

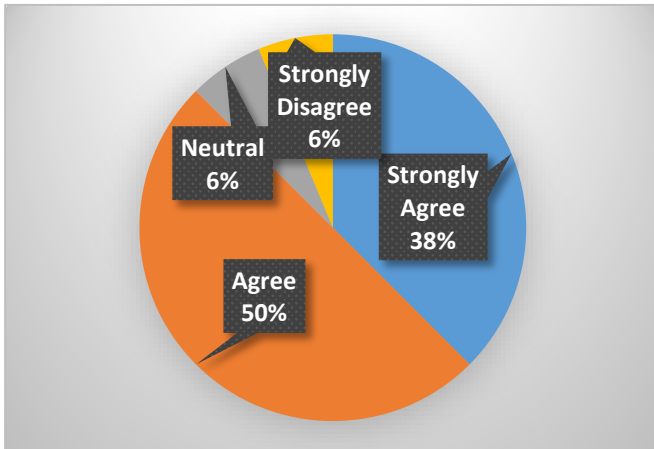
SAN DIEGO MESA COLLEGE  
Innovation Research Lab

Fall 2023 IRL Intro To Arduino Electronics Engineering Workshops  
(16 responses received out of 31 participants)

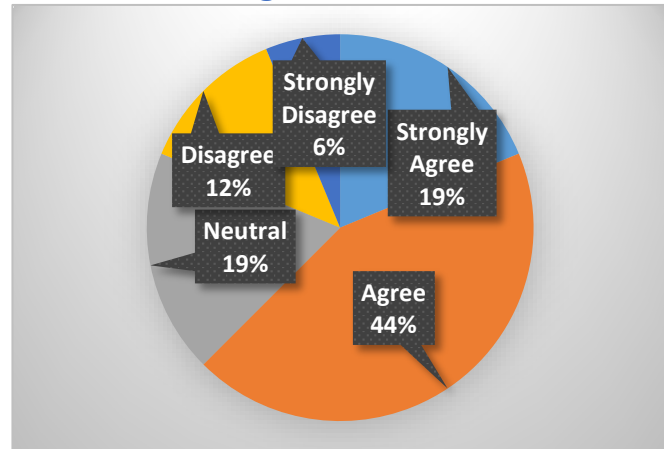
**Student Baseline Experiences:**

The workshops provided opportunities for me to learn in the following areas:

