# Unpacking the Pedagogical Potential

### An Investigation into the Effectiveness of ChatGPT Generated Lesson Plans in Modern Vocational Education

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## Problem Statement

With the growing integration of Artificial Intelligence (AI) in education, understanding its **pedagogical** implications has become an imperative. The research aims to evaluate the **quality** and **comprehensibility** of these **AI-driven lesson plans** and teachers' **experiences**. Associated benefits and challenges will also be identified.

## General Research Approach

Data will be collected through a **Grounded Theory** approach, including interviews, focus group discussions, and performance evaluations. The objective is to present a **holistic view** of the pedagogical potential of **AI in lesson planning**, ultimately guiding future enhancements for AI applications in educational contexts.

## Research Project Overview

Smart use of AI by the educators themselves can in turn facilitate the process of both assessment and lesson planning. The aim of this study is to delve into the **efficacy** of such AI-driven innovations, with a focus on lesson plans that are generated by **Large Language Models** (LLMs). To this aim we scrutinize two lesson plans concerning two highly challenging topics in software development, generated by OpenAI's ChatGPT-4.

## Research Objective/s

1. To assess the **quality** and **comprehensibility** of AI-generated lesson plans.
2. To understand the **pedagogical impact** of these **lesson plans** on student engagement and learning outcomes.
3. To **evaluate teacher experiences** with using artificially generated lesson plans in the classroom.
4. To **identify potential challenges** and benefits associated with the use of artificially generated lesson plans.

## Research Methodology

The methodology for this study is based on the concept of a **qualitative evaluation** of a lesson plan by qualified lecturers. Two lesson plans were **developed** based on an introductory topic in programming in a Level-6 degree programme.

Lessons were generated by two separate teams of researchers, who both worked on topics for their lessons in collaboration with **ChatGPT4.0**. An attempt was made to develop a comprehensive prompt that would generate the lesson as the first response of the bot, which is technically referred to as a **one-shot prompt.**

## Key Propositions/Findings

- The results revealed variation in scoring within the research team, indicating that even though a standard scoring methodology (LPAP,2023) was used, there was still scope for significant differences in the way that scores were applied.

- A strong requirement for discussion, dialogue, and extensive use of AI tools for educators in order both to familiarize them with the potential of AI and Language models.

- Despite requiring substantial human intervention, AI can serve as a valuable tool in structuring information for educators.

