

# TOWARDS AN INTEGRATIVE MODEL OF NATURAL LEARNING BEHAVIOURS FOR THE DESIGN OF EDUCATIONAL TECHNOLOGIES

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**Biography:** I started my career as a digital media designer developing digital educational materials for art museums and for the consumer electronics industry, where I worked on electronic toys, audio tours, and multimedia installations. During this period, I also started working as a digital media educator for several secondary schools in The Netherlands. My experiences with working with these pupils sparked my interest in answering the question on how education can be designed as such, that it enables pupils to discover their individual talents and abilities, rather than attending classes for the mere consumption of facts and techniques. My fascination for this question triggered me to pursue post-graduate research on the intersection of educational neuroscience and educational technologies.

## EXTENDED ABSTRACT

My research proposes to view the learner as having a discrete set of *natural learning behaviours*, which then can serve as a basis for the design of educational materials. These behaviours represent the commonplace actions of children: play, creativity, imitation and social learning, and reinforcement and associative learning, all of which are active in varying degrees (or can be externally induced) throughout the child's development, and of which each is suggested to have a clearly defined pathway to the long-term memory systems of the human brain. The benefit of this conception of the learner is that the educational designs that can possibly flow from it, can aid the learner's discovery of his natural abilities and talents.

## BACKGROUND AND AIM

In the discourse of Educational Technologies, learners are generally understood as having a visual and auditory information processing system with a limited working memory capacity, and require a coordinated set of cognitive processing during learning [1]. The design of educational technologies have predominantly been centered around the paradigms of inquiry based learning, which aims to facilitate a learners' curiosity; or game-based learning, which facilitates learners' reward-seeking behaviour [2]; or software that mimics the classroom-based paradigm of teaching and standardised testing. This model of the learner and these technologies for teaching view the learner as a mere consumer of knowledge, rather than as a discoverer of how certain knowledge can be significant to the learner's development. While inquiry-based learning paradigms sound empathetic to that view, it does require external guidance to shape it into an effective learning strategy [3]. My proposal for an integrative model of natural learning behaviours aims therefore to balance this process of discovery with the virtues of teaching. Designs that are based on this model could then facilitate these behaviours to let them serve their physiological purpose.

## METHOD

The focus of the methodology will be concerned with the development of an integrative model that depicts the physiological mechanisms that underlie the prior-mentioned natural learning

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behaviours. This requires a systematic review of all the relevant neuropsychological and behavioural literature that should reveal how the particular learning behaviour contributes to the learner's overall ability to maintain itself, how its mechanism of control operates, how the learning behaviour can be externally induced, and how the behaviour changes throughout the child's development over time [4]. The resulting model will be subject to a field inquiry at various primary and secondary educational institutions. Here, the manner in which the pupils exercise their repertoire of learning behaviours, including the simultaneity of their occurrences and the degree in which individual behaviours can be induced, will be studied per age category. Examples of means to induce creative learning behaviours are the presentation of positive affect stimuli, such as flowers, candy, or pleasing novel visual effects [5], and in the case of playful learning it depends on the perception of having a surplus of resources, such as food, a rich environment that allows for interaction, and without any concern of safety [6].

## **CONCLUSION**

Education, and the techniques, materials, and technologies that are used in its conduct, are best to be viewed as an intervention in the child's natural ability to learn. The type of learning that intrinsically occurs in an individual is strongly self-referential: it's a process in which abilities are being developed on the basis of the capacities that a child is born with. At its core, this process of development is not very different from the ways that other species in the animal kingdom develop their abilities. Humans, on the other hand, have the unique ability to build further on the knowledge of previous generations due to their capacity for social learning [7]. My proposal to view the learner by their natural learning behaviours seeks therefore to make the process of knowledge transmission more efficient and its return more richer, due to the increased possibility of the learners to discover their unique abilities with which they can contribute to society. For the design of Educational Technologies, it means a shift from designing audiovisual interactive presentations, to designing facilitations that can support the child's natural learning behaviours.

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