Eagle Scout Service Project Proposal

BOY SCOUTS OF AMERICA®

Eagle Scout candidate's full legal name Austin Jewell Motz

Eagle Scout Service Project Name Arduino Learning Kit

Eagle Scout Requirement 5

While a Life Scout, plan, develop, and give leadership to others in a service project helpful to any religious institution, any school, or your community. (The project must benefit an organization other than Boy Scouting.) The project proposal must be approved by the organization benefiting from the effort, your unit leader and unit committee, and the council or district before you start. You must use the *Eagle Scout Service Project Workbook*, No. 512-927, in meeting this requirement.

Instructions for Preparing Your Proposal

Meeting the Five Tests of an Acceptable Eagle Scout Service Project

Your proposal must be prepared first. It is an overview, but also the beginnings of planning. It must show your unit leader, unit committee, and council or district that your project can meet the following tests.

1. ***It provides sufficient opportunity to meet the Eagle Scout service project requirement.*** You must show that planning, development, and leadership will take place; and how the three factors will benefit a religious institution, a school, or your community.
2. ***It appears to be feasible.*** You must show the project is realistic for you to carry out.
3. ***Safety issues will be addressed.*** You must show you have an understanding of what must be done to guard against injury, and what will be done if someone gets hurt.
4. ***Action steps for further detailed planning are included.*** You must make a list of the key steps you will take to make sure your plan will have enough details so it can be carried out successfully.
5. ***You are on the right track with a reasonable chance for a positive experience.***

When completing your proposal you only need enough detail to show a reviewer that you can meet the tests above. If showing that you meet the tests requires a lengthy and complicated proposal, your project might be more complex than necessary. Remember, the proposal is only the *beginnings* of planning. Most of your planning will come with the next step, preparation of your project plan.

If your project does not require materials or supplies, etc., simply mark those spaces "not applicable." As a reminder, do not begin any work, or raise any money, or obtain any materials, until your project proposal has been approved.

Consider also, that if you submit your proposal too close to your 18th birthday, it may not be approved in time to finish planning and executing the project.

Working with Your Project Beneficiary

On the last two pages of this workbook there is an information sheet called, "Navigating the Eagle Scout Service Project." This is for you to print and give to the religious institution, school, or community that will benefit from your efforts. You should do this as part of your first meeting with your beneficiary and use the sheet to help explain how the Eagle Scout service project works. Be sure to read it carefully so you can explain what it says.

"Navigating the Eagle Scout Service Project" will help you communicate a number of things to your beneficiary. For example, it provides thanks and congratulations for accepting the project; and it gives some background, discusses the requirements, and points out the responsibilities connected with approving your project proposal. It also explains that the beneficiary has the right to review, and also to require changes in your project plan.

Again, be sure to read carefully "Navigating the Eagle Scout Service Project" so you will have a full understanding of the role of your beneficiary.

Next Step: Your Project Plan

Once your proposal is approved, you are ***strongly encouraged*** to prepare your project plan using the form in this workbook. Doing so increases the likelihood your project will be approved at your Eagle Scout board of review. As you begin preparing it, you should meet with a project coach. Check with the person who handled the approval of your project proposal to learn how coaches are designated in your community.

Your designated coach can help you avoid the common pitfalls associated with Eagle Scout service projects and be a big part of your success. You may also want to talk to your unit leader. There may be adults in your troop who are experts in conducting the kind of project you are planning. It's ok for you to work with them as well. The more coaching you get, the better your results will be.

Beginning Work on Your Project

Once your proposal has been fully approved and you have finished your project planning, only then, may you begin work on your project.

Contact Information

Eagle Scout candidates should know who is involved, but contact information may be more important to unit leaders and others in case they want to talk to one another. While it is recognized that not all the information will be needed for every project, Scouts are expected to provide as much as reasonably possible. Approval representatives must understand, however, that doing so is not part of the service project requirement.

