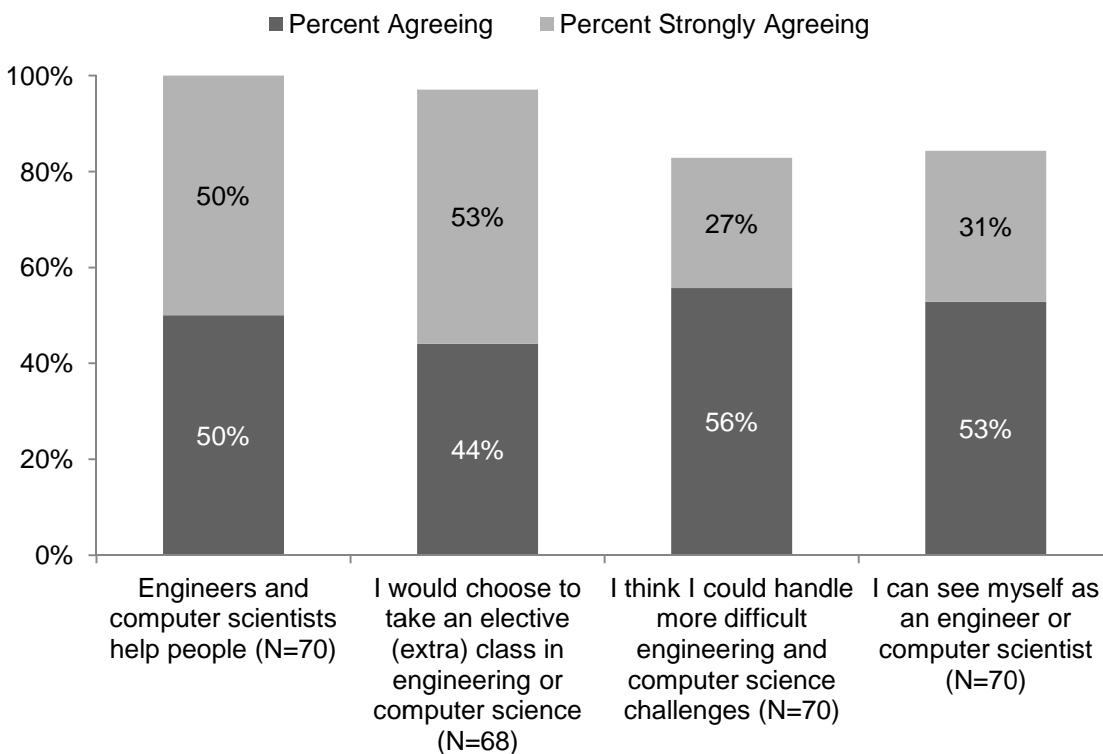
In this section, we examine self-reported data from three sources—student surveys, student focus groups, and parent evaluations—to determine if the D2L series achieved MESA’s four goals and forecasted outcomes.

Did participating in the D2L series increase student interest in pursuing additional computer science-related activities?

MESA met its goal of increasing student interest in computer science-related activities during the D2L series. Students reported that their interest in pursuing computer science activities, including other MESA workshops, grew after attending a D2L workshop.

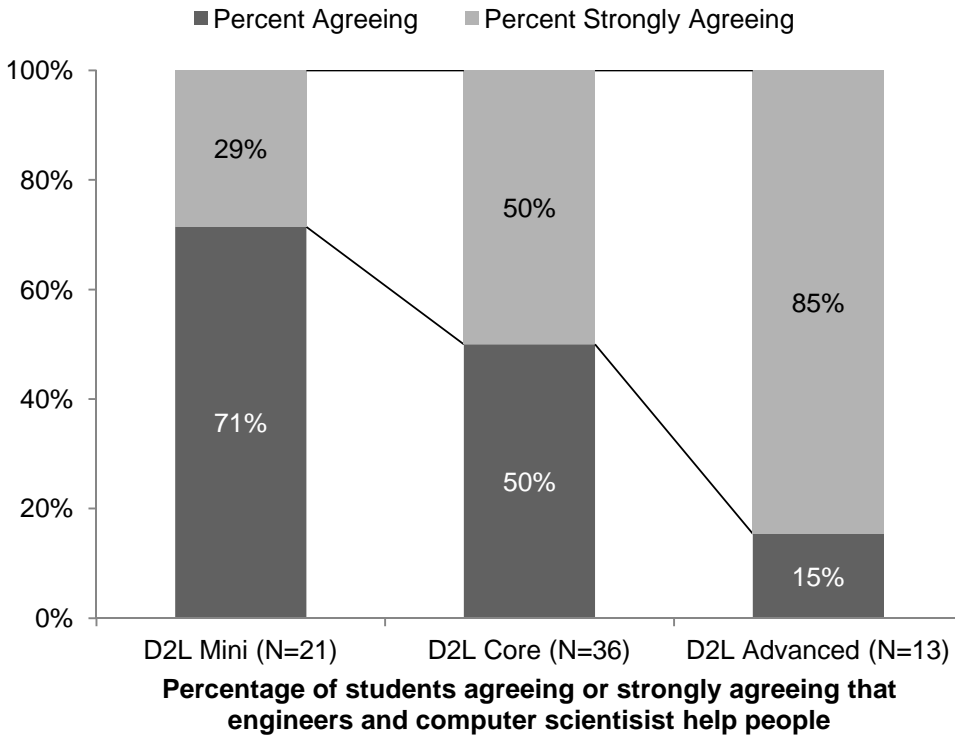
Students showed very positive attitudes about engineering and computer science. All students agreed that engineers and computer scientists help people (100%), and, as shown in figure 3, nearly all agreed that they would choose to take an elective class in engineering (97%). Most also agreed that they could handle difficult engineering challenges (83%) and could see themselves as an engineer (84%).

