

Workshop Notes, MASTERPIECE Innovation Project

This is an unofficial guide to approaching the MASTERPIECE Innovation Project. This document is not intended as a sole information source, and should be interpreted using the official materials provided by FIRST.

FLL Challenge has four components: Robot Game, Robot Design, Core Values, and the Innovation Project; all components are weighted equally in the championship ranking. This workshop focused solely on the Innovation Project, to provide clarity about the expectations and tips on how to have a successful preparation experience.

Note: the example included in the final slides is not exactly demonstrative of a project. The purpose is to exemplify the process of creating an innovative solution.

Judging Session Flow

- Each team will have 30 minutes total in their judging session. During this time, the team will present and answer questions on their innovation project, robot design, and core values. A breakdown of the allotted time for each section is visible in the Judging Session Flowchart.
- Core values should be evident in all aspects of the judging session and competition.
- Set up time is included during the 30 minutes. If set-up exceeds the two-minute Welcome section, it will result in less time for the other sections; time management is key.

Overview

What is the Innovation Project?

- The Innovation Project description is available in the blue section of the Engineering Notebook, and the Challenge Overview (online).
- The MASTERPIECE challenge for the project asks, “how can you use technology and the arts to help you engage others or increase participation in what you love to do?”
- In an essence, the project encourages teams to seek a way to share their hobbies by combining technology and the arts.

What counts?

- Don't fret if the prompt feels too vague. The project is about the innovation *process*, with “big ideas, bold action – and creativity,” and the prompt is open to a wide variety of interpretations.
- *FIRST* “would like to assure all teams that your Innovation Projects are legal and will not be disqualified” (<https://flblog.wordpress.com/2023/08/30/make-create-innovate-important-update-on-the-masterpiece-innovation-project/>).
- Judges will be evaluating the innovation process over the end-result.

What do we do?

- The Innovation Project challenges teams to identify and research a problem relevant to the themed prompt, create an innovative solution and model, receive feedback from professionals and users, and communicate their idea and process to the judges.
- Teams may want to think of the presentation less as a Shark Tank pitch of a solution, and more about explaining their innovation process that led them to their solution.
- Each step in the innovation process is judged equally; **ultimately, the success of the project is not determined by the end-result, it is about the process.**
- Each component of the Innovation Project (Identify, Design, Create, Iterate, and Communicate) represent a chronological step in the process of preparing an innovative solution to present to the judges, and are represented on the rubric.

Rubric

- **Frequently referencing the judging scoresheet is the key to preparing a successful Innovation Project.**
- The rubric can be used as a checklist for each component/step of the process and tells you exactly what the judges will be looking for.
- Teams should aim to meet the criteria under the third section, “Accomplished,” and exceed where they can earn additional points.

Identify

- The first step to the project is identifying a problem in sharing a specific hobby/interest with others. Teams will need to research their problem using legitimate sources.
- Teams are encouraged to practice good research strategies, including citing sources before starting notetaking, using quotation marks to indicate copied material and give credit, brainstorm effective keywords, and use a variety of sources.
- Typically, having at least three sources is a good starting point. Although *FIRST* does not enforce a quota, a well-researched concept is fundamental for an effective idea.
- A variety of sources leads to well-rounded research. This can include books, journal articles, news articles, organization’s websites, industry professionals, librarians, etc.
- While the internet is a good starting point, searches run through Google Scholar or other archives, e.g., library search engines, are more likely to be credible than a simple Google search. Just because something is posted on the internet does not make it factual.
- Citations should be created as soon as a source appears useful, so that it does not get misplaced, and any notes and/or quotes can be organized under the correct section.
- Teams are encouraged to use critical thinking to evaluate the credibility of their sources. Wikipedia and social media are not reliable sources.
- When researching with books, check to see if the book has an index. This can greatly narrow down the time you spend looking for information on a topic within the book. For example, you may only need a chapter, or a few pages, of a bigger textbook.
- You can talk to your school librarian or public library librarian to help guide you on research. They are experts at researching!