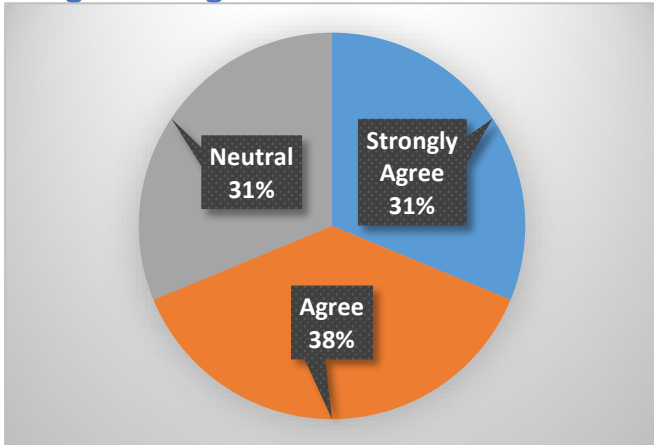
**Arduino Hardware**



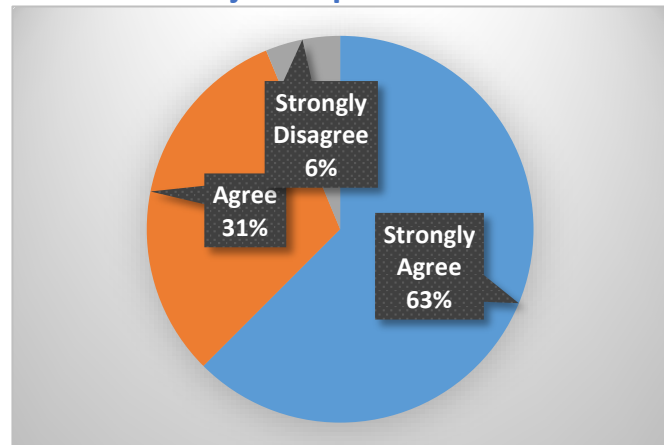
**Troubleshooting**



**Programming**



**Hands-on Project Experiences**

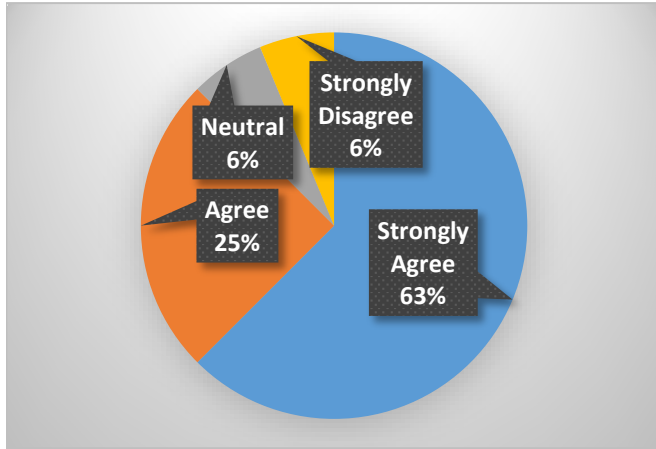


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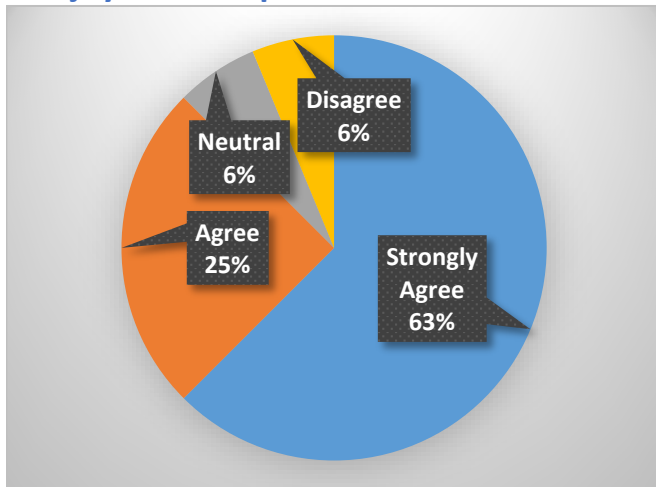
**Student Baseline Sentiment:**

The workshops helped increase my interest to pursue more engineering projects:

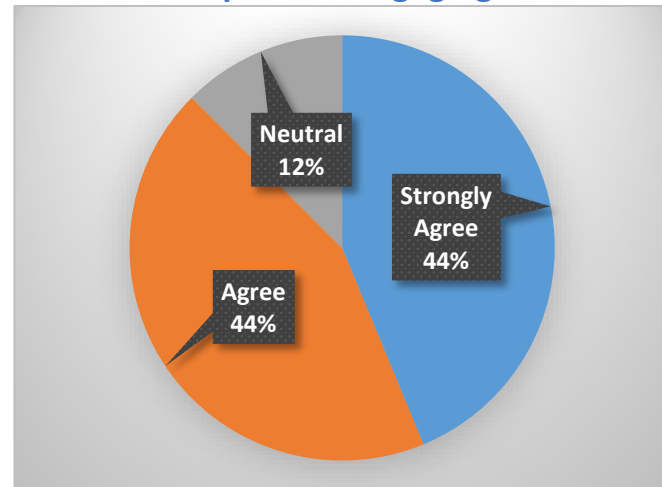


**Please rate the following areas:**

I enjoyed the topics covered in the workshops



The workshops were engaging

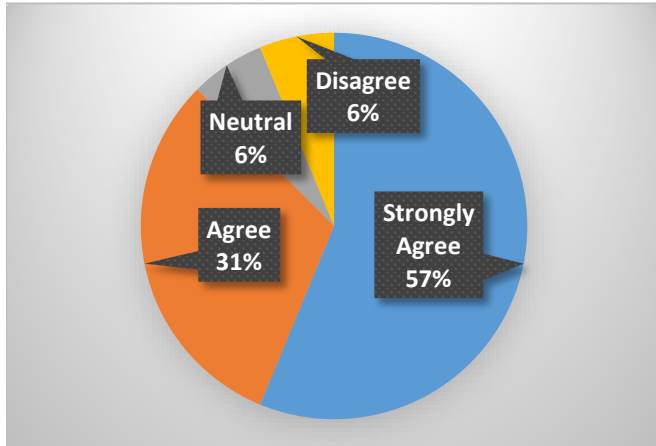


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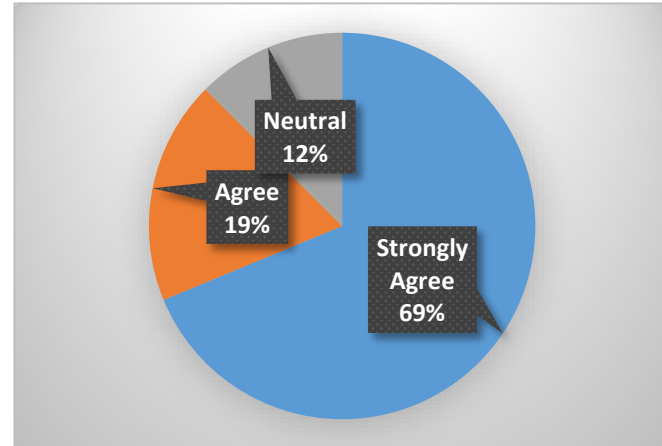
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**Please rate the following areas:**

