Lesson 6 - App development unplugged Facilitator Guide

Overview

Students look at an important phase of design - prototyping a product that attempts to address user needs. In teams, students examine a paper prototype for a chat app called "Txt Ur Grndkdz". Through using this paper prototype, students get a chance to see how a simple paper prototype can be used to quickly test ideas and assumptions before we ever get to the computer. After "using" the provided prototype students begin to identify ways to improve the next iteration.

Purpose

This lesson introduces students to the concept of a paper prototype as a quick tool to kick off the development of an app. This prototype will also serve as the context around which students will start to parse and organize feedback from a wide variety of users.

Agenda

Warm up (10 min)

- What is an App?

Main Activity

 (25 -35 mins depending on lesson length)

- Reading and Using a Paper Prototype

- Prototype Debrief

Wrap-up (15 min)

- Critique the Prototype
- Careers reflection and next steps

Objectives

Students will be able to**:**

- Use a paper prototype to test out an app before programming it

- Identify the user needs a prototype was designed to address

Preparation/materials needed

- ❏ Print one copy of the **User Interface Screens - Activity Guide** for each pair of students
- ❏ Print one copy of the **User Testing (Computer)- Activity Guide** for each pair of students
- ❏ Print one copy of the **User Testing (User) - Activity Guide** for each pair of students
- ❏ Cut out the UI Screens or provide scissors for students to do so themselves
- ❏ Post it notes

Vocabulary

- **Prototype** - A first or early model of a product that allows you to test assumptions before developing a final version.
- **Paper prototype** - one of the earliest forms of a prototype, and it allows a developer to test out their idea before investing a lot of time programming. Paper prototypes are a quick and dirty way to share the *user interface* of your app with potential users.
- **User Interface** - The visual elements of a program through which a user controls or communicates with the application. Often abbreviated UI.

Teaching guide

This guide includes a suggested script for the session (in orange). However, please feel free to tailor and adapt this accordingly when delivering.

Section 1: Getting started (approx. 10 min)

What is an app?

Prompt

What is an app? What apps do you or other people you know use?

- Keep a running list of responses on the board.

Once everyone has had an opportunity to share write down a proposed shared definition of an app as "a piece of software designed for a purpose".

This discussion aims to introduce the definition of an app. Most suggestions students provide should be able to be tied to this definition. Apps can provide services, organize or provide information, or might just be a game of other form of entertainment. In all cases, you just want to establish an app as a piece of software built for a purpose.

Remarks: When you think of an app, you probably imagine the finished product. In the last lesson you got a chance to experience the earliest phase of development, when we were brainstorming ideas and coming up with potential users and needs. The path between that brainstorming and a finished app, however, is quite long.

Have a discussion: What do you think goes into the development of an app?

The purpose of this discussion is to get students to consider the development lifecycle of a software product. You can use the list from the previous prompt to point out how their expectations of apps were likely all focused on the finished product, and not the process of development.

Section 2: Main Activity (approx. 30 min)

Place the students into pairs.

Reading and using a paper prototype

Hand out a copy of **User Interface Screens - Activity Guide** to each pair of students. If you haven't already cut the screens apart, give students a few minutes to do so.

Remarks: The set screens I just handed you is called a paper *prototype*. This is one of the earliest forms of a prototype, and it allows a developer to test out their idea before investing a lot of time programming. Paper prototypes are a quick way to share the *user interface* of your app with potential users.

Discuss: Based solely on the screens, what do you think this app was designed to do? *Encourage students to identify the specific elements of the prototype that support their arguments, and to consider the user needs that this prototype might have been designed to address.*

Transition: For each pair of students, either assign each student a role of *Computer* and *User*, or allow the students to decide. Once the roles have been assigned, have pairs move so that they are sitting across from each other.

Distribute: Give each of the *Computers* a copy of **User Testing (Computer) - Activity Guide** and each of the *Users* a copy of **User**

<u>**Testing (User) - Activity Guide**</u>

User testing

This activity has pairs of students testing the paper prototype, with one acting as the User and one as the *Computer*. The basic process is as follows:

1. The *Computer* places the home screen (the one titled "Txt Ur Grndkds") in front of the *User*.

2. The *User* selects a task from the table on their activity guide.

3. The *User* attempts to complete the tasking by "clicking" on the paper prototype screen in front of them.

4. Every time the *User* clicks on the screen, the *Computer* consults the Navigation Diagram on their activity guide.
   - If the Navigation Diagram shows a line connected to the element that was clicked, find the screen at the other end of the line and place it in front of the user
   - If the Navigation Diagram doesn't show a line connected to the element that was clicked, do nothing

5. When the User completes a task (or decides it is impossible in the current prototype), they fill out the "What I Tried" and "My Reaction" columns

There are several additional rows in the tasks table for *Users* to come up with their own tasks to attempt. The first task is filled out as an example, and you may choose to model it for the class.

Reducing printed materials computer activity guide. The computer's Activity Guides are used for reference only. Students can look at digital versions during this activity. Assign each student a link, rather than handing out a paper version. If you choose to print out the guide, they can be reused, as long as the students are told not to write on them. User Activity Guide: The user's Activity Guide can be completed online as a journal activity. Students can use a digital version of the Activity Guide as a prompt, copying the charts and questions into their journals.

Prototype debrief
Have the *Users* share back their experience to the whole class. Discuss some of the common problems that *Users* ran into in this activity, and attempt to identify potential improvements to the prototype.

Section 3: Wrap-Up (approx. 10 min)

Critique the prototype

Earlier in the lesson we hypothesized about the user needs that this prototype addresses. Now that you have experienced the app first hand, as either a User or Computer, return to that question.

In a journal or on a piece of paper, jot down the following:

- What user needs did this app addresses well (I Like)
- What user needs could this app do a better job of addressing (I Wish)
- What are a few user needs that aren't addressed at all, but that you think would make a good addition (What If)

Share: If there's time, have students share out their needs. Consider writing this up on the board or on poster paper.

Reinforce vocabulary. Use this concluding conversation to reinforce the vocabulary terms introduced in this lesson, in particular 'user interface' and 'prototype'.

Employability skills reflection:

What employability skills have you developed in this session? What might your next steps be in learning more and thinking about your career?

The slide outlines multiple employability skills as a prompt for pupils to reflect. Encourage them to pick three and think of three specific examples to support how they have displayed these skills in the session. This is good practice for job applications and interviews - particularly competency based application processes.

Want to find out more

If you have time you could click on the links provided, or just point the pupils towards these. It should be made clear that the

opportunities outlined are just those at PwC, and pupils should be encouraged to look at other opportunities too.

Link for more info: More information about app development can be found [here](#)

Link for opportunities in tech:

- Technology Degree Apprenticeships and Data Science Graduate Apprenticeships.

  (https://www.pwc.co.uk/careers/early-careers/our-programmes/flying-start-degrees/technology.html)

- School and College Leaver Apprenticeships at PwC
  (https://www.pwc.co.uk/careers/early-careers/our-programmes/join-us-from-school.html)