

Measuring Cognitive Load

By Waqas Ali

Aims and Objectives

Aims:

1. To critically assess how information impacts the cognitive load to identify how efficient different methods are for displaying information.

Objectives:

1. To **critically assess the current state** of how information in applications affects our cognitive load and our abilities to process information.
2. To **develop an application** that presents information in a variety of ways generating planned variations in the cognitive load.
3. To **make recommendations** on how to deliver information effectively without causing cognitive overload.

Literature Review

Research:

Primary literature read was related to the subject of **Cognitive Load Theory**, its history, revisions and purpose. This was followed by research into how **technology assists those with cognitive impairment**. **Similar systems** were also sought and tested with a desire to find similarities and differences between them.

Software tools:

The application will be developed in **Android Studio**, an IDE for Android apps. The programming language of choice is **Java** due to personal experience as well as being the official language for Android Studio. Other tools will be used as the projects proceeds such as **Lucidchart** for developing UML diagrams or **Balsamiq Cloud** for designing wireframes.

Solution

The application:

The **mobile application** that will be developed will behave as a test and **demonstrate various ways to show information** generating planned variations in the cognitive load, certain questions will be purposely poorly instructed to **study how users process** and deal with them. Examples of the questions include multiple choice questions and memorisation of patterns. Another feature of the application is that it will be possible to **record user activity**, the data here will be recorded and will be used to support conclusions alongside the feedback they provide at the end of the testing session. A few types of data which will be gathered includes the time they had taken on each question as well as the choices made.

Methodology

Scrum of One:

Agile for the **solo developer**. Daily reflections and a backlog to monitor progress. **User feedback** is the only other source of influence other than the developer therefore is much more valued here. This methodology **can incorporate techniques** such as XP (Extreme Programming).



Evaluation

User testing:

The sample pool for user testing will be **students whose native language is not English** for the reason of fewer ethical issues and convenience. The users will be tested through use of the application and a **survey will be conducted** after each test to take feedback on the delivery of information, graphs will be generated and conclusions will be drawn.