Figure 3. Students had very positive attitudes about engineering and computer science



While all students agreed that engineers and computer scientists help people, a significantly higher percentage of students in the D2L Advanced “strongly agreed” than students in the D2L Mini or D2L Core.¹

Figure 4. Students showed increasingly positive attitudes towards computer science as they progressed through the D2L series



In focus groups, students universally agreed that their experience at MESA with the D2L strengthened their desire to pursue additional computer science and engineering activities in school, and eventually university.

Interest in Other MESA Events

Across the D2L series, an increasing percentage of students wanted to attend other MESA workshops or events.

- Many (68%) D2L Mini participants wanted to attend the D2L Core
- Many (78%) D2L Core participants wanted to attend the D2L Advanced
- Most (92%) D2L Advanced participants wanted to attend other MESA workshops

In addition, all parents (100%) strongly agreed that they would enroll their student in another MESA event.

¹ $\chi^2(2, N = 70) = 10.088, p < .006$

Regardless of their interest in attending other MESA workshops, students said that they might not be able to attend future workshops for three main reasons, as shown in table 1.

Table 1. Students may not be able to attend future MESA events for three reasons

	D2L Mini	D2L Core	D2L Advanced
PSU is too far from home	19%	8%	8%
I don't have transportation	14%	6%	15%
I need or want to work	14%	6%	23%

In an open-ended survey question, students indicated that school events could interfere with future participation. One student wrote about the timing of the D2L Advanced:

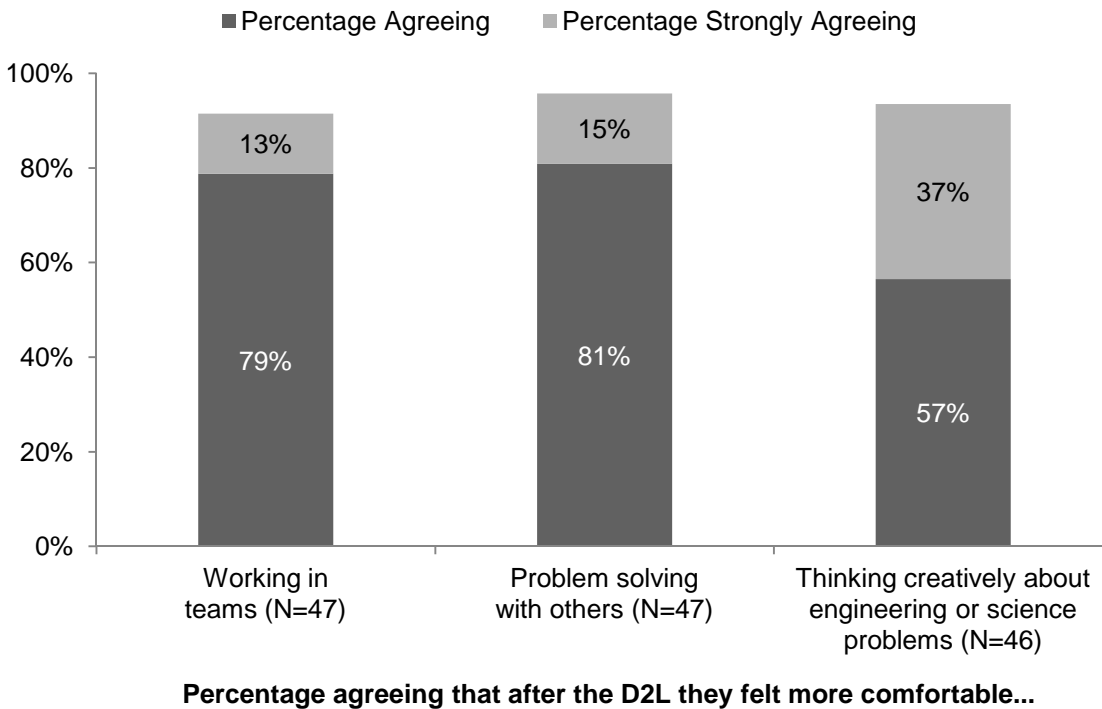
The timing of D2L Advanced was wrong. It happened right around AP testing, so I could not give my 100% to D2L. If it was at the beginning of summer, then I could have done more... (D2L Advanced Student)

Did participating in the D2L series improve student skills related to thinking creatively, working in a team based environment, analyzing and solving problems, and communicating with others?

MESA met its goal of improving student skills related to thinking creatively, working in a team-based environment, and analyzing and solving problems. Most students were more comfortable working in a team (91%), problem solving with others (96%), and thinking creatively about engineering or science problems (93%) after completing the D2L Core and Advanced workshops (figure 5).²

² These questions were not asked in the D2L Mini survey.

