**Nomékop Go Interface Study**

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**INTRODUCTION**

In order to ensure that development of the application includes a strong emphasis on the effectiveness of interface interactions, the design team and I will need to develop a study that accurately and efficiently measures such. The following sections are recommendations for how to achieve a successful study for the collection of data that will be used to shape the application’s interface and the design process needed to develop it.

Since the application by nature is a game designed for entertainment, an appropriate environment to set up the main study is a separate kiosk and gaming booth positioned in the center of a busy foot-traffic lane in retail malls and large shopping centers.

Each of the two interfaces will collect participants that will be separated by two groups, generating four sets of data.

**1. PARTICIPANT SELECTION**

**1.1 Population Sampling Type**

The sampling type most appropriate for this study, given the recommended environment and availability of users in that environment, will be of the non-probability type. Deployment of testing materials and equipment should be simple and data generated should be easily compiled. However, a disadvantage that cannot be avoided is that generalizations made out of the collected data will be less robust.

**1.2 Sampling Method**

The sampling method is defined as convenience sampling due to the method of collecting users as they flow through the main traffic areas surrounding the test site. The main advantage to this method is in the ability to passively filter out irrelevant data that could have been generated by participants indifferent to gaming culture. Interested users will be encouraged to do something they already enjoy and effort will be sincerer.

This method has the disadvantage of being at the mercy of the overall economic conditions during the time of year that the study will be carried out and also the actual shopper turnout, factors that could be diversified away by setting up in many different locations and during seasons that generate favorable amounts of traffic for these shopping centers.

**2.3 Informed Consent Form**

These forms are critically necessary to any study of this nature. Participants who willingly volunteer their time may thing lightly of their time and effort, but the establishment of a formal relationship between participant and investigators sets the foundation for an understanding of what is actually trying to be accomplished by the study. It is not safe for either party to assume the intentions of the other during the encounter, so a formal agreement must be established in writing and referenced whenever any issues of responsibility arise during the study.

**2. DATA COLLECTION: APPLICATION**

**2.1 Time Between Option Presentation and Physical Selection of Options.**

The application should be integrated with a database for collection of live data as the user makes physical manipulations of the interface. To achieve a smooth and automated record of each participant, each participant should be given a short ID to be used to identify a new signing in before using the application and also recorded on the participant’s paper questionnaire to match. This links application data with investigator data.

One of the key metrics collected by the application will be how much time passes between user interactions with the interface after being presented with options. This will validate the visibility and placement of controls. This can also measure how quickly the user understands a control’s function if at all.

A notable concern is that the integrity of the database must be maintained as it will collect the bulk of the data generated from the study. An early error in how it collects data could invalidate the entire study. A solid, reliable, and simple database solution should be employed as well as redundancy measure to protect from loss of data.

**2.2. Speed of Overall Task Completion**

Immediately after signing in to the system, the application should begin keeping time until the user makes the final interaction with the interface. This bit of data will also be sent to the database in relation to the user’s ID.

This validates the efficiency of the interface by measuring against the game’s target time to completion for this particular task. If the interface is too cumbersome or difficult to understand, then it will be noticeable in the total time needed for the user to complete the task.

Some users may be more proficient gamers than others, so some data may be skewed due to experience and user dexterity.

**2.3. Control Activations to Task Completion**

This is measured by each physical activation of controls via direct interactions with the interface from sign-in to end. This is the number of times the user actually felt the need to activate a control in order to complete the task successfully.

This validates interface efficiency and the user’s perceived level of control over how sub-tasks are carried out. In addition to measuring successful control, this measurement keeps track of errors committed by the user. Generally, the interface that causes the user to generate more errors is the one that is less intuitive to use and therefore provides a worse experience.

If both Sun and Moon interfaces generate similar results in this metric, this form of data may be much less useful, since a baseline for comparison may be too thin to be make relevant design decisions in future releases of the interface.

