

The Use of Scientific Concepts in Human–Artificial Intelligence Collaboration in Gastronomy Education

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Abstract:

Due to its interdisciplinary nature, gastronomy education encompasses not only culinary skills but also science-based knowledge and practices. Concepts from scientific fields such as chemistry, physics and biology play a critical role in understanding food transformations, cooking techniques and product development processes. In recent years, the integration of artificial intelligence technologies into educational processes has reshaped both teaching methods and learning experiences in gastronomy education. In this context, human–AI collaboration enables the more effective, visual and practical transmission of scientific concepts.

The aim of this study is to examine the role of human–AI collaboration in the teaching of scientific concepts in gastronomy education and to evaluate the impact of this collaboration on learning outcomes. A qualitative research method was adopted in the study, utilising document analysis and case study techniques during the data collection process. Within the scope of the study, AI-supported educational platforms, simulations and smart kitchen technologies were examined; the ways in which these tools are used in the teaching of science concepts were analysed.

The findings indicate that AI-supported learning environments enhance students' conceptual understanding, facilitate the concretisation of abstract science concepts, and positively influence learning motivation. Furthermore, the combined use of human instructors and AI systems adapts to students' diverse learning styles by providing personalised learning experiences. However, it was noted that ethical, pedagogical and technical limitations must also be taken into account.

In conclusion, human–AI collaboration in the teaching of science concepts in gastronomy education emerges as an innovative and effective approach. It is anticipated that this approach will play a significant role in the development of future gastronomy education models. The study aims to contribute to the literature regarding digital transformation and interdisciplinary integration in gastronomy education.

Keywords:

Gastronomy education, artificial intelligence, science concepts, human–AI collaboration, interdisciplinary education.