Eagle Scout Candidate

Name: Austin Jewell Motz		Birth date: June 21, 2000		
Email address: austinmotz2@gmail.com		BSA PID number*:		
Address: 8263 Little Harbor Drive	City: Cincinnati	State: Ohio	Zip:	45244
Preferred telephone(s): (513)417-4779		Life board of review date: 8/24/15		

* BSA PID No., found on the BSA membership card

Current Unit Information

Check one: ☐ Troop ☐ Team ☒ Crew ☐ Ship	Unit Number: 281
Name of District: Blue Jacket	Name of Council: Dan Beard

Unit Leader   Check one: ☐ Scoutmaster   ☐ Varsity Coach   ☒ Crew Advisor   ☐ Skipper

Name: Doug Siebenburgen	Preferred telephone(s): (513)260-2160		
Address: 810 W. Anson Dr	City: Cincinnati	State: OH	Zip: 45245
Email address: dougs4dbc@gmail.com			

Unit Committee Chair

Name: Dale Smotherman	Preferred telephone(s): (513)315-1723		
Address: 1962 Honeysuckle Lane	City: Cincinnati	State: Ohio	Zip: 45230
Email address: amphead4@fuse.net			

Unit Advancement Coordinator *(If your unit has one)*

Name:	Preferred telephone(s):		
Address:	City:	State:	Zip:
Email address:			

Project Beneficiary *(Name of religious institution, school, or community)*

Name: Nagel Middle School	Preferred telephone(s): (513)474-5407		
Address: 1500 Nagel Road	City: Cincinnati	State: Ohio	Zip: 45255
Email address: rosearnell@foresthills.edu			

Project Beneficiary Representative *(Name of contact person for the project beneficiary)*

Name: Rose Arnell	Preferred telephone(s): (513)313-7712		
Address: 1500 Nagel Road	City: Cincinnati	State: Ohio	Zip: 45255
Email address: rosearnell@foresthills.edu			

Your Council Service Center

Contact name: Dan Beard Council	Preferred telephone(s): (513)577-7700		
Address: 10078 Reading Rd	City: Cincinnati	State: Ohio	Zip: 45241

Council or District Project Approval Representative
(Your unit leader, unit advancement coordinator, or council or district advancement chair may help you learn who this will be.)

Name: David Terrell	Preferred telephone(s): (513)304-9380		
Address: 4212 Maple Dale Ln.	City: Cincinnati	State: Ohio	Zip: 45255
Email address: terell.david49@gmail.com			

Project Coach *(Your council or district project approval representative may help you learn who this will be.)*

| Name: Jeff Dunham	Preferred telephone(s): (513)615-7858		
Address: 4608 Stablehand Dr	City: Batavia	State: Ohio	Zip: 45103
Email address: jandakids@yahoo.com			

Project Description and Benefit

Briefly describe your project.

My Eagle scout project will be to create a set of 10 classroom projects to learn uses and methods of implementing Arduinos (small, cheap microcontrollers) into interesting projects for Nagel Middle School. These activities will teach students C programming, breadboarding, circuitry, and problem solving skills. Projects will range from beginner tasks such as turning on an LED after making the circuit and programming it to creating a small robot arm. This project will benefit young students to learn skills of the modern world like computer programming and circuits. As this project is unconventional the end goal is to have Mrs. Arnell have a set of 10 complete kits, with the curriculum to teach it to students, and a manual with solutions and a problem solving guide with it.

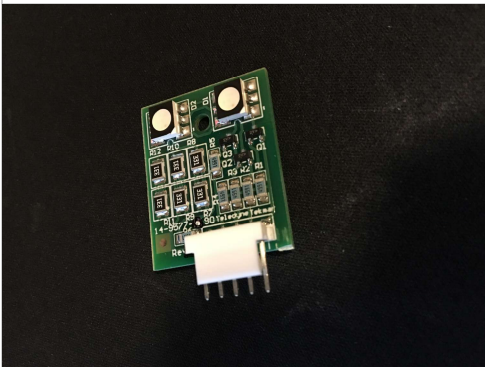Attach sketches or "before" photographs if these will help others visualize the project.

