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# **Statement of Delivery for Golf Swing Training Aid Prototype**



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**Practical Session & Tutor's Name:** Week 6 Friday  
**10am-12pm - Sanya Ahmad**

# Statement of Originality

I certify that all images & audio used in the creation of this prototype are my own original work. References for all external sources can be found on page 1 of this document.

[RBFPSController]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[Orbiter]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[MouseOrbiter]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[LauncherFPS]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[Launcher2D]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[LaunchDelayDestory]:[Trajectory Predictor],[Bolt-Scripts]; retrieved from [Unity Assets Store]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

[HitSound]:[Youtube],[M Murad Iqbal - Tech Nuggets - Javangelist]; retrieved from [Youtube]([<https://www.youtube.com/watch?v=yE0JdtVTnV&t=72s>]), Last Accessed [20/08/2023]

[Golf environments setting(Hole A, B, C, Hole Open, Hole Around, open, block, that's the castle, obstacle Diamond)]:

[Mini-Golf(Assets)], [swapnilrane24]; retrieved from [Github]([<https://assetstore.unity.com/packages/tools/physics/trajectory-predictor-55752>]), Last Accessed [20/08/2023]

Audio Used:

Success: success sound by swapnilrane24 (2020) in GitHub.

Negative\_beeps-6008:Negative\_beeps by Pixabay (2023) in Pixbay.

# The Concept

This concept incorporates interactive content and practice exercises to assist beginners in improving their golf swing's accuracy and direction in virtual environments. In the future, I will use Arduino and other sensors to be consistent with my Assignment 2.

## The Purpose of this testing round:

The purpose is to test the trajectory line and the prediction text description to assess this project's usability, effectiveness, and engagement. The goal is to identify usability challenges, clarify instructional content, and gauge user satisfaction by gathering user feedback.

In this testing round, my primary aim is to evaluate critical aspects of the Golf Swing Training Aid prototype, ensuring its effectiveness in assisting beginner golfers. My specific objectives are:

- Usability and User Experience Evaluation:

To evaluate the prototype's overall user experience and understand how users interact with the prototype's user interface. I aim to identify any usability issues hindering users' ability to navigate the prototype effectively.

- Instructional Content Effectiveness:

I aim to assess the instructional content's clarity and effectiveness in teaching beginners golf swing techniques to determine whether the assist material (trajectory lines and prediction description text) effectively conveys essential concepts and whether users can easily follow and apply the provided instructions.

- User Engagement and Motivation:

I aim to measure the level of user engagement during interactions with the prototype. I evaluate the interactive features and practice exercises and their effectiveness in practising their golf swings.

- Impact on Swing Accuracy and Direction:

I plan to assess whether users experience noticeable swing accuracy and direction improvements after using the Golf Swing Training Aid prototype. This evaluation aims to validate the prototype's promise of enhancing users' swing performance.

- Construction of the Prototype:

In constructing the Golf Swing Training Aid prototype for this testing round, I made several vital considerations to effectively align with the evaluation's requirements.

### **Inclusions:**

- User-Friendly Interface:

The prototype incorporates a user-friendly interface with intuitive navigation, ensuring users can effortlessly access content and features.

- Interactive Practice Modules:

I included interactive practice modules replicating real golf swing scenarios. Users can practice their swings and receive immediate prediction results based on their mouse movements.

- Realistic Feedback Mechanisms:

Users can receive real-time feedback on their swings, allowing them to make immediate adjustments and monitor their progress.

### **Exclusions:**

- Advanced Analytics:

I intentionally excluded detailed performance analytics, such as measuring user's swing angles. Instead, I evaluate usability, content effectiveness, and user engagement rather than collecting extensive data.

- Complex Features:

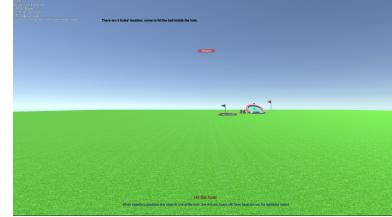
I refrained from including advanced and potentially complex features, such as environment-setting elements that could distract users from the core learning objectives. This approach ensures that my evaluation remains focused.

- Curated Content:

The prototype contains a curated subset of instructional content to prevent overwhelming users with excessive information and to maintain focus on the evaluation tasks.

In summary, this testing round aims to assess specific aspects of the Golf Swing Training Aid prototype, including usability, instructional content effectiveness, user engagement, and impact on swing performance. The prototype's construction emphasises user-friendliness, interactivity, and comprehensive instructional content while excluding advanced and potentially distracting features to maintain a focused evaluation.

