AI PROJECT IMPLEMENTATION GUIDE

Resource for Teachers & Students

(Adapted from "IBM EdTech Youth Challenge – Project Guide" developed by IBM in collaboration with Macquarie University, Australia and Australian Museum)

KEY PARTNERS

INDIA IMPLEMENTATION PARTNERS

GLOBAL PARTNERS

Table of Contents

1. Preparing for the Project *[1 hour]*

Welcome to the AI Capstone project development journey**!**

Your mission is to identify a local issue affecting your school or community and that could be solved using artificial intelligence (AI).

While doing this, you will learn more about problems you can solve to improve lives and make the world a better place. You will also learn many important skills including:
- how to work as a team member
- how to clearly **identify** an issue and who it is affecting (**the user**)
- how to **brainstorm** solutions and select the best one
- how to decide which **type of AI** may be useful for your proposed solution
- how to **ethically** gather and use **data** to **train** a computer to help solve the issue
- how to **test** the prototype with users and use their **feedback** to improve your solution
- how to pitch your solution to people who will be able to help you take action

What you need to get started

To assist you in this journey of developing a capstone project, the following two documents will be helpful:

1. This Project Guide
2. A Project Logbook (which your team needs to fill in as part of your project submission)

What to submit

There are two submissions required:

1. A **Project Logbook** with your ideas and activities along each step of your journey
2. A three-minute team **video** about the problem and your solution.

Upload your video to YouTube or Vimeo and share the URL in your Project Logbook. If the video is private, please include the password with the link.

Process

You will be using the Design Thinking method to help you address your problem statement with AI. This Project Guide lists the steps to follow for your project.

Wherever you see the icon, you are required to make the necessary entries in your will Project Logbook.

The icon signals a group discussion and calls for a team decision.

Words that link to web sites are in blue.

Building the solution often involves testing the prototype and getting feedback from relevant people. The testing process goes in a loop until the solution is considered acceptable. Any failures in the process should not discourage you, but rather be seen as a learning experience and an opportunity to improve.

Assessment criteria

You can read more about the rubrics for assessment in the [Appendix](#).

As you progress through the **Project Logbook**, you will also be prompted to rate yourself against rubrics as they pertain to each section.

Project duration

There are times indicated against each of the project phases in the sections below. This is the total of the time for background reading plus the estimated time for the activities in that phase.

The time commitment may vary per team member, depending on their role(s) and when they are needed in the project.

All times indicated are estimates only and teams are encouraged to do a lot of research about the issue they are tackling, what has been done about it so far and how it is affecting people in their local community.

How to prepare for your project

A good understanding of AI and Design Thinking will help you complete your project successfully. In order to gain access to the student course, you will need your teacher or other adult to create an account for you on the [Open P-TECH web site](#) first.

The course, [AI Foundations](#) provides support material for most of the activities in this project cycle,. Throughout each phase of the Project, this Guide will point to relevant sections of the AI Foundations online course where you can get more information about how to perform the tasks at hand.

Students who complete the five modules of the learning plan and pass the final assessment with a score of 80% or more will be rewarded with the [IBM AI Foundations badge](#).

Here is a list of topics that will be covered in the AI Foundations course

AI Foundations Table of Contents

Module 1 What is AI? (2 hours 15 minutes)
Lesson 1 This is AI
Lesson 2 History of AI
Lesson 3 AI and HI (human intelligence)

Module 2 AI and You (3 hours)
Lesson 1 AI and Humanity
Lesson 2 Risks of AI
Lesson 3 Ethics in AI
Lesson 4: The Design Thinking Method

Module 3 Machine Learning in AI (3 hours)
Lesson 1 Machine Learning and AI Challenge
Lesson 2 Machine Learning with Data
Lesson 3 AI Design Challenge
Lesson 4: Machine Learning with Algorithms
Lesson 5: Machine Learning with Neural Networks

Module 4 AI Applications (3 hours)
Lesson 1 Natural Interaction
Lesson 2 Computer Vision
Lesson 3 Recommender Systems
Lesson 4: Autonomous systems

Module 5 Bringing It All Together (2 hours 15 minutes)
Lesson 1 Project Build Day 1
Lesson 2 Project Build Day 2
Lesson 3 Project Build Day 3

Teachers can also undertake the AI Education for Teachers, presented in partnership with Macquarie University, Australia. This course is designed by teachers for teachers and will bridge the gap between commonly held beliefs about AI, and what it really is. AI can be embedded into all areas of the school curriculum and this course will show you how.