Please click below to add images (**JPEG, JPG, BMP, GIF, TIF, PNG, etc.**)
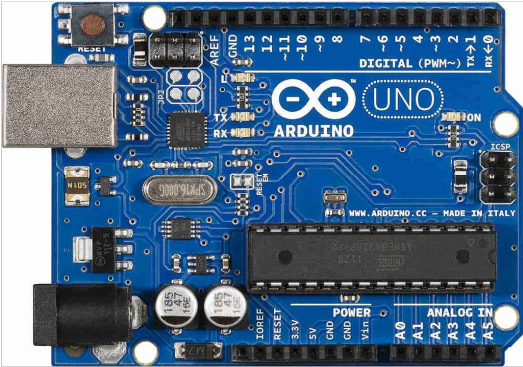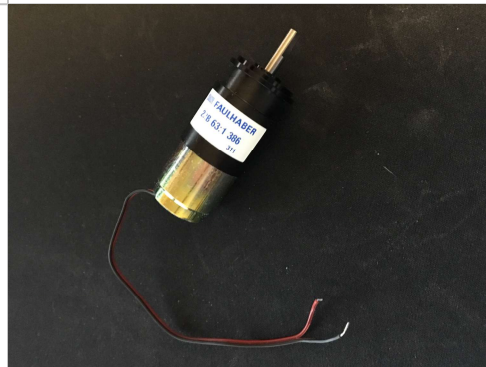

Arduino platform to be used.
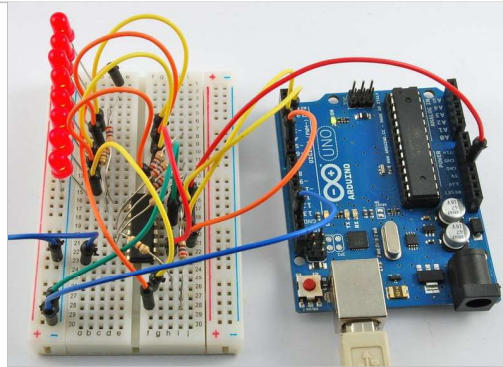
Arduino with a breadboard; the main circuit-building platform of the class.

RGB LED for different colored lights

Small Motor to be used for a robot

Tell how your project will be helpful to the beneficiary. Why is it needed?

This project will be helpful to use already existing tools at Nagel middle school to create a way to use them because they are currently going unused because of lack of knowledge about the Arduinos. When I took this class we tried using the technology, but nobody knew how to do it, so it just sputtered out. The project will teach students skills in rapidly growing STEM fields and expose them to computer hardware and programming. This will make students more prepared for the rising world of technology and build a base for them to go on into programs in high school such as robotics and computer science, exposing them to something I was not able to be in the course.

When do you plan to begin carrying out your project?   End of July 2017

When do you think your project will be completed?   September 2017

Giving Leadership

Approximately how many people will be needed to help on your project?   20

Where will you recruit them (unit members, friends, neighbors, family, others)? Explain:

I will recruit friends from my robotics team with basic skills in STEM, 3D printing resources, circuit board makers, and other people from my school and former robotics team with knowledge of how to make a circuit on a breadboard to create the curriculum. In addition to creators I will also need people to test and make sure they are realistic. These people will be current seventh and eighth graders from troop 281.

What do you think will be most difficult about leading them?

The most difficult part about leading them will be creating a team that can work to create a project from different areas, from making sample code for reference to making a circuit to work for it to creating any needed hardware for the project. I will have to coordinate different groups that may never meet face to face to create multiple projects to build something to learn from.

Materials

Materials are things that become part of the finished project, such as lumber, nails, and paint.

What types of materials, if any, will you need? You do not need a detailed list or exact quantities, but you must show you have a reasonable idea of what is required. For example, for lumber, include basic dimensions such as 2 x 4 or 4 x 4.

