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Enhancing Design Pedagogy through Generative AI: a Theoretical and Practical Perspective

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Generative Artificial Intelligence (AI) emerges as a transformative catalyst in university education, promising to revolutionize teaching methods and personalized learning. This presentation explores innovative AI applications, from the creation of generative educational content to predictive analysis of student success, highlighting how these technologies can not only enrich the educational experience but also challenge existing pedagogical conventions. Through concrete examples and recent research findings, it will demonstrate AI's potential to facilitate a more engaging inclusive, and personalized learning environment in universities.

This presentation focuses on the application of AI generative tools as collaborative design partners for Master's students specializing in communication design. It builds upon the preceding research undertaken at the Department of Design at the Polytechnic of Milan and subsequently presented at ISYDE 2023. This exploration seeks to evaluate the efficacy and pedagogical implications of incorporating artificial intelligence in the creative process, positioning it as an integral component in the educational journey of communication design students. The study aims to bridge the gap between advanced technological tools and creative academic endeavours, emphasizing the transformative potential of AI in enhancing design education and practice.

The first part of the paper goes deeper in the genealogical history of Artificial Intelligence in Education (AIeD), presented last year. This exploration aims to delineate the ways in which AI can augment both the learning and research paradigms. The initial segment elucidates the capability of AI to sift through, organize vast datasets, predict and model future occurrences, streamline research methodologies, and tailor the educational journey to individual needs, as supported by the findings of Jordan & Mitchell (2015), Agrawal, Gans, & Goldfarb (2018), Chui, Manyika, & Miremadi (2016), and Baker & Siemens (2014). These functionalities underscore the potency of AI as an invaluable resource in optimizing the research and learning experience (Di Rosario, Ferri, 2023).

The second part describes and analyses two case-studies. Last year, an initial experiment was carried out with a class from the Faculty of Design at Polytechnic of Milan, which uncovered various methods and activities designed for assignment objectives within the Digital Culture course. In this context, students were tasked with creating ten digital culture products, utilizing Generative AI as co-designers. This experiment aimed to integrate advanced AI technology into the educational framework, providing insights into the collaborative dynamics between students and AI in the design process.

The ongoing research has been enhanced with the integration of another case study. In this case, particular emphasis was placed on the use of generative techniques in the development of programs and concepts that could be integrated into various types of monographic courses, from those dealing with media aesthetics to those concerning privacy and security. Students were asked to develop 17

monographic courses that encompassed theoretical and laboratory-based learning. The integration of artificial intelligence within these courses has been pivotal. It has facilitated the construction of course content and enhanced the verification of practices and scenarios wherein dynamics of experimental pedagogy involving AI in education are already in play.

Furthermore, artificial intelligence has been consistently employed to generate materials which were then scrutinized by student groups. This process has been instrumental in delineating the role of the designer and educator in relation to the role of the machine. It underscores a nuanced understanding of the interplay between human and artificial intelligence in the educational context, highlighting the evolving nature of pedagogical design in the age of digital technology.

In conclusion, this presentation traces the genealogical history of Artificial Intelligence in Education, and illustrates and analyses the expanding role of Generative AI in reshaping the landscape of higher education, particularly within the realm of design. Our exploration, grounded in empirical research and practical applications, focusing on the transformative impact of generative AI on pedagogical strategies and educational paradigms. The case studies presented serve not only as an example to the practical usability of AI in enhancing creative educational processes but also as an example for future pedagogical exploration and experimentation.