[ITRSH-606-2102 | Research Design 2](https://vle.mcast.edu.mt/course/view.php?id=3606)

**SWD-6.3A**

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**Description of Theme and Topic Rationale:**

This research will explore the opinions of chess players with regards to a Computer-Vision-Based Chess Training Tool that requires only a camera for in-game analysis and puzzle solving on a physical chessboard.

Chess is a competitive game where player improvement heavily depends on the methods of which they learn it. However, most AI-driven chess assistants require digital interfaces, limiting their usability for players who prefer physical chessboards. This study will investigate how chess players at different skill levels respond to a non-intrusive, computer-vision-based tool and whether they find it beneficial for learning and strategy development.

**Positioning and Research Onion**

This research falls under the interpretivist paradigm since it aims to explore the subjective experiences and perceptions of chess players regarding a computer-vision-based chess training tool. [1] describes Interpretivism as “an approach based on subjectivist ontological assumptions that entities are constituted of discourse, thus existing or socially constructed reality may be only researched through social constructions as consciousness or language”. Therefore, this interview-based research will fall under the interpretivist paradigm.

This research will also follow an inductive approach, [2] describes inductive reasoning as a way of theory building that starts with a specific observation where a general rule is then formulated. Since this review seeks to develop insights from the qualitative data, the ‘general rule’, in this case the hypothesis, will be built after the interviews have taken place.

Since this research will focus on a detailed interview with a small sample of chess players, the case study strategy has been chosen. Case studies are ideal for investigating situations within real-world settings, allowing researchers to gather rich, contextual insights. Since this study will focus on the individual player’s perceptions and engagement with the training tool rather than a large-scale statistical trend study, this method will ensure a detailed exploration of personal experiences.

The methodological choice for this study will easily be the mono method. Mono method is when research only utilizes either qualitative only or quantitative only. This research will only utilize qualitative research, thus making it mono method.

The time horizon of this study will be cross-sectional. Cross-Sectional time horizon is defined by [3] as “a short-term study, involving collection of data at a specific point in time.” Since the interviews in this study will be captured at a single point in time, it will fall under a cross-sectional time horizon.

The techniques and procedures in this research will involve a qualitative data collection and thematic analysis. Thematic analysis is a method in qualitative research which involves identifying recurring themes, patterns, and insights from interview responses. This approach will help further uncover key factors which might influence how the tool can be improved. Some insights include perceived ease of use, accuracy, and overall usefulness in chess training.

A diagram of a diagram

AI-generated content may be incorrect.

**Background to This Research Theme**

In the present era of chess, chess engines are relied on by most digital implementations of chess. The most prominent examples of this are Chess.com and LiChess, which implement StockFish which is strongly considered the strongest chess engine as of today ([4],[5],[6]). However, this strength is not applied over casual over-the-board (OTB) chess games. The ability to recognize board positions and provide real-time feedback using only a camera presents a cheap and efficient way to integrate the strength of chess engines into OTB chess training without disrupting a player's natural learning process.

**Hypothesis**

1. Do chess players perceive a computer-vision-based chess training tool as useful and effective for their training?
2. Is players' willingness to adopt the tool influenced by factors such as perceived ease of use, system accuracy, and integration with existing training methods?
3. Are there skill-based differences in perception, with higher-rated players being more critical of the tool’s effectiveness compared to lower-rated players?

**Research Aim and Purpose statement**

The purpose of this qualitative study is to explore the perceptions of chess players at varying skill levels regarding the usability and effectiveness of a computer-vision-based chess training tool. This study aims to:

1. Examine how chess players perceive the usability and effectiveness of the tool in their learning and training practices.
2. Identify key factors that influence the adoption of the tool, including ease of use, accuracy, and integration with traditional training methods.
3. Provide insights that inform the design and improvement of computer-vision-based chess training tools for over-the-board (OTB) play.

To achieve these objectives, this study will employ qualitative methods to analyse user perceptions and assess variations based on players' skill levels. Findings may contribute to the development of more effective technology-assisted training solutions for chess players.

**References**

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