Let's get started!

We hope that you enjoy working on this project and that you learn a lot about how to use AI to solve a local issue in your school or community.

Happy Learning!

2. Forming a team *[1 hour]*

Getting to know the people in your team

Introduce yourselves within your team and find out:

- What each person loves doing
- What each person is good at
- What each person would like to get better at
- What each person knows and thinks about AI

AI project team roles

There are several roles team members can take on when working on an AI project. Below are a few examples of roles and tasks. If you are forming a smaller team, members may have to take on multiple roles.

Project leader
- Schedules and allocates tasks among the team
- Ensures tasks are completed on time
- Acts as the point of contact between the team and the teacher, users and stakeholders
- Resolves team issues

Data expert
- Decides on type of data needed to train an AI model
- Collects data
- Ensures data is in a format that the team can work with
- Ensures data is ethically sourced and unfair bias is eliminated
- Works with prototype builder to train the AI model

Information researcher
- Collects questions from the team that need answers
- Identifies where answers can be located (source)
- Searches for answers, writes up a report and passes information to the project reporter

Designer
- Works with the team and the user to create a process flow for the new user experience
- Plans the user interface for the prototype

Prototype builder/coder
- Works with data expert to train/teach computer
- Creates the prototype and codes if necessary

Tester
- Works with users to tests the prototype
- Gets feedback from users and user sign-off when they prototype has met user requirements
- Creates an action plan on what needs to be fixed and prioritises requests for future improvements

Marketing/Communications leader
- Collates the team Project Logbook submission and creates the content for the video pitch
- Selects spokespeople within the team for various matters relating to the project

Video producer
- Films the activities of the team and edits these into a presentation for submission

Tasks are not solely the responsibility of those who are assigned to the specific role. Each team member should involve other team members, users or stakeholders in order to achieve their goals. Team members may also have more than one role. The project is a team effort and requires collaboration and communication.

Watch this video with tips from people who have been involved in the Call for Code competition about how to put together a winning team.

Project Logbook (Section 2.1)

Fill in the table with your team members and their roles.

Team collaboration and communication

Collaboration is **actively working with others** with an open mind to the ideas of others to accomplish your goal. As a team member, you need to be able to **share your ideas and ask questions** so that your team and teacher understand your thinking.

A project plan will help you get started. Here are some tips:

- Look at the time recommended to complete this project and select your start and end dates. Allow extra hours/days for times when team members will be away and unable to work on the project and also factor in when your users will be available for interviews, consultation and testing. Also allow some extra time for tasks that may take a bit longer than planned.
- Add start and end dates for the project phases – background reading and learning about AI and AI tools, forming a team, problem definition, understanding users, brainstorming a solution, designing a solution, collecting and preparing data, training your model, building your prototype, testing your solution, refining your solution, preparing your submissions.
- List tasks for each project phase and assign these to team members with start and end dates.

Project Logbook (Section 2.2)

Document your project plan.

It is also important to have a clear plan of how you will communicate with each other to help you work more effectively as a team and resolve issues more easily so that you can achieve your goal.

Here are some tips on to get you started with a communications plan:

- Will you meet face-to-face, online or a mixture of each to communicate?
- How often will you come together to share your progress?
- Who will set up online documents and ensure that everyone is contributing?
- What tools will you use for communication?

Project Logbook (Section 2.3)

Document your communications plan

During the project, it is also helpful to create minutes for team meetings, where you log the date the meeting took place, who attended the meeting, who was invited but unable to attend the meeting, the purpose of the meeting, the items discussed and the items that need to be done as a result of the discussion.

Project Logbook (Section 2.4)

Document your team meeting. (Complete this for each team meeting.)