Breadboards, resistors, photo resistors, servos, 1/4" pine wood sheet, potentiometers, wires, motors, text display, and a touch sensor will be most of the materials used in the projects. The school already owns breadboards, wires, and arduinos that are going unused and will be used in the project.

Supplies

Supplies are things you use up, such as food and refreshments, gasoline, masking tape, tarps, safety supplies, and garbage bags.

What kinds of supplies, if any, will you need? You do not need a detailed list or exact quantities, but you must show you have a reasonable idea of what is required.

Supplies will be largely reusable. The only things that will be used will be electrical tape, paper, and the occasional replacement part from mistakes while working.

Tools
Include tools, and also equipment, that will be borrowed, rented, or purchased.

What tools or equipment, if any, will you need? You do not need a detailed list, but you must show you have a reasonable idea of what is required.

To develop the resources I will use voltmeters (supplied by participants in my project), a laser cutter (supplied by a maker space I have access to), perhaps a 3D printer (also at the maker space), and computers (supplied by participants). Students using the resources made in this project will only need their laptop and USB cord to use the materials in the kit.

Other Needs
Items that don't fit the above categories; for example, parking or postage, or services such as printing or pouring concrete, etc.

What other needs do you think you might encounter?

The biggest need would be the beneficiary to be able to troubleshoot the curriculum while it is being taught. I would make sure this need is met by collaborating with her as much as needed to ensure she understands it, but within the curriculum there will also be a common problems and troubleshooting guide so that anybody can figure out a problem.

Permits and Permissions
Note that property owners should obtain and pay for permits.

Will permissions or permits (such as building permits) be required for your project? Who will obtain them? How long will it take?

Building permits are not required, but I will need permission to use a space in the church for testing.

Preliminary Cost Estimate

You do not need exact costs yet. Reviewers will just want to see if you can reasonably expect to raise enough money to cover an initial estimate of expenses. Include the value of donated material, supplies, tools, and other items. It is not necessary to include the value of tools or other items that will be loaned at no cost. Note that if your project requires a fundraising application, you do not need to submit it with your proposal.

Enter estimated expenses below: *(Include sales tax if applicable)*		**Fundraising:** Explain how you will raise the money to pay for the total costs. If you intend to seek donations of actual materials, supplies, etc., then explain how you plan to do that, too.
Materials:	$2,500.00	Note: costs are assumed a 20 student classroom working in pairs for a total of 10 kits. Materials used for the resources will be about $250 per kit, but I will be providing many of these materials myself, materials that the school already owns, and tools that I already own or have access to. As a result tools will not cost anything and materials will be closer to $50 dollars per kit which will be covered in an August grant from the school (written by me) or an October one if the August is not approved.
Supplies:	$40.00	
Tools:	$300.00	
Other:	$0.00	
Total costs:	$2,840.00	

Project Phases

Think of your project in terms of phases, and list what they might be. The first may be to prepare your project plan. Other phases might include fundraising, preparation, execution, and reporting. You may have as many phases as you want, but it is not necessary to become overly complicated; brief, one line descriptions are sufficient.

1.	Create a preliminary pitch of projects to the beneficiary to ensure they are all feasible between the beneficiary and I
2.	Gather the materials for one kit and finalize a budget for each one to determine the true cost of the project
3.	Create a circuit design for each project with electrical engineers to build a base for each project
4.	Program each project with robotics team and contacts from programming class to make code that is understandable
5.	Contact the troop and gather scouts of appropriate age who are willing to do the course to find bugs in it
6.	go back with people from the respective teams and fix the root of problems
7.	create a guide for of common mistakes to make it easier to troubleshoot for a novice
8.	Meet with the beneficiary and explain each one of the projects and the main ideas of each one

Logistics

How will you handle transportation of materials, supplies, tools, and helpers? Will you need a Tour and Activity Plan?

