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# The Utilisation of Artificial Intelligence Applications as a Catalyst for the Transition towards Student-Centred Pedagogical Practices: The Following Essay Presents a Qualitative Analysis of Implemented Educational Scenarios in Primary Education

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**ABSTRACT:** This study investigates the extent to which the use of Artificial Intelligence (AI) applications in primary education teaching scenarios contributes to the transformation of teaching towards student-centred practices. The research was conducted as part of a distance learning programme on Human-Centred AI, in which 164 teachers designed and implemented scenarios in authentic school environments. A qualitative approach was adopted, with a descriptive case study and systematic content analysis using a specially designed tool to record student-centred teaching axes. The findings indicated an overall high level of student-centred integration of TN (mean 4.10/5), with notably high performance in active and exploratory learning, creativity, and critical thinking. In contrast, differentiated teaching exhibited a comparatively lower value. In conclusion, the pedagogically documented use of TN has the potential to catalyse the transition to truly student-centred learning environments, provided that there is systematic training and targeted pedagogical planning.

**KEYWORDS:** Artificial Intelligence, Student-centred learning, primary education, educational scenarios.

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## Introduction

In recent years, the field of Artificial Intelligence has garnered the attention of the educational community, particularly for its capacity to enhance the quality of education and refine pedagogical methodologies (Hwang & Chen, 2023). Educators must not merely utilise artificial intelligence applications within the educational process; rather, they should effect a transformation to ensure that these applications provide support for the pedagogical goals of educators in meeting the learning needs of their students (Kotsidis & Anastasiades, 2025).

In this context, the pedagogical use of Artificial Intelligence can be linked to a student-centred approach, where students actively participate, autonomy is enhanced, and critical skills are developed. Learning is tailored to their needs and interests (Bremner, 2021). The majority of studies focus either on the technological dimensions of applications or on the attitudes and perceptions of teachers and students. However, there is a lack of empirical investigation into the pedagogical transformation of educational practice through designed interventions implemented in the classroom using Artificial Intelligence applications.

This research endeavour seeks to address this knowledge gap by undertaking a comprehensive design that encompasses teacher training, the creation and implementation of educational scenarios in the classroom using Artificial Intelligence applications, and, subsequently, the systematic measurement and analysis of the student-centred dimension of these educational interventions. In this manner, an endeavour is made to establish a connection between the theoretical discourse on the student-centred utilisation of Artificial Intelligence and empirical evidence derived from authentic educational praxis.

## Research Aim and Research Question

This study aims to examine the extent to which the implementation of Artificial Intelligence applications in educational scenarios contributes to the transformation of teaching towards student-centred practices. The study addressed the following research question in order to achieve this research question:

What is the level of student-centred teaching reflected in educational scenarios incorporating AI, and how does it differ in terms of individual pedagogical dimensions?

## Methodology

The Department of Primary Education, and in particular the Laboratory of Lifelong and Distance Education at the University of Crete, designed and implemented a free distance learning programme on the topic: "Human-centred Artificial Intelligence in Education—pedagogical Dimension: From Theory to Practice. A total of 921 primary school teachers participated in the programme and completed it.

The objective of the training programme was to equip participants with foundational pedagogical training and, conversely, with methodologies, instruments and competencies about the utilisation of

Human-Centred Artificial Intelligence in Education, with a particular focus on collaborative inquiry and knowledge construction, creativity and critical thinking. A total of 164 trainees were tasked with designing, creating, and implementing educational scenarios for all primary school subjects in their respective classrooms.

An analysis of the educational scenarios followed this. To conduct the analysis, the researcher devised a code-topic recording key, establishing axes and criteria for determining the degree of student-centredness in the scenarios. The research applied a qualitative approach, specifically the descriptive case study method, resulting in a description of the degree of application of student-centred teaching through the integration of multiple variables (axes and criteria), their quantitative measurement, and the analysis of their interactions (Mills et al., 2019). The set of participating school classes was selected as the delimited system, with the school class as the unit of analysis. The content analysis was conducted using a systematic approach, quantifying content within predefined categories. This method of analysis was informed by the principles of qualitative data analysis, as outlined by Bryman (2016).

The data obtained from the research tool (recording key) were analysed using quantitative statistical analysis criteria. To ensure the validity of the data, theoretical validity (Mills et al., 2019) was applied by linking the phenomenon under examination to the relevant theory that explains it. Concurrently, reliability was ensured based on the criterion of fidelity, taking into account the complexity of the research and the management of patterns that are not easily interpretable through the strategy of utilising experienced educators in the review, where the results of the research were confirmed (Mills et al., 2019), specifically the data that the researcher evaluated and recorded in the research tool, which is available to the research community.

## **Research Results**

A comprehensive analysis of data concerning the development and execution of educational scenarios in authentic classroom settings has revealed that the incorporation of Artificial Intelligence (AI) applications within suitable pedagogical frameworks can facilitate a student-centred approach, thereby offering opportunities for discovery/exploration, active and collaborative learning, and the cultivation of students' creativity and critical thinking skills (Hwang & Chen, 2023). The subsequent analysis of the scenarios yielded several key findings:

- i) A student-centred approach was applied to all cognitive subjects to a very large extent, with an average score of 4.10 out of 5.
- ii) Exploratory/discovery learning was applied to a very high or extremely high degree in all cognitive subjects, with an average score of 4.22 out of 5.
- iii) There was active learning to a very high degree in all cognitive subjects, with an average score of 4.63 out of 5.

iv) There was a high degree of collaborative learning across all cognitive subjects, with an average score of 3.94 out of 5.

v) There was differentiated learning to a considerable degree in all cognitive subjects, with an average score of 3.34 out of 5.

vi) Creativity was cultivated to a very high degree across all subjects, with an average score of 4.28 out of 5.

vii) Critical thinking was cultivated to a high and very high degree across all cognitive subjects, with an average score of 4.17 out of 5 (Table 1).

**Table 1**

*Dimensions and Mean Values of Student-Centred Integration of Artificial Intelligence Applications*

No	Axis of Analysis	Conceptual Dimension	Average (1-5)
1	Exploratory/Discovery Learning	Developing hypotheses, collecting and analysing data, drawing conclusions	4.22
2	Active Learning	Interaction with content and people, active participation, reflection and application of knowledge	4.63
3	Collaborative Learning	Intra-group and inter-group collaboration, joint goal setting and co-creation	3.94
4	Differentiated Learning	Teaching adaptation, personalised feedback and alternative forms of assessment	3.34
5	Creativity	Divergent thinking, initiative, originality, and experiential problem solving	4.28
6	Critical thinking	Analysis, documentation, evaluation of information and conscious decision-making	4.17
Overall Student-Centred Integration Index TN			4.10

Source: author's own development

**Conclusions**

In conclusion, the pedagogical use of artificial intelligence (AI) applications in all scenarios has been shown to enhance the exploratory, active and collaborative dimensions of learning (Aravantinos et al., 2024). Concurrently, AI applications have been shown to foster students' creativity and critical thinking skills (Hwang, Xie, Wah & Gašević, 2020). Conversely, the comparatively lower performance in differentiated learning confirms the fact that differentiation requires clear diagnostic data and targeted pedagogical design (Van Geel et al., 2019) for ETNs to be able to support it under appropriate pedagogical conditions

Teachers must possess a firm grasp of Artificial Intelligence, undergo comprehensive training and

continuous professional development, and demonstrate the capacity to utilise AI applications with a high degree of autonomy and critical thinking (Anastasiades et al., 2024) to facilitate the effective transformation of the educational process towards a student-centred approach (Holmes et al., 2023).

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