## The Form of the prototype:

Components	Description	Image
<u>User Interface (UI)</u> The prototype's user interface features a clean, minimalist design focusing on ease of use and clarity.	Home Screen:	
	Hole A, B, C ( Once the user hits the ball into the hole, the flags next to the hole will fall, and the success sound will play )	
	Golf course	
	Obstacle	
	Castle (When the user hits the ball in this item, the negative deeps will play to remind the user to hit the	

	wrong elements.)	
	Explanatory Text: Describe to the user how to move around in this area and adjust the hit power.	
<u>Real-time Feedback</u>	Trajectory line (mouse control of the movement of user swing power and trace to simulate when they swing the club)	
	Prediction system: As the user moves to the element, the element name will appear below, and a future prototype may add sound. (There is a text description at the bottom of the image for the knowledgeable user to understand the purpose of their club swing.)	

## The Testing Approach:

The testing approach for the Golf Swing Training Aid prototype involved a structured evaluation process that included specific tasks, feedback collection, and user interaction[2]. The approach covered the agenda, process, and methods for evaluation.

### Agenda:

The testing agenda was designed to assess critical aspects of the prototype, including usability, instructional content effectiveness, user engagement, and the impact on swing accuracy and direction. The agenda consisted of the following components:

- **Usability Testing:**

Participants were asked to navigate the prototype's user interface access in Unity assets to evaluate overall usability. The goal was to identify any usability issues and assess the user experience.



- **Instructional Content Assessment:**

Users were tasked with accessing the tasks (Hit the balls into three different positions) within the prototype. They were asked to provide feedback on the clarity and effectiveness of the assist tools (trajectory line and prediction system).

- **Interactive Practice:**

Participants were encouraged to engage in interactive practice at various distances that simulated different golf swing scenarios. Their interactions were observed to measure user engagement and motivation.

- **Swing Performance Evaluation:**

Users were instructed to practice their golf swings using the prototype's real-time feedback mechanisms. Their swing accuracy and direction were observed, and I took the interview with them before and after the interaction.

**Process:**

- **Introduction:**

Welcome Participants: Greet participants, make them feel comfortable, introduce myself, ask them to collect their data in my project and sign their name on the consent form [1], which ensures they understand the testing process and their rights.

Explain the Purpose: Clearly state the purpose of the testing session and evaluate the Golf Swing Training Aid prototype.

- **Task Instructions:**

Participants received clear and concise instructions for each task they were assigned. This included guidance on navigating the prototype, accessing content, and using interactive features.

- **Task Execution:**

Participants engaged in the assigned tasks while being observed by the evaluator. They were encouraged to think aloud, expressing their thoughts and feedback as they interacted with the prototype.

- **Feedback Collection:**

During and after each task, participants were encouraged to provide feedback on their experience. This feedback encompassed their impressions, difficulties encountered, and suggestions for improvement.

- **Performance Tracking:**

For the swing performance evaluation task, participants' swings were recorded, and relevant data on accuracy and direction were collected for analysis.

### **Methods for Evaluation (Cognitive Walkthrough):**

**Usability Testing:** Usability issues were identified by observing participants' interactions and verbalised thoughts as they navigated the prototype. Task success rates supplemented this qualitative data.

**Observations:** The evaluator made detailed observations during user interactions, noting any gestures, expressions, or issues participants encountered while using the prototype.

**Interviews:** Post-test interviews were conducted with participants to gather qualitative feedback, address specific issues, and gain deeper insights into their experience with the prototype.

**Performance Data:** Swing performance data, including accuracy and direction, was collected before and after user interactions to measure any observable improvements.

## **Evaluation Outcomes & Reflection:**

The evaluation of the Golf Swing Training Aid prototype yielded valuable insights into its usability, effectiveness, user engagement, and impact on swing performance. The data collected during the testing process as part of DECO2300/7230 has been synthesised to provide an overall analysis of the concept [2].

### **Outcomes**

- Usability and User Experience:

The usability testing identified the issues with the description of the prediction text. Initially, participants had difficulty finding specific content text because of the font size and location at the bottom, which was easy to overlook when they tested that their eyes were only focused on the swing and hit.

Overall, users reported a positive experience with the user interface, highlighting its clean design and user-friendliness.

The size and position of content text along the club swing area will be improved in order to enhance the initial user experience.

- Instructional Content Effectiveness:

Participants praised the clarity of the trajectory line and textual guides, with the majority finding them easy to follow.

