

| | |
|-------------------------|---|
| LEVEL: | Middle School and High School |
| NUMBER OF TEAMS: | One (1) team per school can participate at the MESA Day state competition. Up to three (3) teams can participate at MESA regional events. Subject to change. |
| TEAM MEMBERS: | Two (2) to Six (6) Students per team |
| OBJECTIVE: | <p>Students will use the Human Centered Design model to design a mobile phone app (Android or iOS) to solve a problem in their community.</p> <p>Students will submit a Video Journal that tells the story of their design process.</p> |
| MATERIALS: | MIT App Inventor (https://appinventor.mit.edu) or other app creation software |

BACKSTORY:

Apps are the way computers and phones run their programs. There are apps to order food, apps to play games, apps to read the news, apps for anything. The ability to develop an app (computational thinking) is an essential skill for the 21st century world.

This design challenge is based on the **Technovation Girls Challenge**. MESA teams whose members identify as female, trans, nonbinary or gender nonconforming may be eligible to enter this challenge with the same app developed for MESA. For more information visit <https://technovationchallenge.org/>.

DESIGN PARAMETERS

1. Design Theme: Apps must be designed to address Goal 3 of the UN Sustainability goals, to **“Ensure healthy lives and promote well-being for all at all ages.”** For more information including key targets and indicators for achieving the goal visit <https://sdgs.un.org/goals/goal3>.
2. Designs must be:
 - a. Coded and designed in a program like MIT App Inventor, Thunkable or similar program.
 - b. Research, Developed and Designed by students
 - c. Designed to solve a problem in their community
3. Code: Teams may use publicly released libraries, example code, and tools, but your team must also develop original code.
4. Deliverables:
 - a. Design Brief which will include:
 - i. School Name
 - ii. Team Members Names
 - iii. App Name
 - iv. Project Purpose: In one or two sentences explain what this project intends to do. (50 word maximum)
 - v. Abstract: In one paragraph provide a brief overview of your project. The abstract should:
 1. Introduce the User. Describe the people who will benefit from the project and any unique situations they face.
 2. Identify the challenge the user faces. What barriers exist that limit their opportunities to live a healthy life.?
 3. Describe the proposed solution. How will this project minimize or eliminate this barriers to a healthy life?
 - vi. Adoption Plan
 1. Explain app testing process. Who helped to test? What feedback did they have?
 2. Discuss strategy for marketing to new users. How will you get people to use the app?

- b. Pitch
 - i. Must be 3-5 minutes long
 - ii. Teams may use computer to present their pitch. Computers will be Windows.
 - iii. Pitch should (see the rubric for additional information about scoring):
 - 1. Describe the Problem the app addresses and why it is important to the team and the community.
 - 2. Discuss research about the problem and how it relates to UN Sustainability Goal Number 3.
 - 3. Introduce the app and describe how it functions, including unique and innovative features
 - 4. Explain how the app solves the problem for the user
 - 5. Explain how it differs and/or improves on similar apps
 - 6. Discuss user feedback that influenced design choices and design improvements throughout the design process.
 - 7. Explain future goals and plans for the app.
- c. Demo Video
 - i. Must be no longer than 2 minutes
 - ii. Teams may use computer to present their pitch. Computers will be Windows.
 - iii. Video should (see the rubric for additional information about scoring):
 - 1. Show the app and how it works
 - 2. Show what works successfully and explain what coding was required to make it work
 - 3. Show what doesn't work yet and what could help make it work
 - 4. Share future features team would like to add, if any.
- d. Source Code
 - i. Students should share via a Cloud Storage Link (like Google Drive, OneDrive, Dropbox).
 - ii. Code may be submitted:
 - 1. As an .aia file if using MIT App Inventor
 - 2. Project link if using Thunkable
 - 3. If using another on-line platform that allows sharing a project's source code without a required sign-up or download you can send a project link.
 - 4. Otherwise, a Zip File with the source code should be included. Files should be able to be opened and easily read without the need of a special program or application.
 - 5. Recommended: Include basic instructions on using the app and demo user login information (username/password) for judges to test.
 - iii. Code must include:
 - 1. API Keys - Application Programming Interface Keys are used to get information from another website or database. Often used to assist in tracking and controlling how the interface is being utilized.
 - 2. Database Usage - Information stored on or accessed by a phone are often stored in databases. Your app must incorporate use of a database. Examples of databases used in phone include contacts, stored messages, and bookmarks in a web browser.
 - 3. Phone Function or Sensor Incorporation
 - a. Phone Functions include Camera, Speaker, Microphone, GPS, Storage, and more.
 - b. Phone Sensors include: Accelerometer, Pedometer, Gyroscope, Magnetometer, Clock, Location Sensors, Proximity Sensor, etc.
- e. Video Journal – must be in mp3 or mp4 format. Can be uploaded to video hosting website (YouTube, Vimeo, etc.) and link shared with MESA