---

3. Defining the problem *[3 hours]*

Background Reading (2 hours)

[AI Foundations – Module 2, Lesson 1: AI and Humanity](#)
["What is AI? We drew a flowchart to help you work it out"](#) by Karen Hao, 10 Nov 2018
[AI Foundations – Module 4: AI Applications](#)
[IBM Design for AI](#)

Read about some examples and cases studies of AI in the Indian context from these resources:
1. [INDIAai](#)
2. [Leadingindia.AI](#)
3. [MyGOV's Conversational AI during COVID-19 pandemic](#)
4. [Artificial Intelligence in India – Hype or Reality](#)

Project Logbook (Section 3.1)

List the issues you have come up with.

Discuss each issue in your list among your team and arrange the ideas so that similar issues are grouped together. Here are some questions you can use to guide your discussion...

- Which of these issues really matter to you and which ones would you like to tackle?
- Why would you want to solve these problems?
- What are likely solutions for each problem?
- What impact will solving the problem have on the community?
- Have other people already come up with solutions to this problem?
- Do these solutions require AI?

Consider whether AI would be a good fit for the solution

AI mimics the way the human brain works. It learns through experience by accumulating data and insights from every interaction, getting better all the time, rather than being programmed to perform a logical set of rules.

When humans use AI to help them solve problems, the overall effect is greater efficiency, better decision making and quicker implementation of solutions.

AI may be a good fit to your solution if it requires one of the following:

- Recognising digital images, videos and other visual inputs (image recognition)

- Recognising speech, tone of voice, words spoken, heart rate, gestures and responding to these (natural interaction)

- Looking for patterns in large amounts of data and using these patterns to reason or make decisions (recommender systems)

- Use of smart sensors to gather information about the environment (machine perception and autonomous systems)

If you think your solution does not meet any of the above criteria, it probably will not benefit from using AI. Discuss this with your teacher and try to find an alternative problem that requires an AI solution.

Narrow down your list of issues to those that matter most to you and that you think you can solve using AI.

Project Logbook (Section 3.2)

List these issues.

 Vote on one problem that all or most of you would like to tackle, taking into consideration the impact you are likely to make.

Project Logbook (Section 3.3)

Write down the issue your team voted on.

Now breakdown the problem and think of the people affected (your users), what they need and what you can do for them. Make sure that what you can do to help them is something that can be measured. You should be able to express the users' problem in one sentence:

How can we help _____ [a specific user or group of users] find a way to _____ [do what] so that they can _____ [do something not done before that can be measured]

This is your **problem statement**.

Project Logbook (Section 3.4)

Write your problem statement.

4. Understanding your users *[4 hours]*

Background reading [1 hour]
AI Foundations – Module 2, Lesson 4: The Design Thinking Process
Enterprise Design Thinking – Getting to know Users

Project Logbook (Section 4.1)

Describe your users.

Before developing a solution, it is important to thoroughly understand both the problem and your users. Understanding your users involves empathy - putting yourself in their shoes and connecting with how they might be feeling about their problem, circumstance, or situation.

Who are your users?

Who is the hero of your story? Hint: This is the user.

What is their current struggle today? What problems do they face?

What is one idea you have to solve their problem?

How would that idea improve the user's experience?

Observe

You can get to know your users better by actually meeting with them and observing them as they carry out their tasks and as they interact with the people and tools in their environment.

Project Logbook (Section 4.2)

Write down observations about your users.

Conducting interviews

You can conduct interviews with a number of users to find out more about their needs. Ask open-ended questions about how they live and work. Listen to their stories to understand their hopes, fears, and goals that motivate them.