Figure 5. Students were more comfortable working on teams, problem solving with others, and thinking creatively about problems after the D2L workshops



In focus groups, students were very enthusiastic about working in teams during the D2L. One student said that “working with partners was the best thing about the class,” and another noted that “it made it much more fun and productive.” Others agreed that working in teams made problem solving easier and made them more productive. A few students said that by working in teams they were able to concentrate on programming or hardware skills.

Did participating in the D2L boost student technology literacy and development skills?

MESA met its goal of improving student’s technological skills and understanding of concepts. Students reported significant gains in their ability to create a circuit³ and program in the Arduino language⁴ after the D2L workshops. They also reported significant gains in their understanding of circuitry,⁵ how programming relates to hardware,⁶ and the purpose of programming.⁷ Similarly, in focus groups, students discussed how much they had learned about computers and engineering during the workshop.

³ $t(67)=13.79, p = .000$

⁴ $t(46)=11.09, p = .000$

⁵ $t(67)=12.31, p = .000$

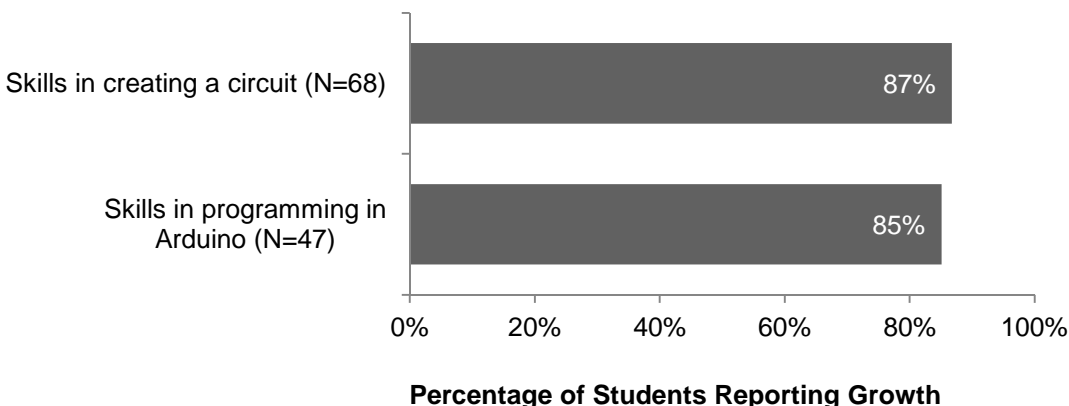
⁶ $t(67)=10.09, p = .000$

⁷ $t(67)=11.06, p = .000$

Growth in Skills

Most participants reported that their ability to create a circuit (87%) and program in Arduino (85%)⁸ had increased after attending a D2L session (figure 6).

Figure 6. Most students felt their skills grew during the D2L



Each of the workshops concentrated on different skills. During the D2L Core, teachers worked to increase circuitry skills. Consequently, a significantly higher percentage of students from the D2L Core (95%) reported growth in creating a circuit than from D2L Mini (79%) or Advanced (78%).⁹

In focus groups, students in all of the D2L workshops agreed that they had learned “amazing” amounts about circuits and programming.

I learned—we learned—so much about computers. I came in knowing only a little, and now I feel like I really understand more. This has been great, and the teachers have taught us lots. The students too; we have learned from each other. (D2L Core Student)

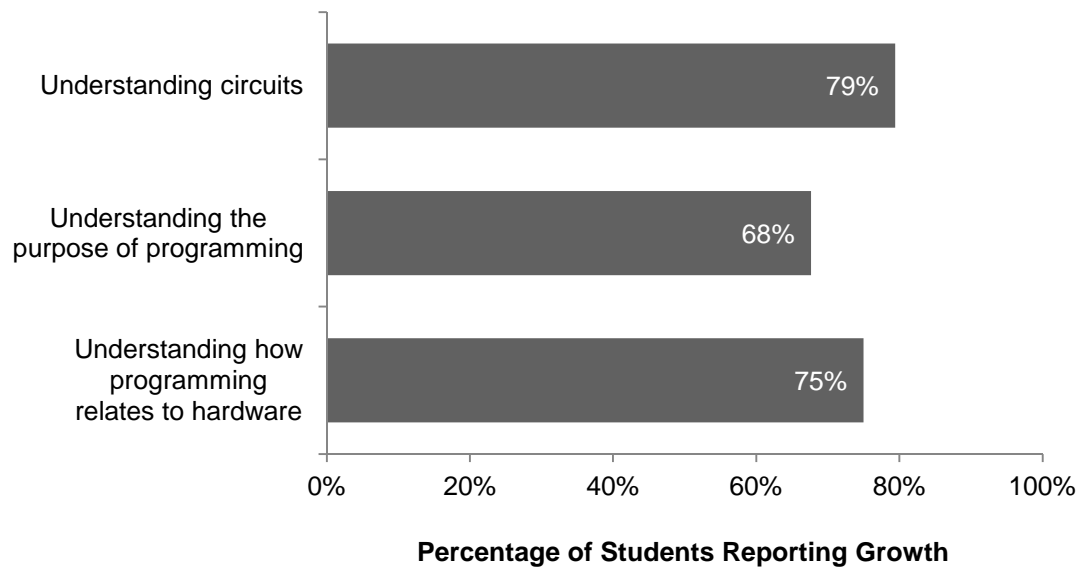
Growth in Understanding

Around three-quarters of students reported that their understanding of circuits (79%) and of how programming relates to hardware (75%) grew after attending a D2L workshop. Slightly fewer students (68%) thought that their understanding of the purpose of programming had grown (figure 7).