**3. DATA COLLECTION: INVESTIGATOR**

**3.1 Muscle Fatigue from Repetitive Motion**

Throughout the user’s interactions with the interface, some amount of fatigue will be experienced, specifically in the hand and wrist area. The user will likely be unaware of the extent to which they are using their joints and muscles upon activation of each control, so to help them easily realize such use, after the interaction session, each user should be required to fill out a short questionnaire with a pencil and paper. Since this activity of using a pencil and paper is a commonly experienced one, it will make a good baseline for subliminal comparison by the user. Using their hands to write will help them identify if there is any additional fatigue out of the ordinary. The questionnaire should be a combination of simple checkboxes and short-sentence responses, just enough to force the user to feel any fatigue as a result of using the interface. In addition to the questionnaire, data can be collected via a camera recording video of only the user’s hands as controls are activated.

When the user is assigned an ID, it should be recorded on the questionnaire and given to the user after completion of the interface interaction part of the study.

This data can be used to validate appropriate control placement. The design of interface controls also affects this metric including size and contact requirements for manipulation (Press and hold, multiple tap, hold and slide).

Once again, age and dexterity due to gaming experience can skew the data if not recognized and accounted for when making generalizations. Data should be stratified by age to allow such dynamics to be analyzed.

**3.2 User Memorability of Interface**

Investigators can collect this data by subjecting participants to a short interview. This interview should be conducted after the user completes the written questionnaire.

Data should be recorded on the same paper as the questionnaire. The interviewer should collect the questionnaire after completion by the user and then immediately conduct the interview, referencing predefined questions printed on the paper and assessing the user’s ability to remember specific functions of interface controls. Each relevant control can be examined individually and also linked sequentially to evaluate remembrance of more complex functionality. Each question will have a predefined correct answer to be compared with user’s response.

The interview will help validate the target complexity. The design of interface menu and submenu paths required for task completion should be simple enough to remember even if only used infrequently.

Due to the distracting environment, memorability could be affected. If the process does not go smoothly, or if the participant has to stand-by for investigator availability, there may be factors external to the study that could affect participant focus.

**3.3 Comfortable Viewing Distance**

The user, during manipulation of the interface, will naturally adjust his or her body and device to create a comfortable position for viewing. Investigators can make a quick visual observation of the distance between the user’s eyes and the screen.

The distance can be estimated in feet and inches. The investigator will record the estimated distance on the questionnaire/interview paper prior to handing to the user to fill out the questionnaire.

This data will validate interface readability. Users should not need to continually bring the screen closer to the eyes to ensure accurate manipulation of the interface. If such is recorded, the design team may need to redesign control aspects, including height, width, and contrast of text on controls.

A concern that should be considered is ensuring constant observation of users comfortable viewing distance by the investigators. Assuming investigators cannot dedicate attention solely to individual users, some observation opportunities may be missed. This could affect actual recorded data used in formulating generalizations. Also, the reliance of collection of data by investigator estimation via simple visual observation could result in small levels of inaccuracies that may go overlooked.

**4. PILOT STUDY**

**4.1 Purpose**

Prefacing the main study with a pilot study is highly recommended. It will ensure that results are viable and relevant so that data collected from the main study is more reliable as the interface design process moves forward.

Some advantages to including a pilot study include ensuring that equipment and instructions to be used can be checked for validity and accuracy before deployment, testing of questions for relevance and clarity, and to identify potential problems in way the overall study is carried out, such as order of tasks presented to participants. Pilot studies allow for identification of issues so that they may be corrected well in advance of deployment of resources to be used for the main study.

In the absence of a pilot study, there is a greater probability of collection of irrelevant, or improperly formatted data, inadequate understanding of user responsibilities during the study, and potential for errors in the transmission of data between application and database.

One major concern that will be present as a result of the pilot study is the cost incurred that could have been allocated towards the main study. Also, pilot study participants will have to be excluded from the main study to prevent prior knowledge of the study parameters from tainting the study’s data set.