Here are some questions you can ask:

- What's their story?
- What is their experience and what they do, think and feel throughout their experience?
- What are the highs and lows of their experience?
- Whom do they work with?
- Who do they rely on and who relies on them?
- What's expected of them?
- What are their needs?
- What problem are they solving?
- How do they define success?
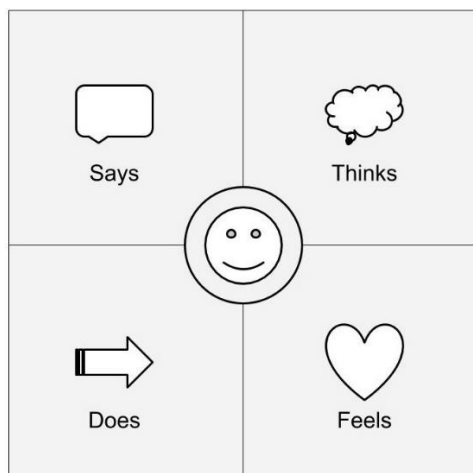
Project Logbook (Section 4.3)

Record your interview(s).

Create an empathy map

Select a scenario and a user to focus on for your empathy map. You can create more than one empathy map for different types of users.

Think about the perspective of the user. Write the name of your persona in the middle of the map. Using the information from the scenario, add observations to the appropriate section of the map.

You can share your Empathy Maps with your user(s) to double check your observations and assumptions.

Project Logbook (Section 4.4)

Fill in the empathy map.

Document the current user experience

Project Logbook (Section 4.5)

List the steps that your users currently experience relating to the problem. Also list the difficulties they have at each step.

Refine your Problem Statement

With a better understanding of your user, review your problem statement. Re-state this as follows:

_____ [a specific user or group of users] are experiencing issues with _____ [problem] today because of _____ [cause].

Project Logbook (Section 4.6)

Write your team's refined problem statement.

5. Brainstorming the solution *[3 hours]*

Background reading [1 hour]

Generate ideas

Once your team has a clear understanding of your user's problems and challenges, it is time to brainstorm a few possible ideas for solutions.

As you generate ideas keep your problem statement in mind and respond to the challenge question:

> *How might we use the power of machine learning to help people increase their knowledge or improve their skills?*

Individually write down or draw your ideas for a solution. Set a timer for five minutes and come up with as many ideas as you can.

Combine everyone's ideas and group similar ideas together.

Vote on the best ideas. Each participant should have 2 to 3 votes.

Listen to each team member's reasoning behind their votes. This is more important than the votes themselves.

- Which idea would be best for the user and why?
- Can you get your user to tell you directly what it is they need or want most?
- Is there any other information that is needed?

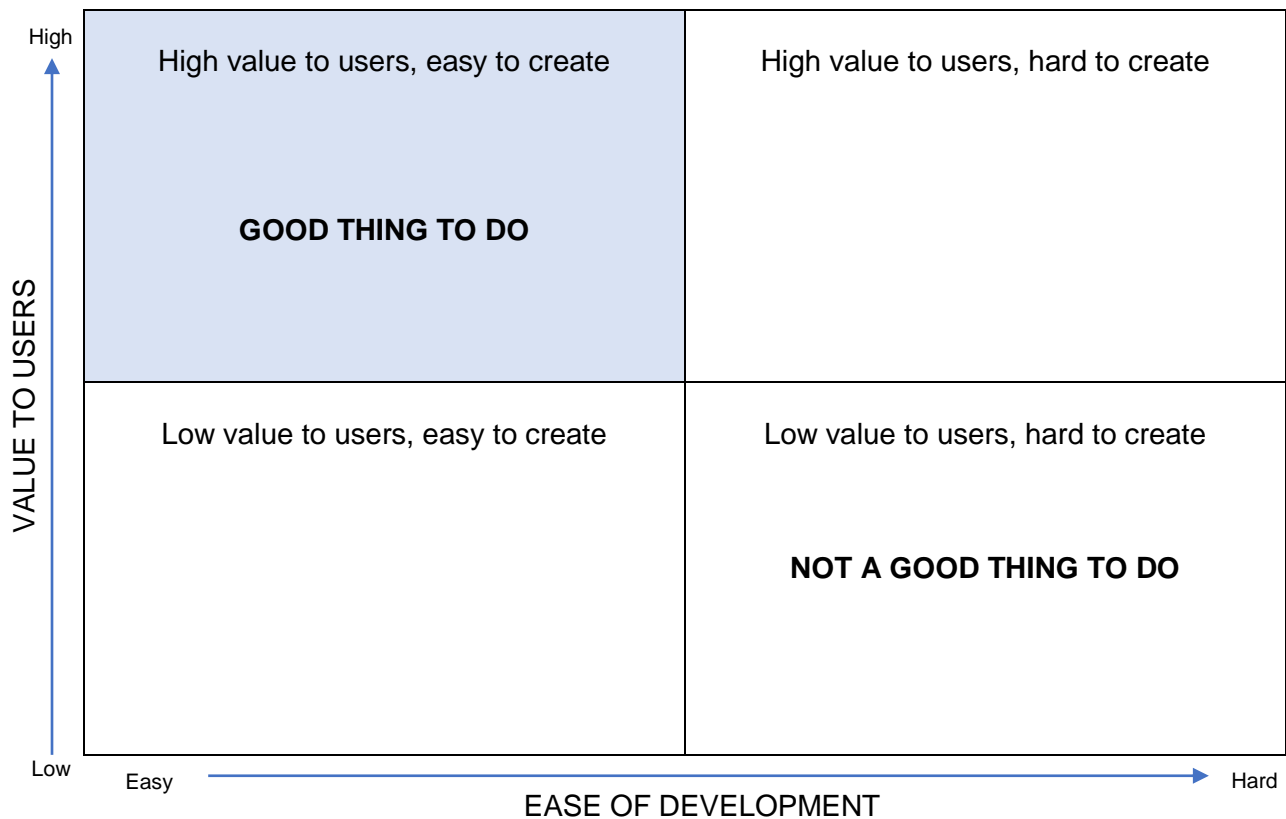**Project Logbook** (Section 5.1)