⁸ This question was not asked in August 2012 D2L Core survey, as Arduino was not taught during the first D2L session

⁹ $F(2, 65) = 4.87, p = .011$

Figure 7. Most students felt their understanding of engineering concepts grew during the D2L



Students in the D2L Core also reported the highest growth (83%) in their understanding of the purpose of programming, followed by the D2L Mini (68%) and then the D2L Advanced (62%).¹⁰ D2L Core students also reported the highest growth of understanding in how programming relates to hardware (83%) compared to the D2L Mini (69%) or Advanced (61%).¹¹

Similar to their reported gain in computer skills, students in focus groups responded enthusiastically about how much more they understood about computers after the D2L during focus groups.

Did participating in the D2L Series increase student knowledge of computer science-related majors and careers and provide a clear pathway for each student to obtain computer science education?

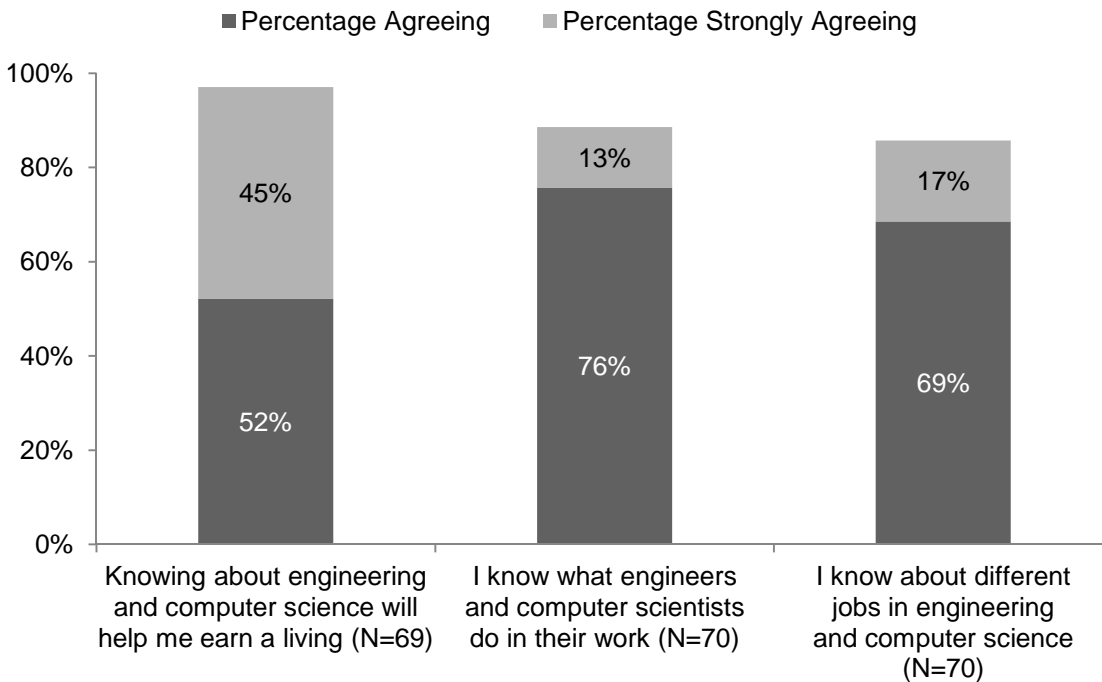
Student interest in, and knowledge of, engineering and computer science-related majors and careers grew after attending the D2L. In focus groups and surveys, students enthusiastically reported growth in their interest in computer science careers and majoring. This suggests that MESA met its goal of increasing knowledge about computer science-related majors and careers. However, fewer students reported that they had learned about applying for college and the process of getting a degree during the MESA workshop.

Nearly all students (97%) agreed that knowing about engineering would help them earn a living. Most (89%) knew what engineers do in their work and about different jobs in engineering and computer science (86%).