**I am able to transfer the skills from the workshops  
to projects I'm interested in working on**



**Participating in hands-on projects  
facilitated my interest in engineering**



**Student Personal Development (Free Response)**

**Did the workshop explore skills required by the internships you are looking for?**

**If not, what topic areas would you have liked to learn?**

- \*yes it did. it involved programming and seeing code used to program a machine was insightful as i saw various coding techniques in action.
- \*I would have liked to explore more projects and individualized applications. I think the workshop was a great introduction but would need to be a class or a part II for the certificate to merit any internship.
- \*I havnt looked too deeply into internships yet, but the ones I have seen do like to see some project experience and working with others
- \*I would say this encouraged a lot of system thinking that is valuable to internships, but with how little we could cover together in our limited time it is hard to feel confident enough to put this on a resume. I would like to have more presentations given throughout the workshop to get us all more comfortable with technical presenting.
- \*Yes it explored topics on coding specifically
- \*The workshop seemed to be too short and slow paced. I would have liked to delve into more projects.
- \*Yes, I was a beginner in understanding Arduino and this workshop has helped with my introduction skills
- \*Yes definitely

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### Continued: Did the workshop explore skills required by the internships you are looking for? If not, what topic areas would you have liked to learn?

\*I want to look at data related internships, and the programming aspect was very helpful for that because although I know some coding, I don't have much experience in the development process. Learning about libraries and having to look on github for the final project was new for and was really helpful. I would have liked to go more in depth into programming, like how to begin developing programs outside of arduino with my own computer, though that might be out of the scope of the workshop. Even though the hands on real world aspect isn't as connected to my career plans, I'm still happy about learning them since the problem solving principles are all relevant, and making arduino projects would be an awesome hobby to pick up that helps with my studies regardless.

\*I currently am not looking for internships, although I felt that this was great experience in the teamwork and team based project sense.

\*As a comp sci major I don't think it would help with specifically internships because it's different but I took the workshop just to gain new skills

\*I wish we had delved into the coding aspect more rather than the hardware.

\*Yes I feel this workshop has been help me a lot as navigating me directly to what I need to learn, knowing the connection between hardware and software are very important to creating a chip which was very interesting.

\*A little bit yes. It was a good starter workshop.

\*Yes

\*The workshops widened my range of skills, and kept my spark of interest in engineering

### Do you recommend the workshop series be converted into a class you can take for credit? Would you be interested in taking the course?

\*yes i would as I think having time dedicated to coding and building the robot as well as troubleshooting would make one learn more.  
i would definitely take it

\*Having this workshop as a class would be more efficient and more enjoyable. I would be very interested in taking a course.

\*I would not be interested in taking this class because it's not required to transfer. Maybe if it counted towards the electronics course that we have to take as mechanical engineer majors. Don't get me wrong, the workshop was really cool, but dedicating myself to a semester long course that doesnt count towards my graduation is a luxury that I cannot afford.

\*This would be an amazing class that would make engineering seem more attainable for students. Giving me the basic fundamentals of Arduino really got me systematically thinking of building and creating my own projects which got me very interested in using Arduino more but I wish the knowledge I obtained was more in-depth. I would love to take an actual class on this.

\*Yes I strongly recommend and will take that class

\*Yes please. Preferably with a second part more focused on projects.

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**Continued: Do you recommend the workshop series be converted into a class you can take for credit?  
Would you be interested in taking the course?**

\*Yes definitely. It would appeal to both engineering/cs students and hobbyists/craft people too. I'm not even an engineering major, but this workshop helped me really understand how to wire breadboards and create circuits which is a big change from knowing absolutely nothing about electronics before. I'm now much more interested in hands on problem solving, it feels more accessible and something I'm more confident in exploring. This workshop also encouraged me to take an engineering class next semester.

\*Sure, but unsure if I would have time to incorporate another class in my schedule. The weekly workshops are good

\*Yes

\*Yes, I think this class would be great as a 1 or 2 credit lab. I am not quite sure how many people would actually take it, due to it not being required definitely for some majors. But if the class had a low workload and was more "for fun" and learning I think a lot of people would take it and I would be interested in having more time to work with arduino.

