EMERGING TRENDS OF PSYCHO-TECHNOLOGICAL APPROACHES IN HEUTAGOGY

Dr A. S. Arul Lawrence
Dr M. Manivannan

Editors

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Published by
TAMIL NADU OPEN UNIVERSITY
577, Anna Salai, Saidapet, Chennai – 600015, Tamil Nadu, India

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Typeset & Cover Designed by
Dr A. S. Arul Lawrence

The correct reference for the chapter published in this book is as follows
Author, A., Author, B., & Author, C. (2022). Title of paper. A.S.A. Lawrence & M. Manivannan (Eds.), *Emerging trends of psycho-technological approaches in heutagogy* (page numbers). Tamil Nadu Open University.

ISBN 978-81-951793-2-9

Price: ₹ 300/-

Paper Size: A4
Total No. of Pages: 222
First Edition: June, 2022

N.B.: This book is published only in an electronic version, not in the printed version.

About Tamil Nadu Open University (TNOU)

The Tamil Nadu Open University (TNOU) is the 10th Open University in the country, which was established by an act (Act No.27) of the Legislative Assembly of the Government of Tamil Nadu in 2002. As per this act, the University with its headquarters at Chennai and 12 Regional Centers in the major cities of Tamil Nadu are carrying out its academic activities all over Tamil Nadu. This university aims at benefitting the sections of people who have been deprived of and/or denied access to higher education. The community of the deprived includes the destitute, the physically challenged, the working men and women, the economically weaker and marginalised people, and the drop-outs owing to various reasons. In nutshell, it aims at reaching the hitherto unreached.

TNOU is the first University in the country which has got over 80 programmes approved by the UGC-DEB. Moreover, it is one among the few institutions approved by the UGC, New Delhi to offer Open and Distance Education (ODL) programmes in the entire State of Tamil Nadu. TNOU currently offers programmes from Short-term to Doctorate level. All 132 Government Arts and Science Colleges of Tamil Nadu have been declared as Learner Support Centres and Examination Centres of TNOU by the order of Govt. of Tamil Nadu. Within a decade, since its existence, the TNOU has remarkably catered to the learning needs of more than 5 lakh students with over 100 programmes, through 14 schools of study and 5 divisions. It has a well-knitted network of student support services with 12 Regional Centers & Constituent Community Colleges, 190 Learner Support Centres (LSC), 157 Learning Resource Centres (LRC), 253 Community Colleges, 3 Programme Study Centres (PSC), 14 General B.Ed. Programme Study Centres (B.Ed.-PSC), 14 Special B.Ed. Programme Study Centres (Spl.B.Ed.-PSC), 9 Special Centres in Prisons, 15 Work Centres.

TNOU's instructional system comprises of quality print materials in Self-learning format, digital content through stand-alone CDs, face-to-face contact sessions, and continuous assessment and term-end examinations. Most of the operations of the University have been brought under e-Governance for efficiency, accuracy and transparency. The university is poised to embark on technology enhanced learning environment. TNOU has been expanding opportunities for life-long higher education and democratizing education by making it inclusive. TNOU has adopted an innovative flexible skill training method to provide skill training to the unemployed youth in the State of Tamil Nadu which encourages rural learners.

From the Editorial Desk

Heutagogy is a modern idea that refers to self- determined learning. Stewart Hase and Chris Kenyon coined the term 'heutagogy' in 2000, which is derived from the Greek verb 'heuriskein,' which means 'to discover,' or in the first person, 'heursko (εὑρίσκω),' which means 'I discover or I find.' Heutagogy takes a holistic approach to developing learner capabilities, viewing learning as an active and proactive process and learners as the "primary agents of their own learning, which results from personal experiences." Heutagogy emphasises self-reflection and double-loop learning. In double-loop learning, learners analyse the problem, the subsequent action and outcomes, and how the problem-solving process influences their own beliefs and actions. Double-loop learning involves "questioning and testing one's personal values and assumptions" Self- determined learners must develop competencies and capacities. Competency is proven capacity to acquire knowledge and skills, whereas capability is learner confidence in his or her competency and the ability to "formulate and solve issues in known, new, and changing environments". In heutagogical methods, the learner is accorded a great deal more value and autonomy; hence, their level of maturity is automatically elevated. On the other hand, instructors have less influence over students, and students have the ability to select their own curriculum and structure their own course. The heutagogical approach is deeply entwined with both the psychological and technological paradigms in their many forms. The contemporary technological platforms are fostering the adoption of heutagogical methods such as collaborative learning, flexible and negotiated assessment, and adaptable curriculum.