Record your team's five best ideas.

Prioritise your ideas

When many ideas are being considered, it helps to put your ideas in a **priority grid** focusing on importance to the user and on how easy it will be for the team to develop.

Value to the user = low to high
Ease of development by the team = easy to hard

High value to users, easy to create **GOOD THING TO DO**	High value to users, hard to create
Low value to users, easy to create	Low value to users, hard to create **NOT A GOOD THING TO DO**

VALUE TO USERS — High / Low

Easy ——————————→ Hard
EASE OF DEVELOPMENT

Plot your ideas on the graph.
Focus on what is valuable to the user and easy to develop and implement. Avoid ideas down in the 'NOT A GOOD THING TO DO' section.

Project Logbook (Section 5.2)

Plot your ideas in the priority grid.

Choose an idea

Take another five minutes to refine ideas for your solution. Think of the solutions that can be designed within a short timeframe (about one hour total) using one of the AI tools that you are comfortable with. Pick the best idea.

Project Logbook (Section 5.3)

Write your team's selected idea in Section 5.3.

Example:
My AI solution will help someone learn yoga poses. I will train a ML model using Teachable Machine to recognize different yoga poses. The tool's confidence level at identifying the pose will help the person know if they have done the pose correctly and how they can adjust their position to increase the machine's confidence level. A high confidence level means that the person is doing the pose correctly.

6. Design your solution *[1 hour]*

Document the steps that your users will now do using your AI tool. Describe what the user does first, what happens next, and so on. You may also represent the steps as sketches or a storyboard.

Example:

1. The user does a yoga pose in front of the computer webcam.
2. The program indicates the name of the pose and the confidence level that the name of the pose is correct.
3. The user keeps practicing the pose until the confidence level is high and they are satisfied that they have done the pose correctly.
4. The user repeats this process with another pose.

Project Logbook (Section 6.1)

Document the users' new experience with your AI solution.

---

7. Data *[3 hours]*

Background reading [1 hour]

AI Foundations – Module 3, Lesson 2: Machine Learning with Data

Identifying and labelling data

Decide what type of data you need for your AI solution, such as images, sounds, text. Decide what labels you would like the computer to assign to the images, sounds or text when the computer recognises them. For instance, you could have the labels, 'happy', 'sad' and 'neutral' which the computer can output when you show it images of people's faces.