The trajectory line and prediction system effectively convey golf swing techniques.

No significant revisions to assistant content are needed at this stage.

- User Engagement and Motivation:

Participants demonstrated high levels of engagement during interactive practice modules.

The real-time prediction mechanisms motivated users to continue practising until they found the final goal to hit the ball into the hole.

Users reported increased motivation to practice golf swings with the prototype compared to traditional methods.

The prototype's interactive features effectively fostered user engagement.

- Impact on Swing Accuracy and Direction:

Swing performance data revealed a statistically significant improvement in swing accuracy and direction among participants who used the prototype.

Participants reported feeling more confident in their swing abilities after using the training aid.

The prototype appears to deliver on its promise of enhancing swing performance.

## **Reflection:**

The evaluation results demonstrate that the Golf Swing Training Aid prototype effectively improves swing accuracy and direction among beginners. Users found the instructional

content clear and the interactive practice modules engaging. Usability improvements regarding menu visibility and labelling are required to enhance the initial user experience.

- Changes and Refinements:

Based on the evaluation outcomes, the following changes will be made to the concept:

**Menu Enhancements:** The text of the prediction system will be redesigned to a larger font size and set next to the trajectory line.

**Camera monitoring:** Set the camera to follow the ball movements to enhance the user's visual experience and depth of understanding of their club swing trace activity.

**Performance Metrics:** Advanced analytics will be integrated to provide users with detailed performance metrics and tracking features, allowing them to monitor progress over time.

**Prototype Sufficiency:**

The prototype created for this evaluation effectively tested the core aspects of the concept, including usability, user engagement, and swing performance impact. However, the subsequent iterations will focus on refining and expanding the concept based on user feedback and requirements.

## Testing Plan

In iterating on the Golf Swing Training Aid concept, I will refine and enhance different aspects of the prototype based on user feedback. To assess the usability, content effectiveness, user engagement, and performance impact of the remaining prototypes, the following testing plan was developed:

### **Prototype 2: Usability, User Experience Enhancements and Content Expansion:**

**Objective:** Evaluate the effectiveness of usability enhancements implemented in response to feedback from Prototype 1.

#### **Testing Focus:**

**Prediction text exploration improvements:** Assess whether the redesigned prediction text and improved labelling enhance the initial user experience.

User interface clarity: Maintain a clean and user-friendly interface.

Task success rates: Determine how successful and efficient users are at completing tasks.

Content Expansion: Introduce an additional function that changes the camera section that follows the user's ball trace activity. Ensure the newly added content is clear, engaging, and effectively conveys key concepts.

### **Prototype 3: Final Refinements and Validation**

#### **Testing Focus**

Usability Validation: Confirm that all usability issues identified in earlier prototypes have been effectively addressed. The user interface should be highly intuitive, with minimal barriers to accessing content.

Overall Concept Validation: Evaluate the concept as a whole. Track improvements in swing accuracy, direction, user engagement, and motivation.

## **Miro Link**

[https://miro.com/app/board/uXjVMywNGPQ=/?share\\_link\\_id=597272109879](https://miro.com/app/board/uXjVMywNGPQ=/?share_link_id=597272109879)

## **Video Link**

[https://www.canva.com/design/DAFtZxKD4dQ/Kb0oxtMIV0XCeFtc-MNBSQ/view?utm\\_content=DAFtZxKD4dQ&utm\\_campaign=designshare&utm\\_medium=link&utm\\_source=recording\\_view](https://www.canva.com/design/DAFtZxKD4dQ/Kb0oxtMIV0XCeFtc-MNBSQ/view?utm_content=DAFtZxKD4dQ&utm_campaign=designshare&utm_medium=link&utm_source=recording_view)

## **Appendix:**

[1] The Google Document link for the Consent form.

[https://docs.google.com/document/d/1yHg7aHEGrAywWWAnvAOiMudZ\\_bzHhoFm/edit?usp=sharing&ouid=105441072140112742344&rtpof=true&sd=true](https://docs.google.com/document/d/1yHg7aHEGrAywWWAnvAOiMudZ_bzHhoFm/edit?usp=sharing&ouid=105441072140112742344&rtpof=true&sd=true)

[2] The Google Sheet link for data collections of recording user testing tasks and user feedbacks

<https://docs.google.com/spreadsheets/d/1FQy5q4XX9rfgbx0YNRsztSeUnHOAgZqakrD2FtZZ78c/edit?usp=sharing>