## Key Figures & Visuals
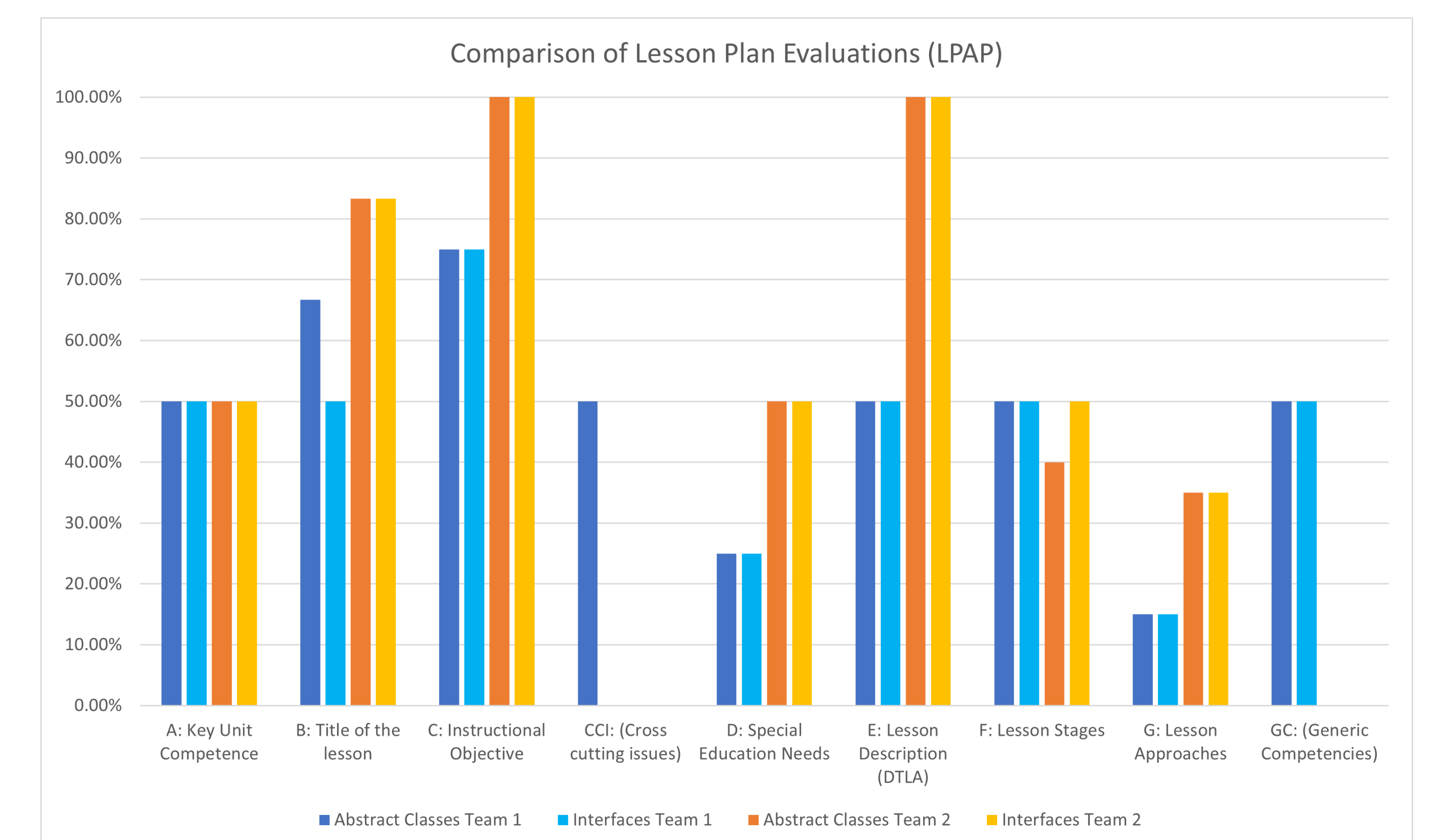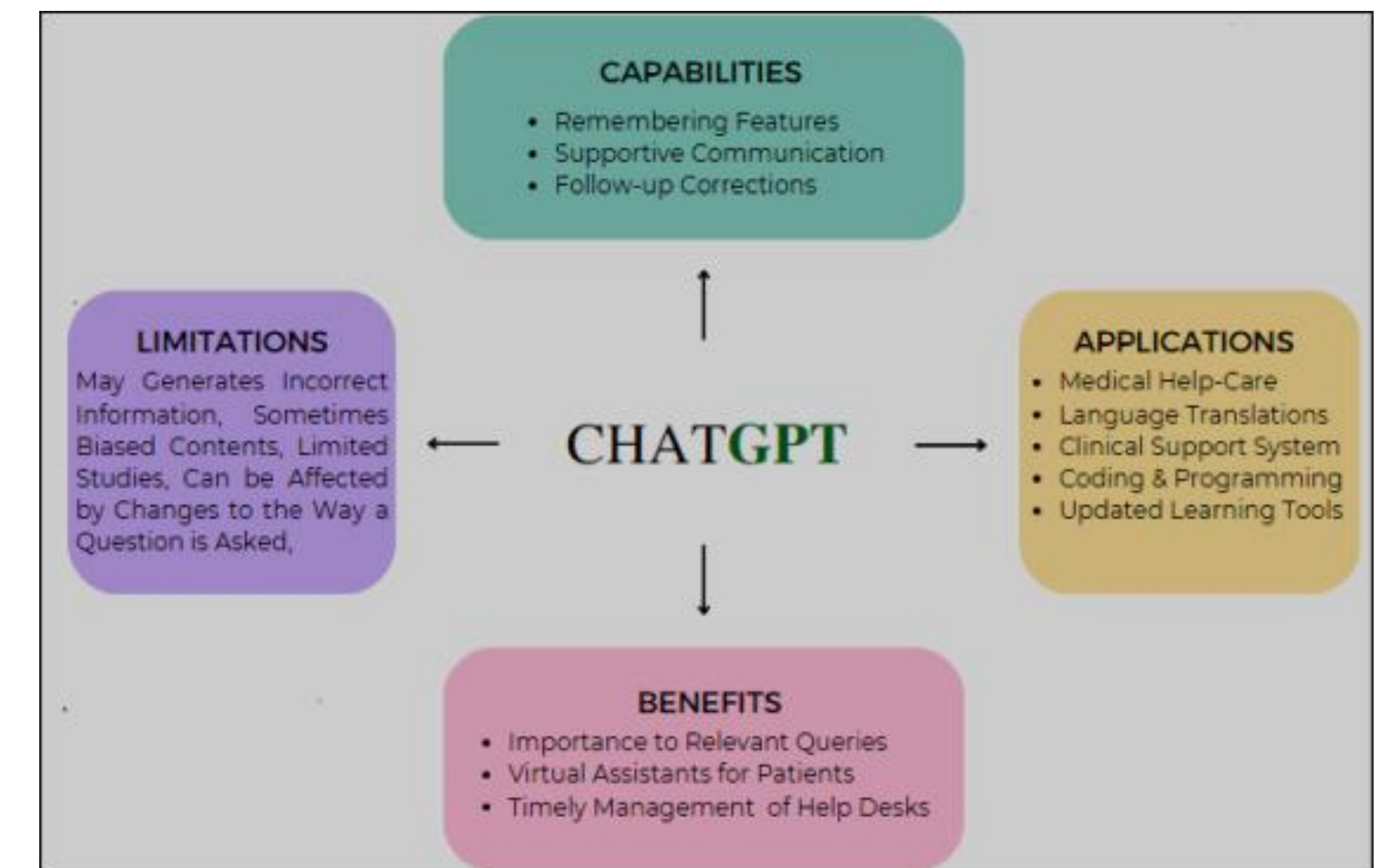




**Comparison of assessment of each lesson plan by team**

## Key References

Ndihokubwayo, K., Byukusenge, C., Byusa, E., Habiyaremye, H. T., Mbonyiryivuze, A., & Mukagihana, J. (2022). Lesson plan analysis protocol (LPAP): A useful tool for researchers and educational evaluators. Heliyon, 8(1).

OpenAI. (2023). ChatGPT (April 23 2023 version) [Large language model]. https://chat.openai.com/chat