



Mission X Design Specification

Objective

This document provides details of the case for Mission X. It is intended to be read in conjunction with “Mission X and Marking Rubrics.docx” and “L4 Programme Overview”.

Background

LevelUp Works is a company that provides education technology to primary and intermediate schools in New Zealand. They were in a process of improving their educational technology platform. A new design has been created as a result, which is described in this document.

Application Overview

The aim of the application is to run as a Learning Management System (LMS) for school teachers to deliver Digital Technologies curriculum (specifically, classes to learn programming) in an easy way. Students and teachers can register themselves on the platform. Students will use the platform to get their lesson instructions. Teachers can help students via the platform. It is designed so that the classes can be conducted either in-person or online although there is no video component to it.

The LMS has the following key users:

- School Students
- School Teachers

Application Prototype

For a demonstration of how the application will work, click the following link to access the prototype. <https://xd.adobe.com/view/5dca6b7a-3424-4a6e-4bab-3f223b8af0a8-2bfb/?fullscreen&hints=on>

The prototype is clickable. If you click anywhere on the screen, the clickable components will flash.

If you are inclined to, you can use the original Adobe XD file “Mission X Design.xd” to get the pictures and details. In order to use the Adobe XD file, you will need to download a free version of Adobe XD.

Requirements

Technical Design Requirements

The technical requirements of this platform are:

- The application needs to work in at least one of the four major browser (Safari, Chrome, FireFox or Edge).
- Users will access the home page from either mobile phone or from desktop, so your code should make sure that the application displays the home page clearly on both platforms.
- Users are not expected to access the logged in portion of the application via mobile or ipad, so you do not need to worry about those devices.
- Ideally both the front end and back end of the application are written in JavaScript as opposed to other programming languages, so LevelUp Works' JavaScript developers can support it going forward.
- The project data (such as Learning Objectives, Instructions) need to be stored in a database. They are not hard-coded in the HTML/JavaScript.
- The user data are stored in the database. They are not hard-coded in the HTML/JavaScript.

Functional Requirements / User Stories

The platform has the following high level user stories / functional requirements:

- As a teacher, I want to see the reason why my school should sign up for LevelUp Works
- As a user, I want to sign up
- As a user, I want to login to the platform
- As a user, I want to logout from the platform
- As a user, I want to see a list of projects available to be used, and to filter these by attributes
- As a student, I want to see learning objectives and get coding lesson instructions and videos
- As a student, I want to do Scratch coding tasks within the platform
- As a student, I want to submit work to a teacher
- As a student, I want to minimise the left hand navigation menu
- As a user, I want to see my profile data
- As a teacher, I want to track the progress of students
- As a teacher, I want to respond to student enquiries
- As a teacher, I want to see student submissions and mark them as completed