¹⁰ $F(2, 65) = 4.20, p = .019$

¹¹ $F(2, 65) = 3.17, p = .049$

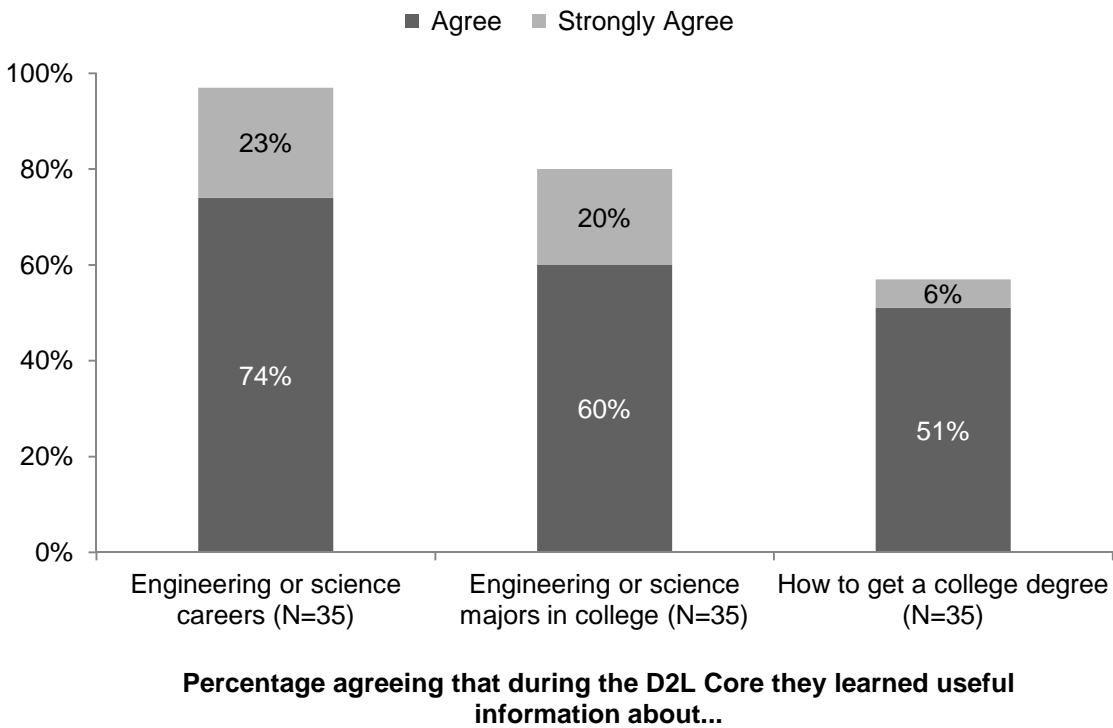
Figure 8. Most students knew about jobs in engineering



The D2L Core workshops concentrated more than either the Mini or the Advanced on providing students with useful information about computer science-related educational pathways and careers. Consequently, a series of questions about this topic was asked only of the D2L Core students.

Nearly all of the D2L Core students agreed that they had learned useful information about careers in engineering and science (97%), and most agreed that they had learned useful information about majoring in engineering and science (80%). However, fewer (57%) reported that they had learned about applying for college and the process of getting a degree, suggesting that the workshop was challenged in providing such information to students (figure 9).

Figure 9. Most students learned about careers and majoring in engineering and science during the D2L

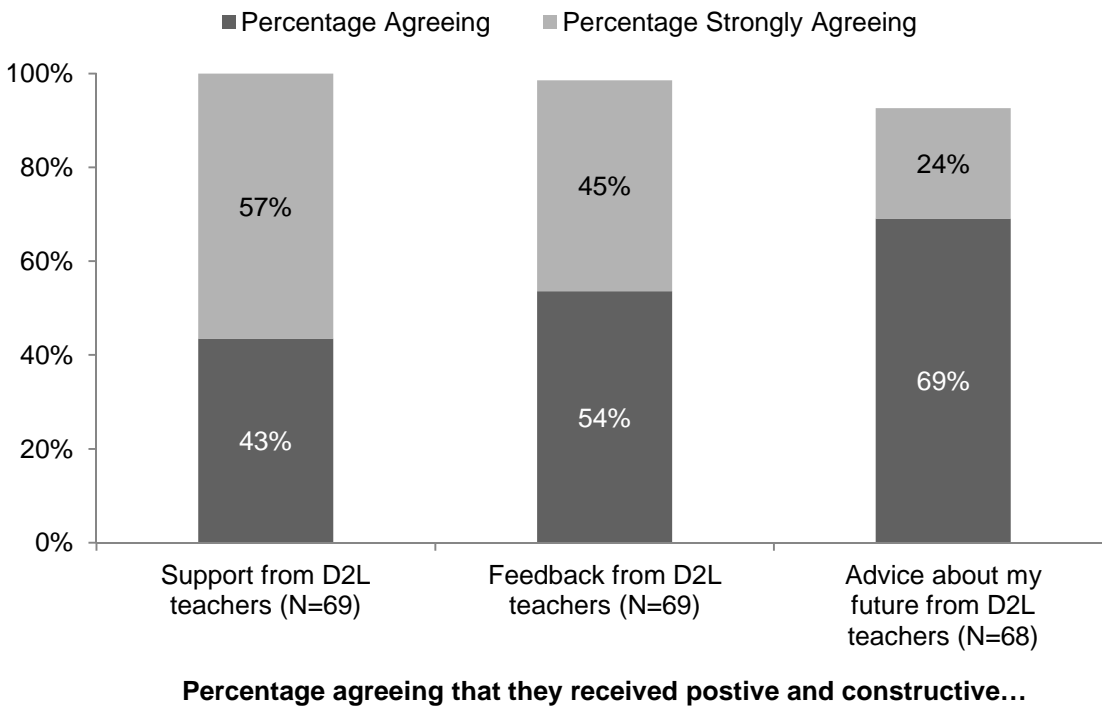


Similarly, in the focus groups, very few students reported that they had learned about applying for college and the process of getting a degree. This suggests that students needed more information from the workshop about the pathways leading to further computer science education.