Project Logbook (Section 7.1)

List data that you will need to collect to train your AI model and the labels you would like them categorised into.

Collecting data

Data such as images, audio, video, statistics, can be collected using recording devices or sensors.

You can also create your own data set by observing behaviours and logging your observations and information about your subjects in a table or spreadsheet. For instance, you might want to log data about your run daily – start time, end time, distance covered, location, etc.

You can also find data sets online, but you need to ensure that the data from a credible source and that you have permission from the owner to use these for your AI solution.

You can find some data sets from sites such as Kaggle, Google Data, Datasets for Social Good Projects, MachineHack COVID-19 Hackathon datasets.

For more India-specific datasets you can got to INDIAai, Leadingindia.AI, Kaggle and Kaggle.

Think of ethical considerations when collecting data. Will the process of collecting data harm anything or anyone? For instance, when you capture photos of animals in the wild, will this process endanger them or their habitats? If you collect images of people, will this put their privacy at risk or damage their reputation? How will you ensure privacy?

Other Considerations when working with data

1. Is the data accurate and recent?
2. Do you have a representative sample that is diverse enough to represent the population you are examining?
3. De-identifying - which features must be removed to safeguard privacy of people's data?
4. Are you taking care to avoid unfair bias?

Project Logbook (Section 7.2)

Describe how you will collect your data and state any ethical considerations in Section 7.2.

8. Prototype *[4 hours]*

Background reading [1 hour]

AI Foundations – Module 3, Lesson 2 Engage: Train a Machine – Part 1
AI Foundations – Module 4, AI Applications
AI Foundations – Module 5, Project Build Day 1 (Plan for Prototyping)

For teams who will not be building a working prototype, you may simply create a concept of your prototype in this section.

Creating a concept of your prototype

Develop a concept of your prototype. Take your user experience design in Section 6 and expand on it to include a sketch of each screen that is part of your solution with details of what the users will do as they interact with your solution. Show how users will transition from one step to the next and include features of how your solution will work (screens, buttons, overall layout, etc).

Provide a brief description that explains each step in the user's experience. Include information about how the solution uses data, makes decisions, and the final output or action.

> **Project Logbook** (Section 8.1)
>
> Document your prototype concept.

Choose your AI tools to build your solution

Solving a real-world problem with AI will typically require you to train AI models to recognise and classify images, sound, text, numbers. There are also pre-trained models that have been trained to classify particular data. The models can then be used to initiate a set of actions which can be coded into programs.

There are a number of tools you could use to create and train your AI models as well as build programs. You will encounter the tools listed below in the **AI Foundations** course by IBM and ISTE. These tools do not require any prior coding knowledge and their web sites come with good support materials for students and teachers.

Machine Learning for Kids (beginner, intermediate, advanced)
Machine Learning for Kids is an easy-to-use platform that you can use to create and train your own model. You can collect and classify your data, or you can use several pre-trained models. While doing so, you will also learn about AI concepts and what goes on under the covers, such as how the model was trained.

To build a program using your model, you have access to coding platforms from within the Machine Learning for Kids site. These include Scratch, App Inventor and Python. The platform also provides access to pre-trained models and can import TensorFlow models, such as those created using Teachable Machine.

Machine Learning for Kids requires you to register an account on the IBM cloud so that you can have free access to IBM Watson AI and work as a team on the project.

Teachable Machine (beginner)

Teachable Machine is a web-based tool for creating machine learning models. You can easily train a computer to recognize your images and sounds without writing any machine learning code. However, to create an application that uses your model, you would need to do so in a separate coding platform capable of handling your model's TensorFlow format.

MIT App Inventor (beginner/intermediate)

MIT App Inventor is a visual coding tool, similar to Scratch for creating fully functional apps for Android smartphones and tablets. For those without Android smartphones, there is an online emulator for Windows, Mac OS X and Linux machines. To enable machine learning, you will need to import some AI extensions for MIT App Inventor.

IBM Watson Assistant (advanced)

IBM Watson Assistant is an AI product that lets you build intelligent chatbots that handle conversational interactions with users on any topic. The chatbot can be integrated into a web site, an app or a messaging channel.