Assumptions

Where GUI or Database Design are Not Shown or Unclear

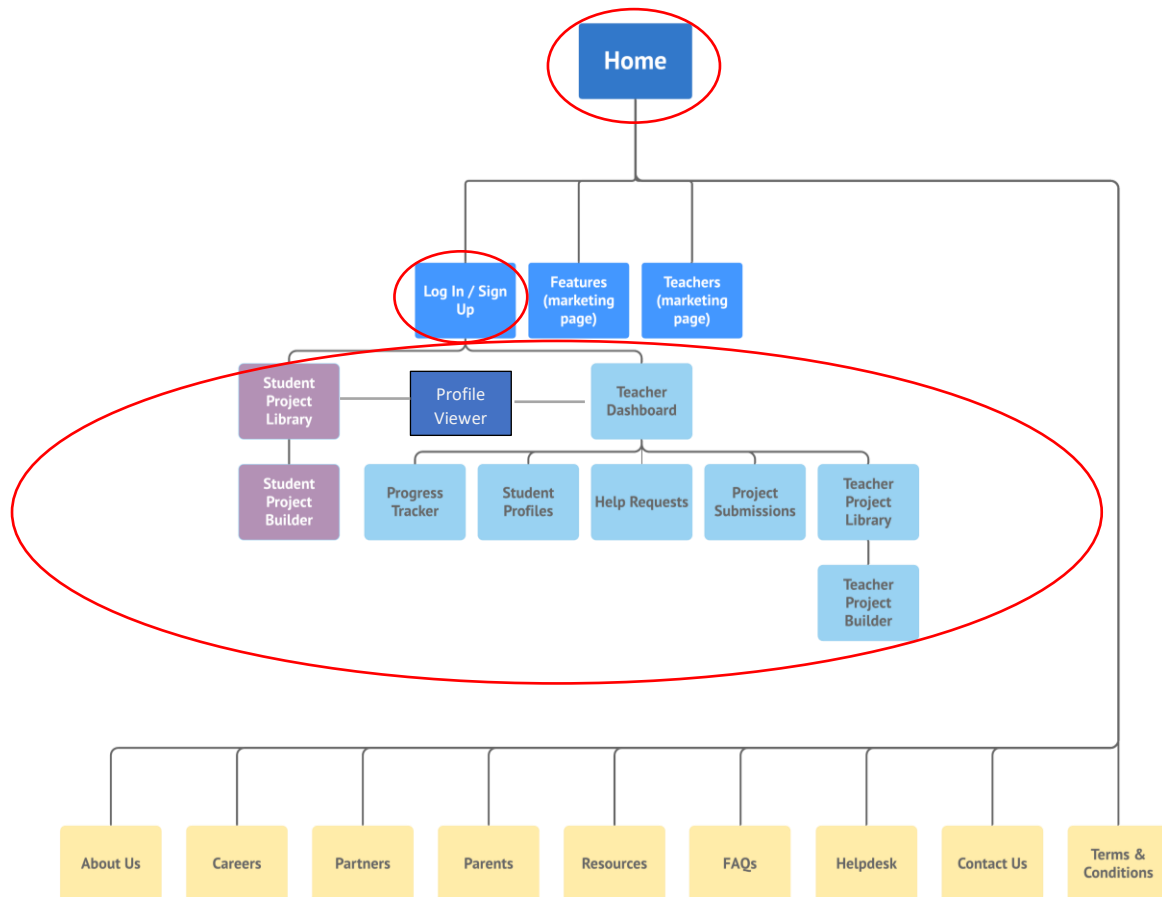
For the purpose of the Mission, you are only required to build the parts where the design is completed.

For any parts **not** specified in the design document or Adobe XD design, you can make your own assumptions. E.g. There are no screens designed for the functions of “add a class” or to “associate a student to a class”. Ensure you record any assumptions you have made.

You can also make your own assumption that the class information will be entered directly into the database by an administrator. And therefore, it does not require a user interface to be built.

Site Map

The following is a sitemap for the application. For the purpose of the Mission, you are only required to complete coding for those pages designed in Adobe XD, not the entire application. The scope of your Mission is the pages circled in red. Any pages outside of the red circle is not part of this Mission.



Page-Specific Explanations

The following pages require slightly more explanation as outlined below.