The epidemic of COVID-19 has disrupted education in over 150 nations and harmed 1.6 billion children. As a result, a number of nations have introduced some type of remote learning employing technology and students were encouraged to engage in self-determined learning. Many Educational Institutions that previously resisted changing their traditional pedagogical method were forced to use online teaching and learning exclusively. Internet-educated kids who have never encountered this issue are unfamiliar with it. As a result, they are confronted with a number of psychological issues and are negatively impacting the health, social, and material well-being of children globally, with the poorest children, such as homeless children and children in detention, being the hardest hit. As a result, the editors came to the conclusion that it would be beneficial to issue a call for papers in order to discuss the difficulties and opportunities associated with the practise of heutagogy from the psychological and technological vantage points indicated in the title.

The call for papers was announced in the month of January 2022, and the submission deadline was extended to the last day of February 2022 in response to several requests from colleges and universities around the nation. Following a check for plagiarised content, 52 pieces were chosen from a total of 121 chapters submitted by authors from throughout the country. Even though many of the chapters do not meet the required quality, standards, and relevance, the editors include them in the book because it will pique the interest of and inspire the next generation learners.

We are grateful to the authorities of Tamil Nadu Open University, for their invaluable guidance and support. We are grateful to the Editorial team and peer-reviewing committee for their tireless efforts in ensuring that these volumes arrive on time. We owe a debt of thanks to all of the generous people who assisted us, for their great coordination and quick completion of this scholarly project.

Date: June 5, 2022

- Dr A S Arul Lawrence &
- Dr M Manivannan

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Thematic Papers

Perceptual and cognitive ability among learners

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Introduction

Jean Piaget is considered by many to be the father of modern developmental psychology. Piaget believed and developed ingenious tasks to test that human infants and children perceive and comprehend the world differently than adults do. He was the keen observer of infants and child behaviour and took wonderfully detailed notes of his observations. In addition to being a skilled observer he performed well controlled experiments to test new hypotheses derived from those observations. His ideas were based on a biological view of development and thus differed from prior behaviourally based theories. On the basis of his observations he characterized the cognitive development in humans in four stage model, that as well we will learn has been and is undergoing rapid modification.

Piaget termed the period from birth until the age of about 2 years the sensory-motor intelligence stage. He conceived of the newborns as a new-born as a work in progress and held that the new-born faced a sensory perception and generated and only random activities. Thus according to Piaget in the first stage of postnatal life, the developing nervous system aims to achieve sensory motor integration and the integration across different sensory modalities (e.g., sound, touch, vision). Piaget also believed that the new-born could form a concept of self that could distinguish between it and the outside world, and thus the development of self-identity had to begin during the period.

Table 1 The divisions of Piaget cognitive development in humans

Stages	Age	Characteristics
Sensory – Motor Intelligence	0-2 Years	Unconnected Sensations, Representational Thought
Pre Operational Period	2-7 Years	Symbolic Representation, Illogical Thinking and Reasoning, Egocentric, Lack of Conservation and Reversibility
Concrete Operational Period	7-11 Years	Concrete Phenomenon, No Abstract Thinking, Conserve and Reverse Relationship
Formal Operational Period	11 Years and older	Development of Abstract Thought, Logical Thinking, Problem Solving

Piaget proposed that to achieve sensory motor and cross modality integration, infants develop sensory –motor schemas during the sensory motor schemas during the sensory motor intelligence period. That is they learn to do simple sensory and motor inputs to logical abstract thought. During this stage Piaget argued that infants have poor concepts of objects in the world. Even when they are old enough to interact with objects, they do not exhibit abilities such as object permanence; child's mental ability is limited to direct sensory and motor interaction with the environment. Obscuring an object from an infant during this period will at first lead the infant to ignore it. Later the infant may learn to look for it might be .for example in repeated trials if an investigator hides a toy from a child in her plain view, she will explore the hiding place to retrieve the toy. If the same hiding place to retrieve the toy. If the same hidden place is used over consecutive trials but then a new hiding place is used she will continue to search the original, well-practiced location, even though she watched the toy being hidden in the new hiding place. As the child ages this preservative behaviour diminishes. Piaget proposed that success in tasks such as this the end of the sensory motor intelligence stage and is the result of newly developed ability to represent objects and events internally; that` is infants can think about objects and acts that are no longer within the sight. Thus infants are said to exhibit object performance when they are no longer have difficulty conceptualizing the presence of an unseen object.

