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# Neuroplasticity and Knowledge Dynamics

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TECH



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# What is Neuroplasticity?



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Neuroplasticity is the reason why people are able to learn and develop new skills, as well as recover from brain injuries and diseases. For example, someone who suffers a stroke may be able to recover some or all of their lost function through rehabilitation exercises that stimulate the brain's ability to form new connections and reorganize neural pathways.

Various types of neuroplasticity have been identified, and they are categorized based on different criteria. The two most common types are structural and functional neuroplasticity. Structural neuroplasticity involves changes in the strength of synapses, which are the connections between neurons, while functional neuroplasticity refers to permanent changes in synapses as a result of activities related to learning and memory exercises. Structural changes occur when neurons change or adapt their network, resulting in physical alterations to the brain's structure. Functional neuroplasticity, on the other hand, involves significant changes in the entire neuronal network. Once learned, the new connection between neurons becomes stronger and stronger with time, eventually weakening the old one and becoming a routine. To put it another way, it is similar to creating a new pathway on an unexplored road: the more you travel the same path repeatedly, the more familiar and easier it becomes to access it.

# Evolution of knowledge metaphors

Knowledge dynamics refer to the fluctuations and changes in knowledge over time and across different geographical locations, as well as the processes of transformation that occur.

## Rational Knowledge

Focuses on explicit knowledge, which is the product of conscious cognitive processes in the brain.

## Emotional Knowledge

Stems from the essence of tacit knowledge and involves the perception of emotional information.

## Spiritual Knowledge

Pertains to an individual's comprehension of the purpose of human existence, which encompasses values, beliefs, and organizational culture.



The field of Knowledge Dynamics is focused on the transformations that occur between different knowledge fields. Traditionally, the concept of knowledge has been explained using metaphors related to objects or stocks in the first wave, and fluid, flow, or stock-and-flow metaphors in the second wave. However, Bratianu and Andriessen (2008) introduced a new metaphor for organizational knowledge that centers around energy. According to this metaphor, knowledge is similar to energy in that it exists as a field that can take various forms and transform from one form to another. It is also considered an open system, meaning that it can experience both knowledge loss and acquisition. The objective of studying Knowledge Dynamics is to better understand the knowledge transformation process, including all of the various forms and dynamics of knowledge transformation.

# Knowledge dynamics meeting neuroplasticity in 3 steps

1.

## **Nurture a growth mindset**

The belief that intelligence can be developed and noticing knowledge fields transformation enhances the process of new neural connections

2.

## **Promote Lifelong Learning**

New neural connections can be created at any point in life through constantly learning new things: transforming data into information, then into knowledge and wisdom

3.

## **Develop Psychological Safety**

Create a space where people feel encouraged and safe to share their knowledge and by sharing what they know without judgement, neuroplasticity is enhanced



The growth mindset, a concept developed by psychologist Carol Dweck (2016), is characterized by the belief that one's intelligence, abilities, and talents are not fixed but can be developed and improved through hard work, dedication, and perseverance. Those who possess a growth mindset view challenges and obstacles as opportunities for learning and growth rather than insurmountable barriers. They recognize that failures and setbacks are temporary and necessary steps towards achieving success. With effort and persistence, individuals with a growth mindset believe that they can develop their abilities and learn from their mistakes. Developing a growth mindset can enhance one's resilience, motivation, and achievements in various aspects of life.

Lifelong learning is the continuous process of gaining knowledge and skills beyond formal education. Its purpose is to improve personal and professional growth, adaptability, and employability, and to encourage social and civic participation. People can achieve this through attending courses, workshops, and seminars, reading books and articles, participating in online learning, and gaining experience through work and volunteering. In today's fast-changing world, lifelong learning is crucial for individuals to stay competitive and relevant.

Psychological safety means feeling secure enough to take interpersonal risks and express oneself without fear of negative consequences. It creates a comfortable atmosphere where people can share ideas, make mistakes, and speak up without fear of rejection or punishment. It promotes open communication, innovation, and collaboration, leading to higher job satisfaction and performance. Psychological safety is crucial for creating a supportive and inclusive work environment that enhances well-being and productivity.

## Sources to find out more!

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We recommend you to check these resources for additional information on neuroplasticity and knowledge dynamics.



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