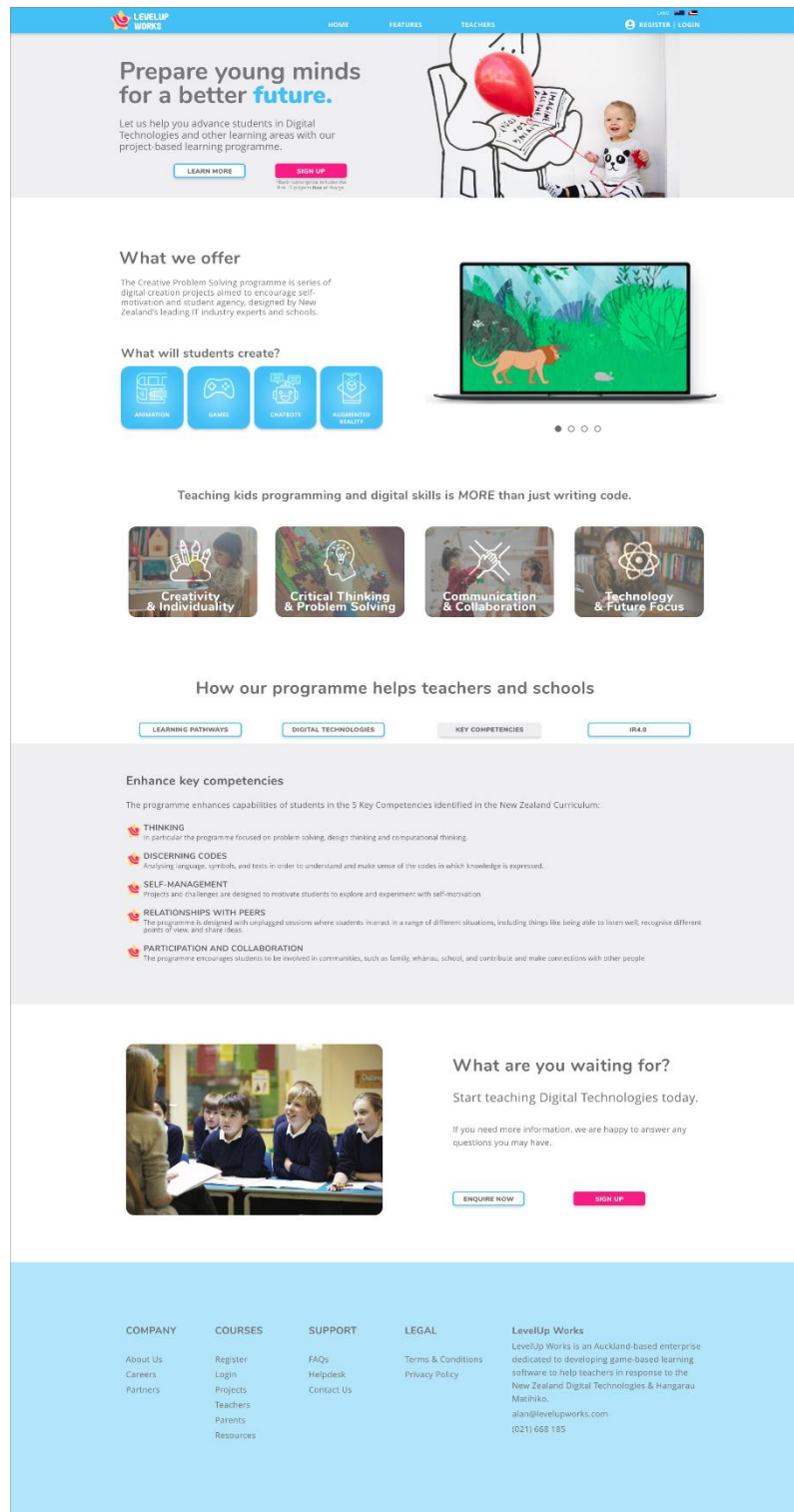
Home Page

The home page is designed for marketing purposes.

Users can access this page without having to sign in.

It is a long page with static content.

You do not need to get any content from a database.



“How our Programme Helps Teachers and Schools” Buttons

In the XD design and prototype, the following 4 buttons are not clickable:








They are expected to be clickable buttons. Clicking on them will display different contents in the grey sections right below them.

The contents of the 4 buttons can be found at <https://levels.levelupworks.com/> (you can copy and paste the contents from there).

Page Layout and Presentation

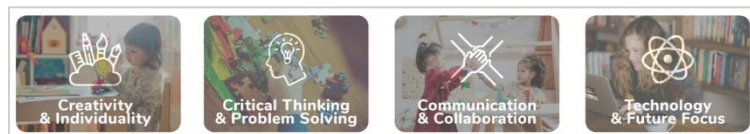
Enhance key competencies

The programme enhances capabilities of students in the 5 Key Competencies identified in the New Zealand Curriculum:

-  **THINKING**
In particular the programme focused on problem solving, design thinking and computational thinking.
-  **DISCERNING CODES**
Analysing language, symbols, and texts in order to understand and make sense of the codes in which knowledge is expressed.
-  **SELF-MANAGEMENT**
Projects and challenges are designed to motivate students to explore and experiment with self-motivation
-  **RELATIONSHIPS WITH PEERS**
The programme is designed with unplugged sessions where students interact in a range of different situations, including things like being able to listen well, recognise different points of view, and share ideas.
-  **PARTICIPATION AND COLLABORATION**
The programme encourages students to be involved in communities, such as family, whānau, school, and contribute and make connections with other people

This page will be accessed by any users from any device.