Many investigators have challenged the Piaget concept of the limited nature of new-born capabilities in the realms of the sensory motor integration, cross modal integration, cross modal integration and object perception. The nature of the challenge has to do with how quickly after birth an infant display a particular ability. Piaget critics have argued that the cognitive perspective focuses on thought processes and the behaviour that reflects those processes. For example new-born infants are given with adequate

 ISBN 978-81-951793-2-9

support to head theycan visually track sounds. This suggests a well-developed skill at cross modal visual and auditory integration and ability to link motor actions with cross modal perceptions.in line with this idea, studies have shown that infants only a few months can observe what elders are doing and making sounds can be identified by movements of mouth and voice synchronization.

Rene Baillargeon (1991) demonstrated this in object occlusion task .She showed infants an object and then placed it behind a vertical panel that occluded their view. The panel was dropped under two conditions .in that situation the panel was dropped and disturb the object placed it, as would be expected. In the next situation the panel was dropped during that time object had been removed secretly, then the panel fell flat to the table. The infants showed more surprise in the second condition than in first condition.

If infants have well developed object permanence even at an early age how can we explain the perseverative behaviour when the investigators hide the object. One interpretation has to do with properties of the frontal cortex. It is well known that adults suffering from frontal lobe damage cannot switch their motor set-they persevere with a previous response. Infants with preservative motor behaviour behave as though they were frontal lobe lesion patients. This similarity in behaviour can be interpreted in a surprisingly simple and gratifying way: Infants do not have complete myelination of neurons from the prefrontal cortex, and thus their frontal cortex and thus their frontal cortex is not yet fully functional.

In the Piagetian model, three additional stages follow the sensory motor intelligence stage. The first from 2-7 years old is the preoperational stage during which representational thought and object permanence are hypothesized to be well established but other conceptual processes are not yet evident. Piaget believed that children in this stage do not show conservation of quantity: that is, they cannot appreciate that two differently shaped glasses of liquid contain the same volume even though they see them being filled with the same amount of liquid for the same source. Thus ,the visual appearance of a taller thinner glass verses a shorter fatter glass dominates the children's decisions about the quantity: they believe that the taller glass holds more liquid than the shorter fatter glass, even though they actually have the same volume .Piaget proposed that a similar effect happens with numbers of objects. It is not until near the end of this stage ,at about 7 years old, according to Piagetian theory, that children learn these abstract concepts and rarely fooled if given all the information needed to make the correct decision.

From 7-11 years old `Piaget held that children become capable of some forms of some forms of quantitative conceptual thinking. He argued however that during this period that initially can do quantitative operations on concrete events. Piaget called this period the stage of concrete operations. Then from 11 years onward during the stage of formal operations, children learn to make abstract representation of relationships according to Piaget. Children at this age can generalize mathematical relationship and manifest hypothetical deductive thought –the ability to generate and test hypotheses about the world.

Research challenges Piaget's theory about the three stages. Infants show remarkable evidence of the rudimentary sense organs in early in life. They can identify the difference the three stages. Thus, infants appear to be sensitive to the concepts of more and less.

Development of Visual cognition –Object Recognition

Like Piaget, WilliamJames, one of the founding fathers of the field of psychology, speculated that new-borninfant's perceptual experience amounted to one great blooming, buzzing, and confusion. Over the past 25 years researchers have devised methods to investigate whether infant's perceptual difference is indeed as confused as James and Piaget believed or whether it is more organized. These methods involve capitalizing on and quantifying overt behaviours in which babies engage naturally.

Extensive research had made use of babies 'looking time –that is how long they took us the stimulus.it turns out that there are very predictable aspects of infants looking behaviour that render measures of looking time as a powerful tool in the developmental science.

Development of the Human Attention System

The visual perception system shows dramatic developmental changes early in life ,as demonstrated by the acquisition of the ability to recognize objects in the world. When changes in the developing brain support the acquisition of such abilities? primate visual systems have been adapted and investigated over the past 40 years. The structures and system of relevance to the oculomotor system was mapped and as a result of observation of how oculomotor behaviour develops have enlighted us about the neural substrates of a key cognitive mechanism-attentional orienting.

Development of Face Recognition

Face processing like language is an exquisitely developed skill in humans that has its origins in the first days of life. Newborns babies seem to like looking at many other interesting stimuli such as bull's eyes and checker boards. Infants just as few weeks old can distinguish their mothers face from other women's face. They rely on global aspects primarily because their visual ability is poor at birth and does not approach adult capability until the age of 3-4 months. Once normal acuity develops, babies begin to recognize and distinguish faces on the basis of their features. A hall mark of mature face processing is the

ADMINISTRATIVE BLOCK OF TNOU

ISBN 978-81-951793-2-9

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