



SCIENTIFIC RESEARCH OF THE SCO COUNTRIES: SYNERGY AND INTEGRATION

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CULTURAL STUDIES

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数字时代的文化指导：人工智能在专业经验传承中的潜力和局限性
**CULTURAL MENTORING IN THE DIGITAL AGE: THE
POTENTIAL AND LIMITS OF ARTIFICIAL INTELLIGENCE
IN THE TRANSMISSION OF PROFESSIONAL EXPERIENCE**

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摘要：本文探讨了文化指导作为一种在数字化转型背景下传递专业经验和价值观的机制。基于对当前关于人工智能（AI）能力和局限性的讨论分析，作者探讨了人工智能技术在多大程度上可以取代或补充传统的指导实践。文章指出了指导中难以通过算法实现的关键功能：隐性知识的传递、职业认同的形成、情感支持以及因果关系的解读。研究表明，尽管人工智能在内容生成和模式识别方面取得了显著进展，但它无法理解因果关系，也无法进行深度反思，这限制了其在文化指导领域的应用。结论认为，人工智能可以作为自动化日常流程的辅助工具，但人的因素对于职业文化和价值观的全面传承仍然至关重要。本研究结果可为高等教育和企业环境中指导项目的开发提供参考。

关键词：文化指导、人工智能、职业文化、经验传承、数字化转型、因果关系、专家知识、高等教育。

Abstract. *The article examines the phenomenon of cultural mentoring as a mechanism for transmitting professional experience and values in the context of digital transformation. Based on the analysis of current discussions about the capabilities and limitations of artificial intelligence (AI), the author explores the extent to which AI technologies can replace or complement traditional mentoring practices. The paper identifies the key functions of mentoring that are difficult to algorithmic: the transfer of tacit knowledge, the formation of professional identity, emotional support, and the interpretation of cause-and-effect relationships. It is shown that AI, despite significant advances in content generation and pattern recognition, does not understand causality and is incapable of deep reflection, which limits its use in the field of cultural mentoring. The conclusion is drawn that AI can serve as an auxiliary tool for automating routine processes, but the human component remains critically important for the full-fledged transmission of professional*

culture and values. The results of the study may be useful for developing mentoring programs in higher education and corporate environments.

Keywords: *cultural mentoring, artificial intelligence, professional culture, transmission of experience, digital transformation, causality, expert knowledge, higher education.*

Introduction

In the modern cultural and anthropological paradigm, mentoring is understood not merely as a technology for transferring knowledge and skills, but as a fundamental cultural practice through which professional values, norms, and identity are reproduced [1; 6]. Mentoring ensures continuity between generations, preserves and transmits the tacit knowledge accumulated by a professional community, and forms the subject position of a specialist.

At the same time, the digital transformation of all spheres of life poses a challenge to traditional mentoring practices. Artificial intelligence technologies, including generative neural networks and machine learning models, are increasingly being integrated into education and professional development. This raises a natural question: to what extent can AI replace a human mentor? Is it capable of transmitting not only explicit knowledge but also the deep layers of professional culture – values, meanings, ethical attitudes, and the ability to make decisions in situations of uncertainty?

The purpose of this article is to analyze the potential and limitations of using artificial intelligence in the implementation of the cultural functions of mentoring. The author proceeds from the assumption that AI can be an effective auxiliary tool, but cannot fully replace a human mentor, since key aspects of cultural mentoring (transfer of tacit knowledge, formation of identity, emotional support, interpretation of cause-and-effect relationships) are fundamentally non-algorithmizable.

Main part

1. Mentoring as a cultural practice

In cultural studies and the anthropology of education, mentoring is interpreted as an anthropopractice – a practice that transforms human reality through dialogue, reflection, and co-being [4; 5]. Unlike simple instruction or knowledge transfer, mentoring involves deep intersubjective interaction in which not only information is exchanged, but also value orientations, patterns of professional behavior, and reflexive attitudes toward experience are formed.

The key functions of cultural mentoring include:

1. **transmission of explicit and tacit knowledge** – the mentor conveys not only formalized information, but also that which cannot be fully verbalized: intuition, professional flair, the ability to see the context;

2. **formation of professional identity** – through interaction with a mentor, the mentee assimilates the norms and values of the professional community, becomes aware of their place in it;

3. **emotional support** – the mentor helps overcome uncertainty, fear of failure, and professional crises;

4. **development of reflexivity** – the mentor stimulates the mentee to comprehend their own experience, actions, and their value foundations;

5. **interpretation of cause-and-effect relationships** – the mentor explains not only “how” to do something, but also “why” it should be done this way and not otherwise, revealing the logic of professional actions.

These functions are deeply rooted in the cultural context and presuppose the mentor’s ability to understand the unique situation of the mentee, their personal characteristics, and their value system. This makes mentoring a complex anthropological phenomenon that cannot be reduced to a set of formalized procedures.

2. Artificial intelligence: achievements and limitations

In the expert community today, there are at least two opposing views on the prospects for using artificial intelligence. The first, optimistic, opinion is that AI has enormous potential and the corresponding technologies are already bringing significant results. The second, skeptical, opinion is that the current popularity of AI is nothing more than hype, and in a few years generative neural networks will take their “deserved” place in generating garbage content on an industrial scale.

AI has indeed achieved impressive results in a number of areas. Machine learning methods are actively used in industry to predict equipment failures, in the banking sector for scoring, in healthcare for diagnosing diseases from MRI images, and in logistics for optimizing supply chains.