Although the XD design file did not include any design for a smaller form factor such as a mobile phone, you are asked to make it so that when it is displayed on mobile phones, the following 4 horizontal tiles will layout vertically:



A vertical layout will look as follows:



Student/Teacher Project Library Pages

The student project library page, and the teacher equivalent, display the list of projects available in the database. The page also allows users to filter and only display those projects useful to them. The list of projects can be found at this website <https://levels.levelupworks.com/> and click on the Projects menu item.

You will need to login using username “terry” and password “terry1234” to access this page.

The page has over 50 projects. You are asked to only display enough projects on the Library page to demonstrate your functionality, which will be a minimum of three (3). You do not need to display all details for all projects. You can make assumptions about the attributes for projects.

LEVELUP WORKS

HOME PROJECTS TEACHERS

LAWS RAWIRI FLETCHER

PROJECTS

Welcome to the project library. You can use the filters on the right to help you search for specific projects.

SUBSCRIPTION

☒ Free
☐ Premium

ACTIVITY TYPE

☒ Animation
☐ Game
☐ Chatbot
☐ Augmented Reality

YEAR LEVEL

☒ 1 - 4
☒ 5 - 6
☐ 7 - 8
☐ 9 - 13

SUBJECT MATTER

☒ Computer Science
☐ Maths
☐ Science
☐ Language
☐ Art
☐ Music

BEGINNER INTERMEDIATE ADVANCED

SHOW 25 50 100

Introduction
BEGINNER | Animation

My Birthday
BEGINNER | Animation

10 Block Challenge
BEGINNER | Animation

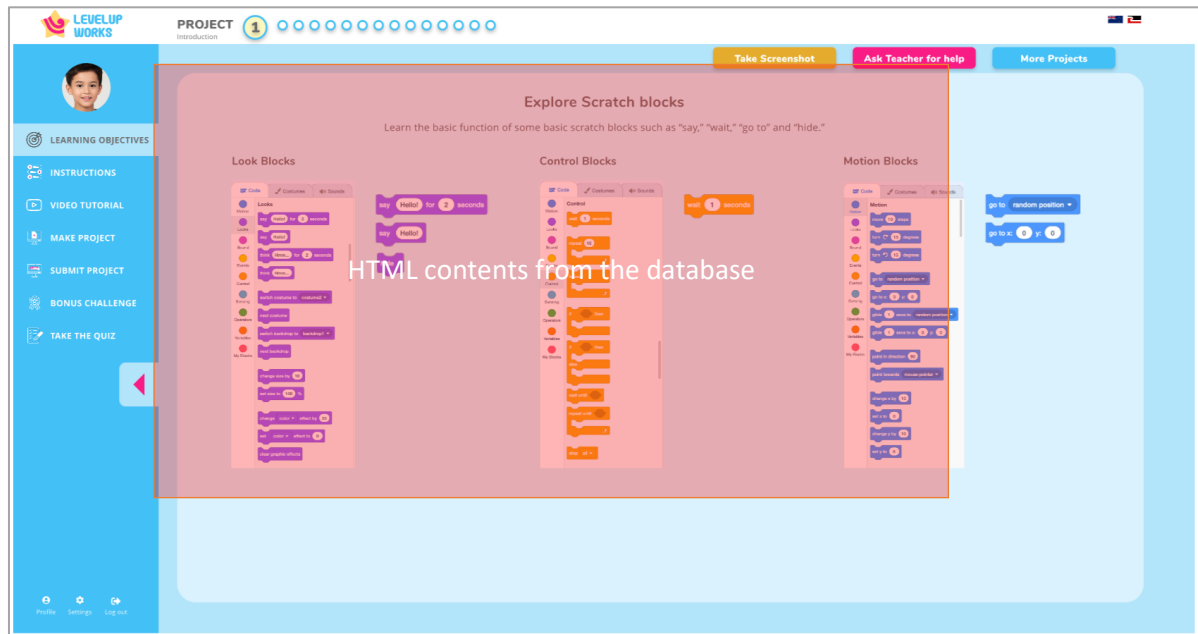
Build a band
BEGINNER | Animation

The bear and the monkey
BEGINNER | Animation

Debugging
BEGINNER | Animation

Student/Teacher Project Builder Page

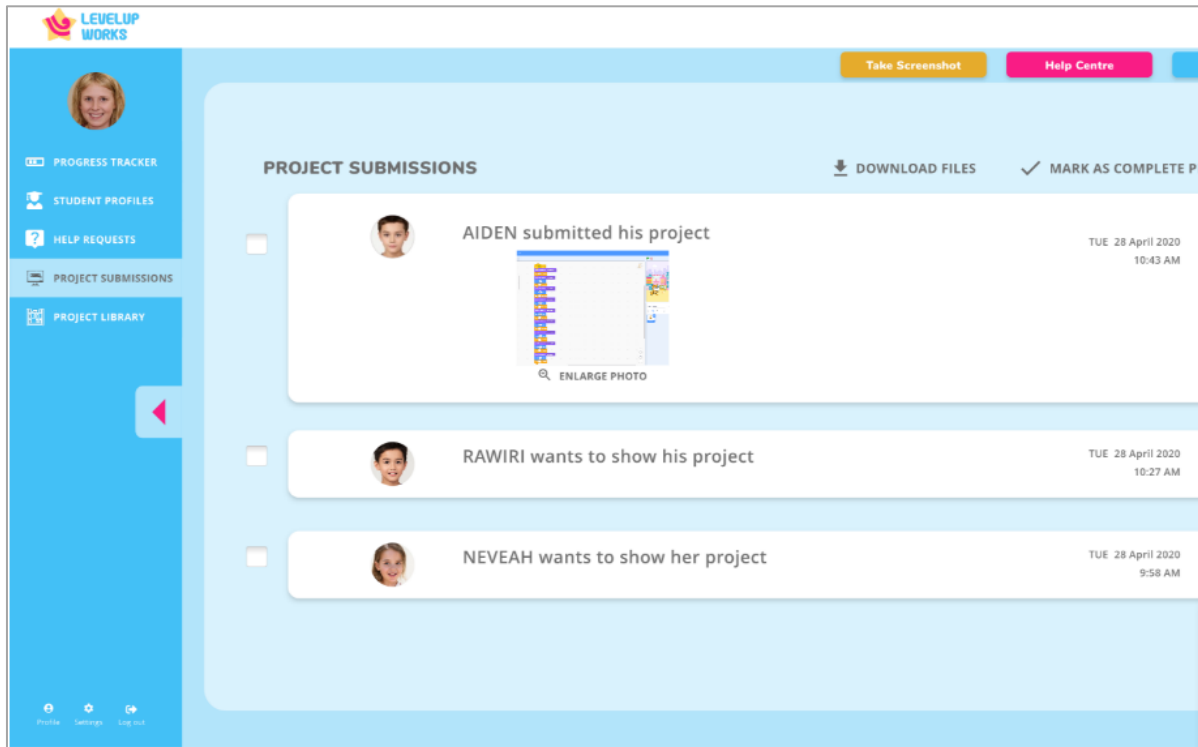
The project builder page is the main workbench for students. Learning Objectives, Instructions, and Video Tutorial pages, only display the HTML contents from the database. In other words, the database will store the content as HTML, and the page will take that HTML content and display it as the content on the page.