TESTING GUIDELINES:

1. At least two (2) students must be present during testing.
2. Teams are allowed to use presentation software (PowerPoint, Google Slides, etc) and emulators to demonstrate their app.

SUBMISSION GUIDELINES:

1. Demo Video, Source Code and Video Journal will be submitted two (2) weeks before competition
2. Materials unable to be accessed by MESA staff will not be considered for scoring. It is the team's responsibility to ensure materials are accessible.
3. Late materials will not be accepted. It is the team's responsibility to ensure materials are submitted prior to the deadline.

SCORING CRITERIA:

1. Teams will be judged on the following categories (see Rubrics for more details):
 - a. Design Brief (23 points)
 - b. Pitch Video (40 points)
 - c. Demo Video (20 points)
 - d. Source Code (10 points)
 - e. Video Journal (Multiplier)
2. The Final Score will be determined by multiplying the Performance Score by the Video Journal Score (V).
3. The Performance Score will be determined by adding together the points received for Design Brief, Pitch, Demo Video, and Source Code
4. The Video Journal Multiplier will be determined by dividing the notebook score by the maximum points. (50 or 70 point maximum) If team does not submit a video their video journal multiplier will be .10. For example, if a video receives 20 points. The video journal multiplier will be .80 (20/25).

RESOURCES:

MIT App Inventor - <https://appinventor.mit.edu/>

Techovation:

- Challenge Information - <https://technovationchallenge.org/>
- Curriculum for App, Pitch, and Business Plan development - <https://technovationchallenge.org/curriculum-intro/registered/new/>

School: _____

Student Name: _____

For Official Use Only

| | |
|---------------------------------------|--|
| Design Brief Score: | |
| Pitch Score: | |
| Demo Video Score: | |
| Source Code Score: | |
| Performance Score (sum of all above): | |
| Video Journal Score | |
| Total Score | |

Judge's signature: _____

Student signature: _____

Parts of these rubrics are adapted from the rubric for the Technovation Girls Challenge.

School: _____

Division: ☐ Middle School ☐ High School

| Design Brief Rubric: | LEVEL OF MASTERY | | | | | |
|---|---------------------------|-------------------------|-------------------------------|--------------------|-------------------|---------------------------|
| | Exceptional (5 points) | Excellent (4 points) | Met Criteria (3 points) | Fair (2 points) | Poor (1 point) | Not Present (0 points) |
| School Name: Name is present | | | | | | |
| Team Members Names: Names are present | | | | | | |
| App Name: Name is present | | | | | | |
| Project Purpose: Adequately explains what the project intends to do in one or two sentences and no more than 50 words. | | | | | | |
| Abstract: Adequately introduces the people who will benefit from the project and any unique situations they face. | | | | | | |
| Abstract: Clearly identifies the challenges the user faces that will be addressed by the project and adequately explains how the project will address these challenges | | | | | | |
| Adoption Plan: Adequately explains the testing process and how they will market to new users | | | | | | |
| COLUMN TOTALS: | | | | | | |
| TOTAL (23 points max): | | | | | | |

