

Johann Friedrich Herbart: A Precursor to Modern Neuroeducation

Paula Linares

Faculty of Philosophy and Humanities Research Centre, National University of Córdoba

Introduction

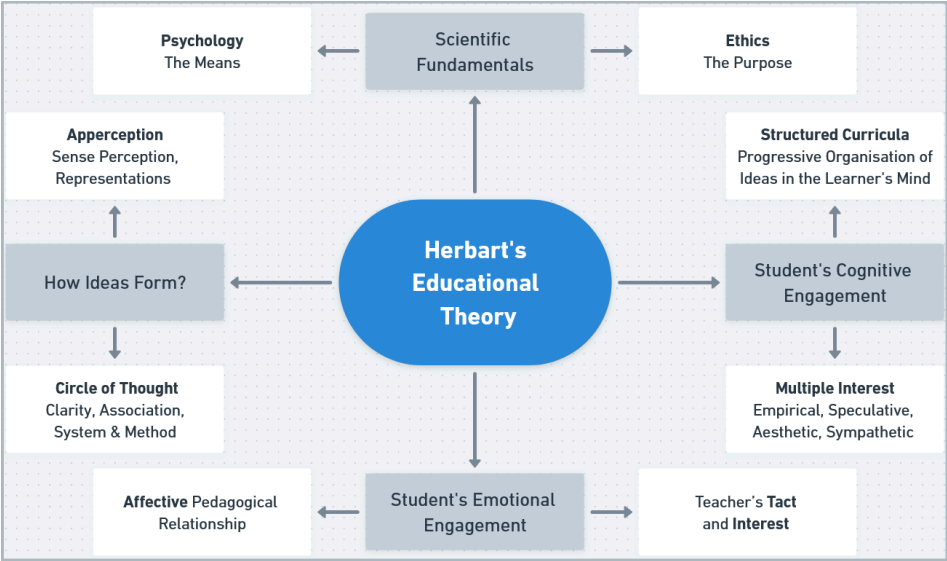
Johann Friedrich Herbart (1776–1841) established a systematic framework for education supported by psychology's understanding of cognitive processes, guided by ethic (practic philosophy) placing morality at its core. He recognized that education was not merely knowledge transfer by repetition but an art of cultivating intellectual, emotional and moral faculties [1, 2]. This ongoing research explores Herbart's work as a precursor to neuroeducation, which seeks to understand how the brain learns and to apply that knowledge to teaching [6, 8].

Methods

Interdisciplinary approach that integrates insights from pedagogy and neuroscience. The methodological design is qualitative, focusing on analysis of educational discourses through primary textual sources, combining theoretical-comparative methods.

Research Progress

Herbart's Concepts	Akin Discoveries of Neuroscience
Apperception - new knowledge connects with prior mental structures	Synaptic plasticity and neural networks [5, 6, 8]
Circle of thought - interconnected web of ideas and mind development	Synaptic plasticity, neural network and long-term potentiation [5, 6, 7, 8]
Affective pedagogical relationship	Reinforcement and dopamine role in long-term potentiation [5, 7, 8]
Teacher transmitted interest	Mirror neurons [3]
Multiple interest - multiple learning pathways	Brain memory storage areas and cross-referencing [5, 8]



Discussion

Classical theories, like Herbart's, enrich the field by providing a foundational perspective that deepens our understanding of learning-teaching processes. They inform both educational neuroscience and pedagogy, strengthening these fields and fostering innovative interdisciplinary research.

Conclusion

J. F. Herbart's work remains relevant by anticipating concepts that are now reaffirmed in neuroeducation. The integration of his theories with contemporary findings in neuroscience underscores the importance of interdisciplinary approaches in enriching both pedagogical and neuroscientific practices to contribute to neuroeducation improving teaching strategies and curricula.

References

- [1] Herbart, J. F. (1806) *Allgemeine Pädagogik aus dem Zweck der Erziehung abgeleitet*. Johann Friedrich Röwer.
- [2] Herbart, J. F. (1824) *Psychologie als Wissenschaft, neu gegründet auf Erfahrung, Metaphysik, und Mathematik*. August Wilhelm Unzer.
- [3] Mukamel, R. et al. (2010). Single-neuron responses in humans during execution and observation of actions. *Current biology : CB*, 20(8), 750–756.
- [5] Redolar-Ripoll, D. (2012). Consolidación de la Memoria y Sustrato Nervioso del Refuerzo. *Revista Argentina de Ciencias del Comportamiento*, 4(2), 51–74.
- [6] Pradeep, K. et al. (2024) Neuroeducation: understanding neural dynamics in learning and teaching. *Frontiers in Education*. 9, 1437418.
- [7] Speranza, L. et al. (2021) Dopamine: The Neuromodulator of Long-Term Synaptic Plasticity, Reward and Movement Control. *Cells*. 10(4), 735.
- [8] Willis, J. (2007). Review of Research: Brain-Based Teaching Strategies for Improving Students' Memory, Learning, and Test-Taking Success. *Childhood Education*, 83(5), 310–315.

