

The Role of AI Chatbots in the Evolutionary Culturology Educational Ecosystem

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ABSTRACT

In light of the widespread use of AI Large Language Model chatbots such as ChatGPT-5, this article summarizes eight use cases of chatbots in the discipline of Evolutionary Culturology to address science education. The custom GPTs created in ChatGPT-4 and 5 include: (1) The Evolutionary Culturology Tutor GPT, (2) The Evolutionary Culturology Popper Quote Explainer GPT, (3) The Evolutionary Culturology PhD Explainer, (4) The EthiSizer GPT, (5) an Evolutionary Culturology custom instructions GPT, (6) Velikovsky of Newcastle's Digital Twin GPT, (7) Quote Explainer via Evolutionary Culturology GPT, and (8) The Ev Cult GST-Unifier GPT, each presented with example prompts and responses. Table 4 synthesizes domain-adaptation mechanisms, benefits, risks, and safeguards, treating governance as a design requirement. The article situates these designs in educational-AI evidence and major guidance on bias, privacy, transparency, and accountability and links to an Online Supplementary Appendix with replicable custom GPT build instructions and knowledge-base materials.

INTRODUCTION

This chapter summarizes eight (8) use cases of ChatGPT-Plus custom-GPT chatbots to solve the problem of science education and communication within the meta-meta-discipline of Evolutionary Culturology.

Elements (or subsystems) of the education ecosystem in this domain include teachers (lecturers, tutorial leaders, professors), students, educational institutions, administration staff, the general public, and interactive AIs.

The eight AI pedagogy chatbots described in this chapter are: (1) *The Evolutionary Culturology Tutor GPT*, (2) *The Evolutionary Culturology Popper Quote Explainer GPT*, (3) *The Evolutionary Culturology PhD Explainer*, (4) *The EthiSizer GPT*, (5) an Evolutionary Culturology custom instructions GPT, (6) *Velikovsky of Newcastle's Digital Twin GPT*, (7) *Quote Explainer via Evolutionary Culturology GPT*, and (8) *The Ev Cult GST (General Systems Theory) Unifier GPT*.

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Example prompts and responses of these GPTs provided in the paper demonstrate their functionality. Further AI LLM chatbot pedagogy use case directions are also suggested. A URL is also provided to a *Supplementary Online Appendix* to this chapter, containing detailed replicable instructions on how each of these custom GPTs were built (including the relevant GPT Knowledge Base documents, and GPT Instructions), in addition to further discussion of ethical issues raised by these extant LLM technologies.

THEORETICAL PERSPECTIVE

The theoretical perspective of this chapter is the all-disciplinary meta-meta-science of Evolutionary Culturology, as explicated in (Velikovsky 2016b, 2017, 2018, 2019, 2020b, 2023b, 2023a, 2025).

Two key points of the scientific meta-meta-paradigm of Evolutionary Culturology are that:

1. Science has *3 levels of scale* - micro, meso, and macro: (i) Micro - The individual scientific disciplines (i.e., Quantum Physics, Classical Physics, Chemistry, Astronomy, Geology, Biology, Psychology, Sociology, Anthropology); (ii) Meso - the meta-sciences, which apply universally across all the individual sciences (e.g. meta-sciences such as Systems Science, Information Science, Communication Science, Creativity Science, Computer Science); and, (iii) Macro - a meta-meta-science (Evolutionary Culturology) which reduces both (a) systems, and (b) their inputs and outputs (units of information, energy, and matter) on all scales, to their simpler scientific structural and functional (or `behavioral`) units, namely the *fractal HOLON/parton*.
2. By providing: (a) a single standardized universal scientific *unit* of measurement (the *fractal HOLON/parton*) across all domains (the sciences, social sciences, arts/humanities, design, engineering, etc.), Evolutionary Culturology enables *consilience* (the unity of knowledge) via a universal set of standard scientific (b) scale-levels, (c) three laws, and (d) mechanisms/algorithms of change (evolution).

BACKGROUND

AI Chatbot Use in Education, Science, and Science Communication

Education Best Practices

Bloom's (1956) taxonomy of educational objectives remains a popular reference source in pedagogy (Bloom et al., 1956), as does its (2001) revision for learning, teaching, and assessing (Anderson & Krathwohl, 2001).

In the *Visible Learning* research series (2008, 2011, 2023), John Hattie undertook `over 30 years work, synthesizing over 95,000 studies involving more than 300 million students globally that explains the most significant evidence-based ideas about what actually works in schools.' (Hattie et al., 2023, p. 3).

In 2016, Will Self distilled three core tenets of effective knowledge transfer from this work (2008, 2011) as follows:

An effective teacher must: 1. Know their subject; 2. Be enthusiastic about it and able to convey that enthusiasm to their pupils; 3. Be able to perceive in their pupils inchoate capabilities that those pupils aren't even aware of themselves. (Self, 2016, p. 75)

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