School: _____

Division: ☐ Middle School ☐ High School

| Pitch Video Rubric: | LEVEL OF MASTERY | | | | | |
|--|----------------------------|-------------------------|----------------------------|--------------------|-------------------|---------------------------|
| | Exceptional (5 points): | Excellent (4 points) | Met Criteria (3 points) | Fair (2 points) | Poor (1 point) | Not Present (0 points) |
| Clearly states the problem and shows why the problem is important to the team and the Community | | | | | | |
| Adequately explains what the team researched about the problem and how it relates to the United Nations Sustainable Development Goal 3 | | | | | | |
| Includes a clear introduction of the app and adequately describes functionality, including unique and innovative features. | | | | | | |
| Is convincing in explaining that the proposed solution will adequately solve the problem | | | | | | |
| Explains why the a mobile app is a good tool to solve the problem | | | | | | |
| Shows how it is a better solution compared to what already exists | | | | | | |
| Explains user feedback on the problem and solution and shows how they made changes based on the feedback | | | | | | |
| Explains future goals and plans for the project | | | | | | |
| COLUMN TOTALS: | | | | | | |
| Time Penalty: Pitch is less than 3 or more than 5 minutes long (- 5 points) | | | | | | |
| TOTAL (40 points max): | | | | | | |

School: _____

Division: ☐ Middle School ☐ High School

| Demo Video Rubric: | LEVEL OF MASTERY | | | | | |
|---|----------------------------|-------------------------|----------------------------|--------------------|-------------------|---------------------------|
| | Exceptional (5 points): | Excellent (4 points) | Met Criteria (3 points) | Fair (2 points) | Poor (1 point) | Not Present (0 points) |
| Shows the application and adequately explains how it functions. | | | | | | |
| Discusses elements that are successful and the coding required to make them function. | | | | | | |
| Discusses elements that are not functional and what could be done to make them functional | | | | | | |
| Discusses future features that could be added | | | | | | |
| COLUMN TOTALS: | | | | | | |
| Time Penalty: Pitch is more than 2 minutes long (- 3 points) | | | | | | |
| TOTAL (20 points max): | | | | | | |

| Source Code Rubric: | LEVEL OF MASTERY | | | |
|---|--------------------|----------------------------|-------------------|---------------------------|
| | Good (3 points) | Met Criteria (2 points) | Poor (1 point) | Not Present (0 points) |
| Source Code was easy to access and required elements were easy to identify | | | | |
| Discusses elements that are successful and the coding required to make them function. | | | | |
| Discusses elements that are not functional and what could be done to make them functional | | | | |
| Discusses future features that could be added | | | | |
| COLUMN TOTALS: | | | | |
| TOTAL (10 points max): | | | | |

Rubric for Video Journal (VJ).

| Category | 3 | 2 | 1 | 0 |
|--|-----|------|------|------|
| 1. Define the Problem | | | | |
| <ul style="list-style-type: none"> Problem is clearly identified Definition of Problem aligns with problem statement in specifications Definition of Problem matches solution | All | Most | Some | None |
| 2. Initial Design | | | | |
| <ul style="list-style-type: none"> Picture of sketch of initial design is present Sketch can be clearly seen Sketch is aligned to objective as specified objectives in specifications | All | Most | Some | None |
| 3. Design 2 | | | | |
| <ul style="list-style-type: none"> Changes from Initial Design to Design 2 are visible and/or marked Sketch/Prototype can be clearly seen Design 2 is clearly marked as Design 2 | All | Most | Some | None |
| 4. Reasoning for change from Initial Design to Design 2 | | | | |
| <ul style="list-style-type: none"> Reason(s) for change(s) are based on testing Reason(s) for change(s) make logical sense Reason(s) for change(s) keep prototype aligned to Problems Statement | All | Most | Some | None |
| 5. Design 3 | | | | |
| <ul style="list-style-type: none"> Changes from Initial Design to Design 2 are visible and/or marked Sketch/Prototype can be clearly seen Design 3 is clearly marked as Design 3 | All | Most | Some | None |
| 6. Reasoning for change from Design 2 to Design 3 | | | | |
| <ul style="list-style-type: none"> Reason(s) for change(s) are based on testing Reason(s) for change(s) make logical sense Reason(s) for change(s) keep prototype aligned to Problems Statement | All | Most | Some | None |
| 7. Final Prototype | | | | |
| <ul style="list-style-type: none"> Final Prototype addresses the problem statement Final Prototype is clearly visible Final Prototype is clearly marked as Final Prototype | All | Most | Some | None |
| Audio is clear and does not distract from video | | | Yes | No |
| Video Journal is 5 minutes or less | | | Yes | No |
| School name is part of journal | | | Yes | No |
| Competition name is part of journal | | | Yes | No |
| Total | | | | |