Project Logbook (Section 8.2)

Write down which AI tool(s) you will use to build your solution.

Creating your working prototype

1. Gather the training data you need to train your model. If you are generating data in real-time, for example, posing in front of a webcam, list the actions or items you will show.
2. Follow the instructions for the tool you are using and train your model.
3. Test your model using new data to see how well it recognizes or responds to the information.
4. Add more training data as needed to increase the tool's accuracy.

Project Logbook (Section 8.3)

Write down what decisions or outputs will your tool generate and what further action needs to be taken after a decision is made.

---

9. User testing *[2 hours]*

When your prototype is ready, it is time to get some users involved in testing your solution.

For teams who are not building a working prototype at this time, you can still get users to review your concept. Show your users your concept and get feedback about whether they think this would solve their problems if developed. Ask them for improvements they would like to see.

For teams with a working prototype, your goal is to find out the following:

- How well does the prototype work and solve the users' problem?
- What needs to change now to meet the minimum user requirements?
- What improvements can be made later?

As you can see, you can keep refining your prototype until it gets better and better and it is up to you and your users to decide how many more improvements should be done based on your available time and the cost of doing so.

Selecting test users/data

Project Logbook (Section 9.1)

Describe which users/data will you select to test your solution, why they are the right ones and whether they are representative of your subjects.

Observe your users during testing

Tips for testing your solution with your users:
- Take detailed notes as you observe your users.
- Allow your users to experience the solution without explaining it. Give only basic information to get them started but let them explore how it functions. If you are testing a prototype concept rather than a built prototype, allow your users to examine the visual representations and read the explanations for each step.
- Allow your users to make mistakes while testing your prototype. Don't correct them right away if they do something wrong. This is valuable information that you can use to determine if something is unclear about your solution or how users might interpret it in a different way.
- Take note of their questions. These questions provide insight into areas that are not clear in your design and can also provide inspiration for new features.

Project Logbook (Section 9.2)

List your observations of your users as they tested your solution in Section 9.2.

Ask users for feedback after testing

Ask your users about their experience or impressions as they are exploring the prototype. You might ask the following questions or come up with your own:

- What were you thinking as you used this tool?
- How did this solution make your feel?
- What confused you?
- What surprised you?
- What do you wish the tool would do? Why?

Project Logbook (Section 9.3)

List your users' feedback in the Feedback Grid.

Refining the prototype

Project Logbook (Section 9.4)

Based on user testing, write down what recommendations you can act on now so that the prototype can be used.

Project Logbook (Section 9.5)

Write down what recommendations you can leave for later.

After making changes to refine your prototype, iterate and test once again…

10. Team collaboration *[30 minutes]*

Take a moment to reflect on how team members collaborated with each other during the project.

> **Project Logbook** (Section 10.1)
>
> How did you actively work with each other and with your users and stakeholders? If you were keeping a diary or log of your team meetings and to-do lists, you may include those in this section too.

11. Individual reflection *[30 minutes]*

A good way to identify what you have learned is to ask yourself what surprised you during the project. List the things that surprised you and any other thoughts you might have on the issue(s) in your local community or on what you have learned about AI.

Project Logbook (Section 11)

Each team member should write their own individual reflection in this section.

12. Creating a video pitch *[6 hours]*

Write your script

Imagine you are seeking media, support or funding for your solution. Your video pitch is your chance to highlight the issue you want to solve and why it matters to you, to your stakeholders and to your community or the world. Start by writing a script for your video.

Introduce your team:
Talk about your team, how you came up with the idea and why the issue is really important to you.

Introduce the problem and your solution:
What is the problem you are trying to solve? Who is affected? Who will be using your solution to help those affected by the problem?

Include sketches of your ideas from your brainstorming, clips of you training your model, evidence of your users testing the solution, screenshots of the solution, the solution in use and the impact it has made.

Why are you the best people to deliver a solution:
Show your understanding of AI and of your users' needs. Talk about the roles of the team members, your commitment to the project, how you collaborated effectively and how you have acted ethically and responsibly in developing the solution.