\*I do think it'd be a great idea and I would be interested and recommend the class to some friends

\*Not necessarily. I didn't think the format for the class worked where one person would work on the robot and one person the coding. I think the only way this would be a good class was if those aspects were both covered in depth and you got hands on with BOTH of them.

\*Yes I'm absolutely suggesting that because there's many stuff that we need to learn.

\*100% yes. This workshop was great but really we need more time to learn about the code and how we would go about setting something up without a picture and instructions. Coding wise I feel like I didn't learn very much because we didn't have enough time to give the coding that it requires.

\*Yes

\*I would highly recommend the workshop, it was engaging, interesting at every instance and easy to transfer the skills learned in the workshop to engineering problems

**If you could redo the workshops, what would you do differently to enhance your own experience?**

\*i would have asked more questions before uploading code into the elegoo robot as I wasted a lot of time figuring out how to upload code that was already there. if i had figured out the issue earlier I think I couldve done a custom project

\*If I could redo the workshops, I would try to develop each assignment and create new project ideas.

\*I would have practiced my presentation more

\*I would have worked with others more. It is hard to engage with others to work together on your own but when I did it enhanced my experience and learned more.

\*It felt like I was ahead of class.

\*I'd redo the workshop

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**Continued: If you could redo the workshops, what would you do differently to enhance your own experience?**

\*I would have liked to have more time and support for the final project where we do original innovating and problem solving, but I also understand that we took the beginning portion slower to get a better understanding of the basics which is more important, and that I could practice by doing my own project in the future.

\*Learn the basics of coding, the fundamental ideas of Arduino and how the systems work

\*Yes

\*I would have finished the challenges a bit earlier in order to give myself more time on the final project. I really would have liked to actually create something but with finals I simply had no time outside of class.

\*Mainly I would've worked on my attendance and come to all ten sessions. Also having better communication with my partner for the project

\*Not take the workshop. Towards the end it got incredibly tedious and boring.

\*I would take less class to invest more time to learn it.

\*I would look up more challenges and projects to do.

\*Learn more programming

\*I would not change anything about the workshops

**Please provide any general feedback you would like to make regarding the workshops or instructor.**

\*I would like it if the instructor set one starting time for the workshop. It is a bit redundant to explain the same thing twice for the later group and a bit troublesome as I wouldn't talk to my partner about our assignment as to not talk over the instructor.

\*Thank you for making these workshops happen! Despite the time being 8am on a Friday, I would say the workshops were the highlight of my week. I really hope Mesa College offers a class or more opportunities like this. Professor Phuong is extremely knowledgeable and was excellent at helping everyone to learn.

\*I think it was a mistake to let people come in at both 8 am and 8:30. They signed up for the workshop they should be able to come at the prescribed time. I understand that you did this in order to retain people in the program, but it watered down the experience for the people who showed up at 8. I'm not sure how but I would suggest narrowing the focus of the workshop or making it a yearlong thing instead of just one semester. Me and my group had to spend a great deal of time outside of the prescribed hours in order to finish the work.

\*This instructor was a very impressive person with experience in a lot but I would have liked to see a bit more explanation for coding so we could understand it more and how it was unique to each goal and how we should approach different sensors.

\*This was an extremely valuable experience to me and I'm very grateful for Mesa/IRL for hosting such an informative workshop for free.

Honestly just keep doing this for future students haha. Thank you!

\*I wish there were different level options that we can take like advanced robotics in order to improve more on skills

\*Enjoyed coming every week to learn arduino concepts

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**Continued: Please provide any general feedback you would like to make regarding the workshops or instructor.**

\*This workshop was definitely an experience and I loved that I could get hands on engineering experience without the commitment of a class. I really enjoyed the instructor's demeanor and knowledge on the topics.

\*I think the workshop series should be 1 or even 2 more workshop dates longer. I feel like I was rushed through the the final project and I felt a bit disappointed that I couldn't create something of my own. I loved the challenge portion of the workshop however at the end it just felt rushed.

\*This workshop was informative and the instructor made the subject very easy to understand and fun.

\*Be more engaging with the students and offer more help. It seemed like the instructor didn't know what she was doing and had a hard time helping people.

\*I think the better way is just let student work on one problem like building the car only since we dont have enough time to focus on and fully understand how its work.

\*The workshop was great and I definitely know alot more than I did at the start. But I think this would be better as a class because there is so much information to cover and learn and you can't teach it all in the time frame provided

\*Instructor was great

\*The instructor was helpful all along the workshop, I would like to applaud the workshop packet, for it helped me really grasp the sense of what arduino is about

\*This workshop was really great for learning more about arduino. I really hope the college offers more workshops/classes similar to this.

Thank you!