ChatGPT and multimodal neural networks demonstrate remarkable success in generating content indistinguishable from natural content. However, as D. Dorofeev and A. Tyutyunnik rightly note, “the operation of a neural network comes down to approximating graphs of functions,” and “it is surprising that such a simple mathematical apparatus as graph approximation has been applied to solving a large number of problems, including forecasting” [2].

At the same time, seven key limitations of machine learning can be identified that are of fundamental importance for assessing the possibility of using AI in mentoring:

1. **Poor quality of input data** – data is often incomplete or erroneous, which reduces the accuracy and reliability of the model’s predictions.

2. **Lack of data – underfitting** – when there is insufficient data for training, the model cannot capture dependencies in the data and, as a result, does not cope well with predictions.

3. **Too much data – overfitting** – the model becomes too adapted to the features of the training data, which reduces the accuracy of predictions and pattern recognition on real data.

4. **Complex multi-stage learning process** – training machine learning models requires deep knowledge and experience in the subject area.

5. **Lengthy learning process** – modern machine learning models require significant computational resources: equipment, electricity, and time for training.

6. **Loss of accuracy** – after training a model on historical data, any changes at the input can sharply reduce its accuracy. For example, models trained before the COVID-19 pandemic began to perform poorly in the changed social conditions.

7. **Lack of auditability** – the main problem when using machine learning is the lack of a clear explanation of why the output of the model produced exactly such results, which is critical in areas requiring high transparency and accountability.

3. AI and mentoring: points of contact and fundamental differences

At first glance, AI can be useful in implementing certain aspects of mentoring. For example:

- **in the transfer of explicit knowledge** – AI can provide access to vast arrays of information, structure it, and present it in a convenient form;

- **in automating routine processes** – AI can take over checking assignments, generating standard recommendations, and monitoring progress;

- **in developing reflective skills** – AI can offer reflective questions and record the dynamics of changes.

However, upon closer examination, it becomes obvious that AI is fundamentally incapable of performing the key functions of cultural mentoring.

First, the AI does not understand cause-and-effect relationships. As B. Slavin notes, “it is impossible to build full-fledged information systems based on machine learning without correctly coding cause-and-effect relationships.” The problem is that if one event follows another, this does not necessarily mean that the first was the cause of the second. This basic principle of logic machine learning cannot yet adequately interpret. This is one of the reasons why machine learning does not always cope with tasks requiring deep analysis of cause-and-effect relationships [3].

In mentoring, the ability to explain cause-and-effect relationships is critically important. The mentor not only states that it is necessary to do this or that way, but explains the logic of professional action, reveals the relationships between various factors, and predicts the consequences of certain decisions. AI is not capable of such interpretation.

Second, AI does not understand context. It operates with statistical patterns, but is not able to take into account the unique personal characteristics of the mentee, their emotional state, value orientations, and life circumstances. Meanwhile, effective mentoring is always personalized and based on deep empathy and understanding.

Third, AI cannot provide emotional support. It is not capable of sympathy, encouragement, or sharing the joy of success. The emotional component of mentoring is fundamentally non-algorithmizable.

Fourth, AI does not form professional identity. It can provide information about professional norms and values, but is not able to convey them as a living cultural tradition, as a personal example and model of professional behavior. As the experience of implementing AI in education shows, “even the most advanced solutions developed using artificial intelligence are perceived as separate projects, and their integration into everyday business processes leaves much to be desired.”

4. Prospects for the synergy of AI and mentoring

Despite the identified limitations, AI can be a useful tool in the mentor’s arsenal if its use is built taking into account the specifics of cultural mentoring.

Firstly, AI can be used to **automate routine tasks**: checking assignments, generating standard materials, monitoring progress. This frees up the mentor’s time for truly meaningful interaction with the mentee.

Secondly, AI can serve as a **source of objective data** for analyzing the mentee’s progress and identifying problem areas. For example, machine learning models can detect patterns that are not obvious to the human eye.

Thirdly, AI can be used to **create educational content**, including personalized recommendations and training materials. However, it is important to remember that such content must be verified and supplemented by an expert.

Fourthly, AI can be a tool for **developing reflective skills** if it offers the mentee questions for reflection and records the dynamics of their answers. However, the final interpretation of the results and the construction of a development trajectory remain the prerogative of the human mentor.

Thus, we are talking not about replacing the mentor with AI, but about **synergy**, in which AI acts as an auxiliary tool, and the human mentor retains the key functions of cultural transmission, the formation of identity and values, emotional support, and interpretation of cause-and-effect relationships.

Conclusion

Conducted cultural analysis allows us to conclude that artificial intelligence, despite significant advances in content generation and pattern recognition, is fundamentally limited in performing the key functions of cultural mentoring. AI does not understand cause-and-effect relationships, does not grasp context, is not capable of emotional support, and does not form professional identity.

These limitations are of a fundamental nature, since they are associated with the very nature of machine learning as a method of statistical approximation, and not with the level of technology development.

At the same time, AI can be an effective auxiliary tool, automating routine processes, providing access to information and analytical data, and helping to develop

reflective skills. The optimal strategy is synergy, in which AI expands the mentor's capabilities, but does not replace him, and the human component remains critically important for the full-fledged transmission of professional culture and values.

The results of the study can be used in the development of mentoring programs in higher education and the corporate environment, as well as in the training of mentors to work in the context of digital transformation.

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