Support from D2L Teachers

All or nearly all students agreed that they received positive and constructive support (100%) and feedback (99%) from the D2L teachers (figure 10). Most students also agreed that they received positive and constructive advice about their future from D2L teachers (93%).

Figure 10. Students agreed that the D2L teacher's support was positive and constructive



In focus groups, all students showed enthusiasm for the support they received from the D2L teachers, noting that they were “there when you needed them,” and that they understood the student problems. One student said, “the teachers were good at listening to us.”

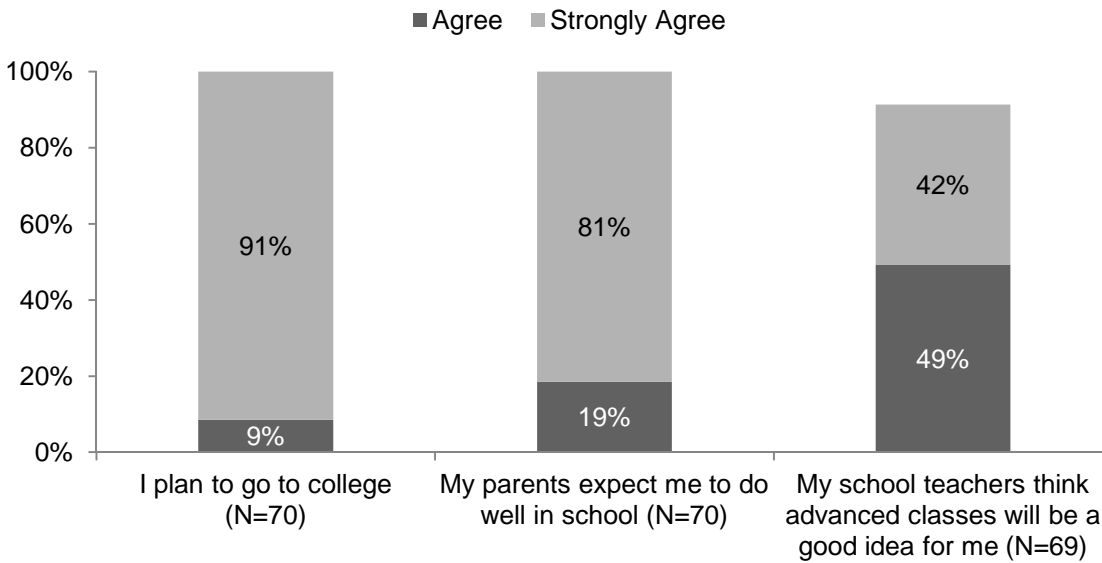
The teachers were great, they would work with us and help solve our problems, but they never did our work; they would just help us think of ways of figuring out what was wrong. (Student)

A few students noted that they occasionally had to wait for help while the teachers were working with other students. However, they felt that this had positive effects, as they had to turn to one another for help.

Student Attitudes Toward Education

Students showed very positive attitudes toward their education. All participants planned to attend college (100%), and felt that their parents expected them to do well in school (100%). Most participants (91%) agreed that their teachers supported their work in advanced classes (figure 11).

Figure 11. Students had very positive attitudes towards their education



Nearly all parents strongly agreed (97%) that they often talk with their child about the importance of completing high school and pursuing education after high school, and nearly all (96%) reported that they think their child will achieve a Bachelor's (38%) or graduate degree (58%). One parent wrote that not attending college “isn’t an option.”

Conclusion

MESA staff members established four goals for the D2L ETIC grant. Collected data suggest students believed that these four goals were met during the D2L Series.

Goal: Increase student interest in pursuing additional computer science-related activities

Data suggest that MESA met its goal of increasing student interest in computer science-related activities during the D2L. Most participants were interested in attending other MESA or D2L workshops. In addition all participants showed positive attitudes about engineers and computer scientists. All, or nearly all, participants agreed that:

- Engineers and computer scientists help people. (100%)
- They would choose to take an elective class in engineering. (97%)

Finally, many participants reported that they could see themselves as engineers or computer scientists (84%), and could handle its more difficult challenges (83%).

Goal: Improve student computational and innovation skills related to: thinking creatively, working in a team based environment, analyzing and solving problems, and communicating with others.

Responses suggest that MESA also met its project goal of improving student skills related to thinking creatively, working in a team-based environment, and analyzing and solving problems. Most D2L participants agreed that they felt more comfortable:

- Working in teams (91%)
- Problem-solving with others (96%)
- Thinking creatively about engineering or science problems (93%)

Goal: Boost student technology literacy and development skills.

Data indicate that student skills and understanding of computer technology grew during the D2L. Many students indicated that they had increased their skills in:

- Creating a circuit (87%)
- Use of Arduino programming language (85%)

Most students also reported that their understanding of engineering and computer science concepts had grown:

- Understanding circuits (79%)
- Understanding the purpose of programming (68%)
- Understanding how programming relates to hardware (75%)

Goal: Increase student knowledge of computer science-related majors and careers and provide a clear pathway for each student to obtain computer science education

Surveys and focus group data suggest that MESA met its goal of increasing knowledge about of computer science-related majors and careers, but that providing clear pathways to obtaining an education in computer science may continue to be a challenge. All students showed very positive attitudes toward their education, and reported that they:

- Planned to attend college (100%)
- Felt their parents expected them to do well in school (100%)

Most also said that their teachers supported their work in advanced classes (91%). However, nearly half of students (43%) disagreed that they had learned about applying for college and the process of getting a degree during the D2L Core. Future workshops might build in time to inform participants more about the steps that will lead them to advanced computer science education.

