**Part 1 – Ethics**

I confirm that I have read and understood the *Massey Code of Ethical Conduct for Research*, *Teaching and Evaluations involving Human Participants*. Both of my participants are aged 16 years or older. All completed ethics documents (ethical compliance statement, low-risk checklist, information sheet, and consent forms) are filed in the “Ethics documents” folder.

**Part 2 – Usability evaluation plan**

**Goal**

Assess how easy it is for new users to create sketches using the Sketchpad website. Will they be able to successfully use the Crop & Resize, Text, Pen, Fill Vector, Star, Clipart tools. Also, will new users be able to save a sketch or export an existing one.

**Questions**

* How effectively can you use drawing tools?
* Can users find the eraser in the current site layout?
* Will they be able to save and export the sketch without prompting?
* Will they be able to use stickers and drawing tools using layers?

**Equipment/Materials/Environment**

* **Equipment**

1. Laptop
2. Microphone
3. OBS – Screen and audio recording
4. Phone – Using a stopwatch and digital touch sheet

* **Materials**

1. Consent form (oner per participant)
2. Task sheet (oner per participant)
3. Paper for notes – I will leave notes on how successfully or unsuccessfully users were able to use the website.
4. Pens, highlighter

* **Environment**

A quiet, well-lit room with two chairs and a table where I'll place my laptop. Stable and good Wi-Fi.

**Participants**

**Ideal Participants**

* Age 16-45, mixed gender
* Basic computer literacy; no previous experience with Sketchpad
* Students and professionals who need to use such a tool in their work or studies

**Tasks**

Participants must complete six tasks. Each task has success criteria and a time limit for independent completion (until help is offered).

* **Task 1 – Freehand drawing (Pencil)**
* **Instruction:** “Select the pencil, change the stroke color to read and draw a start shape”
* **Success criteria**: Pencil selected, red star visible on canvas
* **Time limit before help**: 2 minutes
* **Task 2 – Select and Resize tools**
* **Instruction:** “Select a star and increase or decrease its size depending on the original size of the star”
* **Success criteria**: Start selected and changed star size
* **Time limit before help**: 2 minutes
* **Task 3 – Eraser usage**
* **Instruction:** “Switch to the eraser and erase one edge of the star”
* **Success criteria**: The edge of the star has been successfully erased
* **Time limit before help**: 3 minutes
* **Task 4 – Increase the size of the star line**
* **Instruction:** “Select a star and increase the star line size to your choice”
* **Success criteria**: The star line size has been increased
* **Time limit before help**: 3 minutes
* **Task 5 – Layers, drawing tools, stickers**
* **Instruction:** “Select any other drawing tool. Draw any two objects. Can use a sticker and place one object behind the star and the other in front. That is, use different layers.”
* **Success criteria**: One object is behind the star; the other is in front
* **Time limit before help**: 5 minutes
* **Task 6 – Export**
* **Instruction:** “Save the image to your computer in .png format”
* **Success criteria**: The file has been successfully saved in .png format
* **Time limit before help**: 3 minutes

**Test procedure**

Each session lasts approximately 30-45 minutes. The following checklist will ensure consistency between sessions.

**Before participant arrives**

* Make sure recording equipment is ready (video recorder, microphone).
* Prepare printed consent forms and task sheets.

**Session flow**

* **Welcome & consent (3-5 min)**
* Greeting and consent
* Greeting the participant; confirm age ≥16 years.
* Provide information sheet; questions.
* Participant signs consent form; assign participant ID (P01, P02).
* **Setup & recording (2 min)**
* Launch video recorder screen (OBS) + audio recording; check the sound (10 sec test)
* **Pre-task instructions (1-2 min)**
* Explain the think-aloud protocol and encourage verbal expression.
* Provide the task sheet and explain the time limit and that help will be provided after the time limit.
* **Performing the task (20-25 min)**
* Introduce the tasks in order.
* For each task: start the timer, watch silently, take notes (start time, end time, success (yes/no), help (yes/no), mistakes).
* If a participant is silent for more than 20 seconds, ask him to think out loud.
* **Questionnaire (5 min)**
* The participant completes the SUS test and three short Likert scale tests.
* **Post-task interview (3-5 min)**
* Ask open-ended questions: “What was the most difficult?” “What did you like?” “Any suggestions for improvement?”
* **Wrap-up (1 min)**
* Stop recording; confirm saving the exported file; thank the participant and award him.

**Data to be collected**

* **Quantitative**
* Time spent on task (seconds)
* Task success (passed/partially/unsuccessfully).
* Number of errors (misclicks, wrong tool selections)
* SUS score (0–100)
* Number of Undo/Redo uses.
* **Qualitative**
* Audio recordings of thinking out loud (no face)
* Screen recording (video)
* Observational notes
* Ongoing comments and responses
* **Interview questions**
* *What did you like about Sketchpad?*
* *What did you find annoying or inconvenient?*
* *What 1-2 improvements would you suggest?*

**Data analysis**

* **Quantitative analysis**
* Calculate for each task: average time, median, standard deviation
* Calculate the percentage of successful task completion (task success rate) If success < 80% - mark as a critical issue
* SUS: calculate the final score using the standard procedure (0-100), average and spread
* **Qualitative analysis**
* Record critical incidents in recordings (long pauses, repeated clicks)
* Transcribe short excerpts (main comments and difficulties)
* For key issues, assign a severity rating on a three-level scale: high/medium/low

**Part 3 – Usability pilot study**

**Part 4 – Heuristic evaluation**