Design and Create

- Teams must use their research and explorations to improve upon or come up with a way to share their chosen hobby. Their idea is their **design**, and they will then **create** a drawing, model, or prototype of their solution.
- The rubric emphasizes that teams should “[generate] innovative ideas independently before selecting and planning which one to develop,” and show “clear evidence of an inclusive selection process.” This means that teams should show judges their design process by indicating the discussion and involvement of team members in agreeing on a design.
- Teams’ drawing/model/prototype should be detailed and effectively show the development of their innovative solution.

Iterate

- To develop their idea, teams should share their idea with and seek feedback from professionals and users relevant to their project.
 - o We are a university and college rich province (NS). You may be able to locate a professional here.
- Using the feedback from professionals and users, teams should improve upon their initial idea.

Communicate

- This is the presentation aspect of the project. Teams are judged both on the solution and its potential impact on others, as well as how engaging the presentation is.
- The whole team should be involved.
- The presentation should be rehearsed and meet the 5-minute time constraint
- On addition to the model/prototype/drawing, visual aids may be used in the presentation. While use of a projector *may* be, it is not guaranteed or recommended, as Acadia Robotics is not responsible for the equipment’s functionality or presence in the judging room. Set up of the projector is included in the allotted time, and must be unassisted by adults (incl. coaches, mentors, judges, or Tech Services). Alternatively, teams may bring a laptop/Chromebook/tablet to display their material, or use other creative formats, e.g., posters.
- Teams can choose to present through a creative format, such as a skit, song, etc, as long as it meets the 5-minute time allotment and communicates their innovation process and solution effectively.

Coaches’ Involvement

- While coaches and mentors are welcome to sit in on the judging sessions, they are prohibited from participating in the session’s presentations or questions.
- Coaches are to be silent spectators.
- Coaches may assist in carrying in presentation supplies if physically unmanageable for youth participants, but cannot assist in the set-up after dropping them off.

- Only registered coaches, mentors, and team members are permitted in the judging sessions. Sessions are closed to the public. Friends and family are welcome in the gym to join the audience in viewing the robot game in the afternoon.

Project Example:

Audiobooks are an example of an innovative solution that was created to solve a problem with sharing a hobby (reading) with others (people with vision impairments). This example shows how the steps of FLL Challenge's Project are evident in the real-world innovation process.

Identify Example:

- The identified problem in this example is that reading is a hobby that is difficult to share with people with vision impairments. While lacking literacy-skills was historically a barrier for many people, this identified problem specifically focuses on soldiers returning from WWII with vision impairments.
- Research on this problem used legitimate sources, e.g., PBS.org

Design Example:

- Rather than designing a completely new idea, these innovators opted to improve upon an existing solution. This is also an option for teams' projects.
- The existing sharing method identified is for sighted people to read books aloud to others. To improve upon this solution using technology, phonographs could play recordings of people reading, utilizing technology traditionally used to play recordings of music.

Create Example:

- This poster was created as a drawing to demonstrate the proposed solution.
- Models/drawings/prototypes should be detailed, more so than the one included in the slides. They can include written notes and descriptions.

Iterate example:

- Hypothetically, this solution could be pitched to a user and professional relevant to the identified problem.
- A user might have suggested that phonographs are not portable and limit the user to the room in which their phonograph is kept. A professional who works with visually impaired people might have noted that braille is an effective tool for reading already.
- Using this feedback, the phonograph solution could be improved by also using cassettes to play audiobooks (please humour the time-jump of this example) in a more portable manner. While braille is effective, our hypothetical innovators noted that the identified group they were trying to share with, i.e., veterans, are newly visually impaired, and so are not fluent in using braille. Audiobooks are still beneficial, and the innovators may add to their solution that they can be used in conjunction with braille to help people follow along with physical books.

Communicate Example:

- The final solution, and walk-through of the process that led to it, would be presented to the judges in an engaging manner.