References

Lamb, T.A., & Tschillard, R. (2005). *Evaluating learning in professional development workshops: Using the retrospective pretest*. Alexandria, VA: National Staff Development Council (NSDC). Accessed http://www.mdecgateway.org/olms/data/resource/6794/Evaluating%20Learning%20in%20PD%20Workshops_OST-PD.pdf

Appendix A: Student Survey Results

MESA D2L COMBINED STUDENT SURVEY (N=70)

D2L Mini Session I, March 2012 (16%, n=11)
D2L Mini Session II, April 2012 (14%, n=10)
D2L Core Session I, August 2012 (30%, n=21)
D2L Core Session II, February 2013 (21%, n=15)
D2L Advanced (19%, n=13)

Introduction

The purpose of this survey is to discuss your experience in the D2L Core and provide MESA with information to improve future classes.

All of your responses are completely confidential. Your comments and ratings will never be used with your name, and will never be used to judge or evaluate you.

What are grade are you in? (N=70)

(10%) 8th grade
(47%) 9th grade
(21%) 10th grade
(16%) 11th grade
(6%) 12th grade

What is your gender? (N=70)

(24%) Female
(76%) Male

What is your ethnicity? Please check all that apply. (N=70)

(3%) Alaskan Native/Native American
(27%) Asian
(7%) Black/African American
(19%) Latino/Hispanic
(0%) Pacific Islander
(34%) White/Caucasian
(10%) Multiracial or other

Skills and Understanding

Rate your skills before the D2L and now:

	BEFORE D2L				NOW			
	No skills	A little skilled	Pretty skilled	Very skilled	No skills	A little skilled	Pretty skilled	Very skilled
Creating a circuit (N=68)	35%	40%	21%	4%	1%	6%	60%	32%
Writing a computer program in Arduino (N=47)*	60%	26%	13%	2%	2%	30%	55%	13%

* D2L Core Session I Students were not asked this question

Rate your understanding before the D2L and now:

	BEFORE D2L				NOW			
	No understanding	A little understanding	Good understanding	Excellent understanding	No understanding	A little understanding	Good understanding	Excellent understanding
Understanding circuits (N=68)	16%	47%	32%	4%	0%	10%	47%	43%
Understanding the purpose of programming (N=68)	10%	44%	35%	10%	0%	6%	57%	37%
Understanding how programming relates to hardware (N=68)	28%	41%	24%	7%	0%	13%	57%	29%

Attitudes and Feedback

Do you agree with the following statements?

	Strongly Disagree	Disagree	Agree	Strongly Agree
Engineers and computer scientists help people. (N=70)	0%	0%	50%	50%
Knowing about engineering and computer science will help me earn a living. (N=69)	0%	3%	52%	45%
I would choose to take an elective (extra) class in engineering or computer science. (N=68)	0%	3%	44%	53%
I think I could handle more difficult engineering and computer science challenges. (N=70)	3%	14%	56%	27%
I can see myself as an engineer or computer scientist. (N=70)	1%	14%	53%	31%
I know what engineers and computer scientists do in their work. (N=70)	1%	10%	76%	13%
I know about different jobs in engineering and computer science. (N=70)	1%	13%	69%	17%
My school teachers think advanced classes will be a good idea for me. (N=69)	1%	7%	49%	42%
I plan to go to college. (N=70)	0%	0%	9%	91%
My parents expect me to do well in school. (N=70)	0%	0%	19%	81%

During the D2L I received positive and constructive...

	Strongly Disagree	Disagree	Agree	Strongly Agree
Support from D2L teachers (N=69)	0%	3%	52%	45%
Feedback from D2L teachers (N=70)	1%	10%	76%	13%
Advice about my future from D2L teachers (N=70)	1%	13%	69%	17%

During the D2L I learned useful information about...

	Strongly Disagree	Disagree	Agree	Strongly Agree
How to get a college degree (N=35)*	6%	37%	51%	6%
Engineering or science majors in college (N=35)*	0%	20%	60%	20%
Engineering or science careers (N=35)*	0%	3%	74%	23%

* These questions were asked only of D2L Core Students

After the D2L I feel more comfortable...

	Strongly Disagree	Disagree	Agree	Strongly Agree
Working in teams. (N=47)*	0%	9%	79%	13%
Problem solving with others. (N=47)*	0%	4%	81%	15%
Thinking creatively about engineering or science problems. (N=46)*	0%	7%	57%	37%

* These questions were not asked of D2L Mini Students

What are the main reasons you may not attending a future MESA workshop? Please check all that apply. (N=70)

- (1%) I am not interested in computer science
- (6%) Computer science is too difficult
- (11%) I need or want to work
- (10%) I have family responsibilities, like watching a younger sibling
- (13%) PSU is too far from home
- (9%) I don't have transportation.