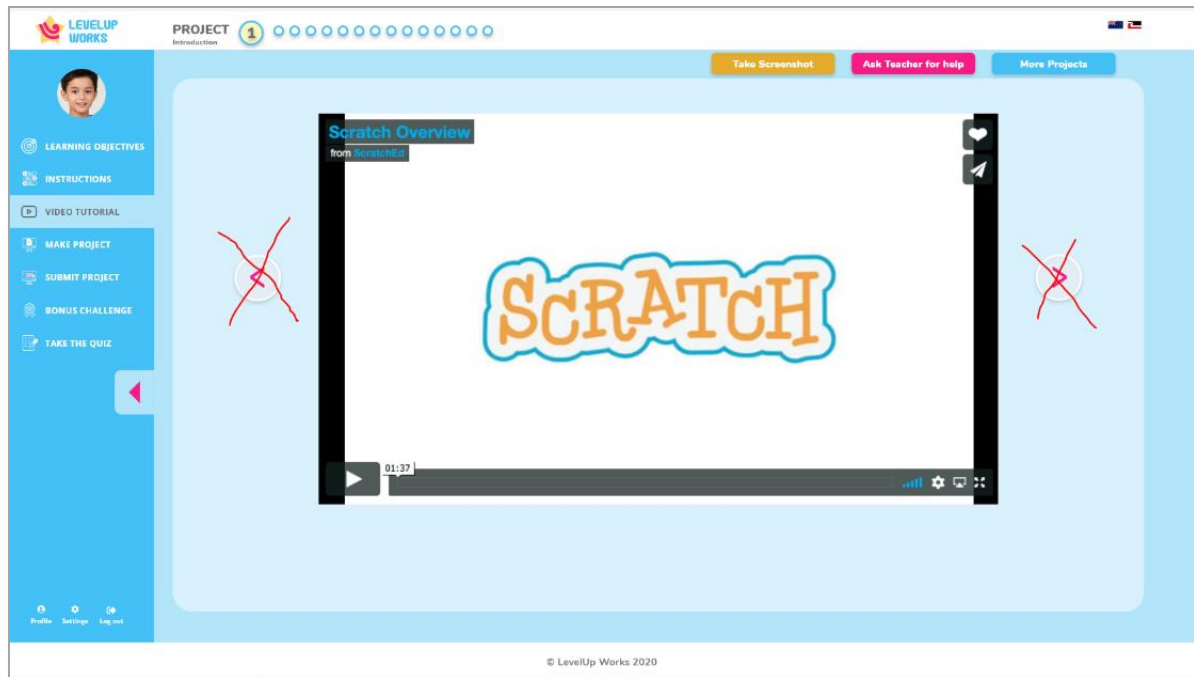
The red “arrow” will toggle between shrinking the menu to the left into icons or displaying them as full text.

The “**Make Project**” menu item is a frame that displays the page <https://scratch.mit.edu/>. You do not need to automatically login, users can login separately.

The **“Submit Project”** menu item has two functions within it. If the student clicks on “Submit” a project, the platform will send a “Submit” request to the teacher with a screenshot. The teacher will see it displayed like the first entry in the screenshot below. If the student requests to show a project, the platform will send a “show” request to the teacher. The teacher will see it displayed like the 2nd and 3rd entry in the screenshot below.



For the purposes of this Mission, **“video tutorials”** only needs one video, and therefore no horizontal previous and next page arrows are required. The video is stored as a YouTube link in the database.