The plan ahead:
Talk about what further improvements you would like to do with your solution, how far you would like to take it, what you need to achieve this and how passionate you are about making this happen.

Start filming your video

You can find tips and ideas on how to develop a pitch video here.

Here are some tips to consider when creating your video:

PRESENTATION

1. Ensure your video follows a clear and logical sequence and is well-paced and clearly communicated
2. Be illustrative. Use demonstrations of your prototype and/or visuals where appropriate to illustrate examples.
3. Present accurate science and technology and use appropriate language.
4. Let your passion for your chosen topic/idea show through when presenting.
5. Ensure your video has good sound and image quality.
6. Keep your videos no longer than 3 minutes.

CONTENT

1. Show how well your solution addresses the defined problem.
2. Show how your solution meets user needs and provides a better user experience. You can ask users to speak about the solution and how it will improve their experience.
3. Demonstrate the originality and creativity in your proposed problem and solution.
4. Provide insight into how well the team collaborated. Showcase team members clearly illustrating their role in the project.
5. Provide insight into the team members' learning journey through the challenge and how your AI knowledge and design thinking skills have developed.

Rating criteria

The video content will contribute to the marking rubric listed in the Appendix.

Submitting your video

Upload your video to YouTube or Vimeo and share the URL in your Project Logbook. If the video is private, please include the password with the link.

Project Logbook (Section 12)

Specify the URL for your video (and password if one is required).

Appendix

Recommended Assessment rubric (for Teachers)

LOGBOOK AND VIDEO CONTENT

Steps	3 points	2 points	1 point	Points Given
Problem definition	A local problem which has not been fully solved before is explained in detail with supporting research.	A local problem which has not been fully solved before is described.	A local problem is described	
The Users	Understanding of the user group is evidenced by completion of all of the steps in *Section 4 The Users* and thorough investigation.	Understanding of the user group is evidenced by completion of most of the steps in *Section 4 The Users*.	The user group is described but it is unclear how they are affected by the problem.	
Brainstorming	A brainstorming session was conducted using creative and critical thinking. A compelling solution was selected with supporting arguments from *Section 5 Brainstorming*.	A brainstorming session was conducted using creative and critical thinking. A solution was selected with supporting arguments in *Section 5 Brainstorming*.	A brainstorming session was conducted. A solution was selected.	
Design	The use of AI is a good fit for the solution. The new user experience is clearly documented showing how users will be better served than they are today.	The use of AI is a good fit for the solution and there is some documentation about how it meets the needs of users.	The use of AI is a good fit for the solution.	
Data	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced, and that safety and privacy have been considered.	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced.	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected.	
Prototype	A prototype for the solution has been created and successfully trained to meet users' requirements.	A prototype for the solution has been created and trained.	A concept for a prototype shows how the AI model will work	
Testing	A prototype has been tested with a fair representation of users and all tasks in *Section 9 Testing* have been completed.	A prototype has been tested with users and improvements have been identified to meet user requirements.	A concept for a prototype shows how it will be tested.	
Team collaboration	Effective team collaboration and communication among peers and stakeholders is clearly documented in *Section 10 Team collaboration*.	Team collaboration among peers and stakeholders is clearly documented in *Section 10 Team collaboration*.	There is some evidence of team interactions among peers and stakeholders.	
Individual learning	Each team member presents a reflective and insightful account of their learning during the project.	Each team presents an account of their learning during the project.	Some team members present an account of their learning during the project.	
Total points				

VIDEO PRESENTATION

Criteria		Points Given 3 – excellent 2 – very good 1 – satisfactory
Communication	The video is well-paced and communicated, following a clear and logical sequence.	
Illustrative	Demonstrations and/or visuals are used to illustrate examples, where appropriate.	
Accurate language	The video presents accurate science and technology and uses appropriate language.	
Passion	The video demonstrates passion from team members about their chosen topic/idea.	
Sound and image quality	The video demonstrates good sound and image quality.	
Length	The content is presented in the video within a 3-minute timeframe.	
Total points		