Appendix B: Student Focus Group Protocol

MESA D2L CORE STUDENT FOCUS GROUP PROTOCOL

1. My first question is pretty simple, what have you learned so far? Give me a list of the top things you have learned.

Answers will probably be about computer science or engineering. What about other things?

2. What have you learned about working in a group? What have you learned about working with others on complex problems?
 - a. What has been hard about working with others?
 - b. What have you gained from working with others?
3. What have you learned about thinking creatively and problem solving?
 - a. What sort of lessons have you learned which you could apply to other areas?
4. How has this workshop affected your interest in engineering and computer science?
How about majoring in engineering and computer science?
 - a. What are the road blocks you face to attend college?
 - b. How about majoring in engineering and computer science? What might prevent you from choosing to major in engineering and computer science?
5. What differences, if any, have you seen between how girls and boys work in the workshop?

MESA D2L ADVANCED STUDENT FOCUS GROUP PROTOCOL

1. My first question is pretty simple, what have you learned so far? Give me a list of the top things you have learned.
2. How is this different from the other MESA D2L course or courses you took?
 - a. What sort of skills are you learning now that you didn't learn before?
 - b. What other things are you working on now that you didn't need in other D2L courses?
3. What have you learned about thinking creatively and problem solving?
 - a. What sort of lessons have you learned which you could apply to other areas?
4. What have you learned about college from this workshop?
 - a. How about majoring in engineering and computer science?
5. How does it feel to be on a college campus?

Appendix C: D2L Core Parent Survey Results

PARENT EVALUATION SURVEY N=34, English 91%, Spanish 9%



Thank you for taking time to complete this survey. The goal of MESA is to promote awareness about career and college opportunities available to students and the steps necessary to pursue education and jobs in science, technology, engineering, and mathematics. Information from you will help us make sure the program meets the needs of your children.

Please answer as many questions as you can. All of the information collected in these surveys will remain confidential and will only be used to improve the program. If you have any questions about MESA or this survey, please contact one of the MESA staff or the MESA Advisor at your student's school. Thank You!

Grade level of your student this coming year: (N=32)

- (9%) 8th grade
- (53%) 9th grade
- (34%) 10th grade
- (0%) 11th grade
- (3%) 12th grade

Relationship to student: (N=33)

- (97%) Parent
- (0%) Grandparent
- (0%) Guardian
- (0%) Friend
- (3%) Brother or Sister
- (0%) Neighbor

Select all the ways you help your student with school (N=34)

- (88%) Make sure there is a quiet place to study
- (50%) Check homework daily
- (79%) Review and sign progress reports
- (82%) Review and sign report cards
- (88%) Monitor my child's attendance at school
- (97%) Attend parent conferences when scheduled
- (15%) Belong to my school's parent association

(62%) Volunteer time to the school when possible

(77%) Keep in contact with teachers

(6%) Other

Other responses:

Every other way possible

Try to help with tools he needs for his education

Talking About Higher Education (N=33)

	Strongly Disagree	Disagree	Agree	Strongly Agree
I often talk with my child about the importance of completing high school.	0%	0%	3%	97%
I often talk with my child about pursuing education after high school.	0%	0%	3%	97%
I think my child could afford to attend a public 4-year college using financial aid, scholarships, and my family's resources.	0%	6%	30%	64%

What are the main reasons your student would not continue his/her education after high school? (N=34)

(3%) He/she has a disability (physical, learning or ADD).

(0%) He/she wants to join the military service.

(3%) He/she needs / wants to work.

(0%) He/she wants to start a family.

(0%) His/her grades are not good enough.

(3%) College is too far from home.

(24%) It costs too much / cannot afford it.

(3%) He/she is not interested.

(9%) Other

Other responses:

She plans on going to college.

She will go to college.

This isn't an option.

	Very unlikely	Unlikely	Likely	Very likely
Based on what you have seen today, how likely are you to enroll your student in another MESA event? (N=27)	0%	0%	0%	100%

Why or why not?

- Because it's very good learning opportunity.
- Earn more knowledge about technology.
- Es muy bueno que aprender mas.
- Es una oportunidad para progresar personalmente e intelectualmente.
- Excellent exposure and experience for future.
- Excellent Program - Very Beneficial!!
- Great timing in mid-summer - student is enthusiastic about program. You make it quite easy.
- He enjoyed it and learned.
- He enjoyed taking the class.
- He really enjoys, and it is good for his future.
- It seems to be enjoyable and introduces her to new topics in technology of today.
- It's a very interesting program with a lot to learn from.
- Very interesting; great learning opportunity.
- What a Great Program - Most interesting.

What is the highest level of education that you think your student will achieve? (N=24)

- (0%) My child will graduate from high school but go no further
- (4%) Certificate Program (Vocational/Technical School)
- (0%) Associates Degree (2-year college or community college)
- (38%) Bachelor's Degree (4-year college or university)
- (58%) Graduate Degree (e.g., law, medicine)
- (0%) I Don't Know

What is the highest level of education that you achieved? (N=16)

- (13%) High school
- (13%) Certificate Program (Vocational/Technical School)
- (19%) Associates Degree (2-year college or community college)
- (56%) Bachelor's Degree (4-year college or university)
- (0%) Graduate Degree (e.g., law, medicine)