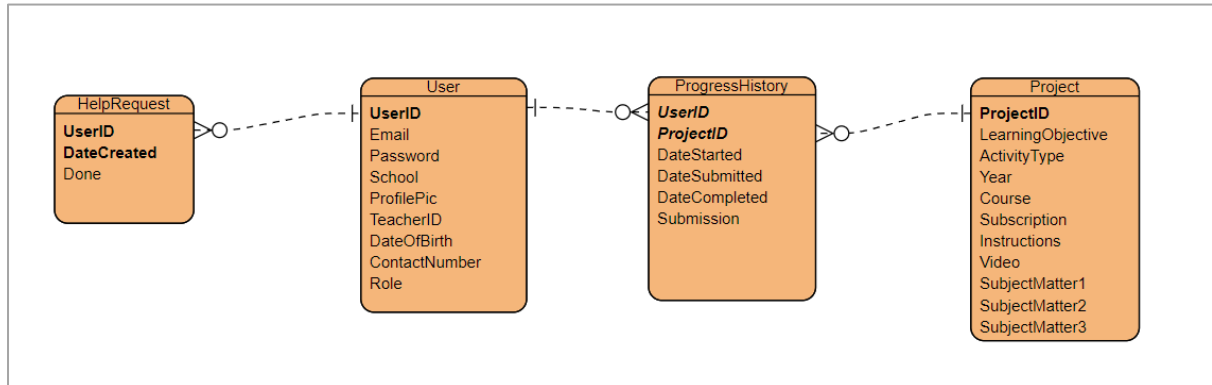


For the purposes of this Mission, **“Instructions”** only needs one instruction page, and therefore no horizontal previous and next page arrows are required. Instructions are stored in the database as html code.

You do not need to build the “Bonus Challenge” and the “Take the quiz” sections.

Database Design

The following Entity Relationship Diagram (ERD) shows the database design for this application. A database will need to be created with the following 4 tables and relationships.



See following two pages for detailed data types.

Detailed Data Types

Project Table

<i>Field</i>	<i>Data Type</i>	<i>Example</i>	<i>Note</i>
ProjectID	Int, auto increment	10	Primary Key
LearningObjective	Longtext	The learning objective for this session is conditional statements including if...then.	HTML code of the content to display
ActivityType	Varchar(20)	chatbot	Can be animation, game, chatbot or augmented reality
Year	Int	4	Represents school year level of students, ranges from 1 to 13
Course	Varchar(20)	Beginner	Options are: Beginner, Intermediate, Advanced
Subscription	Varchar(20)	Free	Options are: Free, Premium
Instructions	longtext	<h2>Step 1</h2> <p>Create a new variable. Here is a screenshot: </p>	HTML code of the content to display
Video	Varchar(200)	https://www.youtube.com/watch?v=21j_OCNLuYg	A link to an online video
SubjectMatter1	Varchar(20)	Computer Science	Options are: computer science, maths, language, art, music
SubjectMatter2	Varchar(20)	Maths	Options are: computer science, maths, language, art, music
SubjectMatter3	Varchar(20)	Science	Options are: computer science, maths, language, art, music

HelpRequest Table

<i>Field</i>	<i>Data Type</i>	<i>Example</i>	<i>Note</i>
UserID	int	23	Primary Key, Foreign Key
DateCreated	datetime	2020-12-31 23:59:59	Primary Key
Done	Boolean	True	

User Table

<i>Field</i>	<i>Data Type</i>	<i>Example</i>	<i>Note</i>
UserID	Int, auto increment	23	Primary Key
Email	Varchar (100)	Peter.pan@ranuiprimary.school.nz	
Password	Encrypted?	*****	
School	Varchar(200)	Ranui Primary School	
ProfilePic	Blob	(a picture)	Stores a picture
TeacherID	Int	34	Foreign Key to UserID of student
DateOfBirth	Date	2010-12-31	
ContactNumber	Varchar(15)	09-234-5678	
Role	Varchar(15)	Student	Can be "teacher" or "student"

ProgressHistory Table

<i>Field</i>	<i>Data Type</i>	<i>Example</i>	<i>Note</i>
UserID	Int	23	Primary Key, Foreign Key
ProjectID	Int	10	Primary Key, Foreign Key
DateStarted	datetime	2020-12-31 23:59:59	The date when the student start on this project
DateSubmitted	datetimeF	2020-12-31 23:59:59	The last date the student submitted the project for review
DateCompleted	datetime	2020-12-31 23:59:59	The date teacher marked the project complete
Submission	Blob	(picture)	The screen capture that the student submitted, blank if students has not submitted or only submitted for teacher to manually inspect