The projects will be developed at my house in meetings to make each portion of the projects. It will be tested in an area large enough to accommodate a test group like the kids rock room or another meeting area where scouts will show up at a designated time. The project will be considered complete when Mrs. Arnell has 10 working kits that are able to be used for all 10 projects included in the curriculum, the curriculum itself, and a manual with answers to code and common problems found in testing.

Safety Issues

The Guide to Safe Scouting is an important resource in considering safety issues.

Describe the hazards and safety concerns you and your helpers should be aware of.

Safety hazards may be electrocution if the person is not careful, although this should not happen because whenever a circuit is being edited it should be turned off and voltage should not exceed 12 volts direct current. This size will not hurt and will not be much of a concern as it would only tingle your fingers. A first aid kit will be on hand for any other unforeseen dangers.
Note: Laser cutters and 3D printers will only be used by myself while accompanied by my father. These tools are run from a computer and nobody will have the opportunity to come in contact with the machines while they are running (including myself as the tools automatically shut off when opened while running). All tools abide by the safe guide to scouting with the only the only tools people under 14 will use is a screwdriver and any electric tools are used by people over 16.

Project Planning

You do not have to list every step, but it must be enough to show you have a reasonable idea of how to prepare your plan.

List some action steps you will take to prepare your project plan. For example "Complete a more detailed set of drawings."

I will need to make a list of projects I intend to do and how they will work before I begin recruiting people because I will need to know the skill set of the people I need to help me. Once I have this list I will have to ask around to my friends to find people who will have some time to work with me over the summer as well as scouts who will be willing to test the projects. Once this is done I will have to meet with my beneficiary to pitch to her what projects I want to do and make sure she is happy with the skills being targeted. We will change any projects that she thinks may be too difficult or not enriching enough to be worthwhile and replace them with appropriate ones. With these steps done I will be able to begin creating the curriculum and making my project.

Candidate's Promise* *Sign below before you seek the other approvals for your proposal.*

On my honor as a Scout, I have read this entire workbook, including the "Message to Scouts and Parents or Guardians" on page 5. I promise to be the leader of this project, and to do my best to carry it out for the maximum benefit to the religious institution, school, or community I have chosen as beneficiary.

Signed	Date

* Remember: Do not begin any work on your project, or raise any money, or obtain any materials, until your project proposal has been approved.

Unit Leader Approval*	**Unit Committee Approval***
I have reviewed this proposal and discussed it with the candidate. I believe it provides impact worthy of an Eagle Scout service project, and will involve planning, development, and leadership. I am comfortable the Scout understands what to do, and how to lead the effort. I will see that the project is monitored, and that adults or others present will not overshadow him.	This Eagle Scout candidate is a Life Scout, and registered in our unit. I have reviewed this proposal, I am comfortable the project is feasible, and I will do everything I can to see that our unit measures up to the level of support we have agreed to provide (if any). I certify that I have been authorized by our unit committee to provide its approval for this proposal.
Signed Date	Signed Date
Name (Printed)	Name (Printed)

Beneficiary Approval*	**Council or District Approval**
This service project will provide significant benefit, and we will do all we can to see it through. We realize funding on our part is not required, but we have informed the Scout of the financial support (if any) that we have agreed to. We understand any fund raising he conducts will be in our name and that funds left over will come to us if we are allowed to accept them. We will provide receipts to donors as required. ***Our Eagle candidate has provided us a copy of "Navigating the Eagle Scout Service Project, Information for Project Beneficiaries."*** ☐ Yes ☐ No	I have read topics 9.0.2.0 through 9.0.2.15, regarding the Eagle Scout service project, in the *Guide to Advancement*, No. 33088. I agree on my honor to apply the procedures as written, and in compliance with the policy on "Unauthorized Changes to Advancement." Accordingly, I approve this proposal. I will encourage the candidate to prepare a project plan and further encourage him to share it with a project coach who has been designated for him.
Signed Date	Signed Date
Name (Printed)	Name (Printed)

*While it makes sense to obtain approvals in the order they appear, there shall be no required sequence for the order of obtaining those approvals marked with an asterisk (*). Council or district approval, however, must come after the others.