Chapter 47

Blockchain Technology as a Bridging Infrastructure Among Formal, Non-Formal, and Informal Learning Processes

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ABSTRACT

Blockchain is an online decentralized and distributed ledger technology that has the ability to keep and track records in a safe, verifiable, and transparent manner. More significantly, it has an infrastructure that is compatible with Web 3.0, which offers great potential for lifelong learning. This chapter explains the different modalities of learning (formal, non-formal, informal), blockchain technology, and its current use in educational processes. Based on the findings, the authors suggest that blockchain technology can be used to connect and interlink different educational experiences that occur in different educational modalities, enabling us to evaluate educational processes holistically and thus promote lifelong learning through the use of cutting-edge technologies.

INTRODUCTION

At a time when we are constantly exposed to new or existing information and when knowledge is produced and consumed consistently, lifelong learning has appeared as a key concept to aid survival in the digital knowledge age. There are many reasons behind these changes, one of which can be considered as distributed online networks that connect the entire world in online networked spaces. In line with the

changes and transformations ushered in by the digital knowledge age, the scope and definition of lifelong learning have undergone a comprehensive change. This chapter presents lifelong learning as a term that covers formal, non-formal and informal learning and focuses on distributed learning and online learning from the perspective of blockchain technology and its transformative potential.

Lifelong Learning

Education is a necessity for everyone. This process is not stable, being something that rather continues throughout our lives. In the 21st century, under the effect of information and communication technologies (ICT), information is constantly changing, and the lifespan of the information is constantly shrinking. We are currently exposed to information as never before, and through ICT, individuals have the opportunity to learn everything almost in a second. In the past, learning was just a requirement in advance of a job, but today the job and life itself is a learning process, that is, learning is a vital need. Consequently, learning does not take place over a fixed period, it is a continuous mechanism in which we need to take part throughout our lives, it proceeds from the cradle to the grave. This state of learning suggests a need for an ongoing process that lasts throughout life. Lifelong learning has multiple interpretations, having been defined with such terms as adult education, fundamental education, continuing learning, basic education, recurrent education and ongoing learning (Billett, 2010; UNESCO Institute for Lifelong Learning, 2018). Billett (2010) claims that "the need for this continuous learning includes completing the tasks we require to simply live and thereby enjoy connected, effective and worthwhile lives" (p. 402). According to Adams Becker et al. (2017): "lifelong learning is the lifeblood of higher education. Institutions must prioritize and recognize ongoing learning – both formal and informal – for their faculty, staff, and students (p. 2)." The advantages of the application of lifelong learning strategies and practices are important for personal and sustainable development, as well as knowledge and skills attainment. Learning throughout life affects people in many different ways, including health, wealth, work potentiality and poverty mitigation (Belanger, 2016). Ultimately, lifelong learning aims to integrate life and learning.

In the face of this continuous change, today's learners are exposed to constant information, although there have been notable changes in learning processes and environments. These include changes from education to learning, from a centralized to a decentralized paradigm, from a one-size to a personalized approach, and from a one-resource to multiple-resource modality (UNESCO Institute for Lifelong Learning, 2014; 2018). In this respect, lifelong learning has three dimensions that covers the entirety of the lifespan and involves many contexts and different learning modalities; these are formal, informal, and non-formal learning. Considering all these learning modalities, the ultimate goal may be to develop an effective and efficient lifelong learning process that takes into account all learners.

Learning Modalities

Learning is not only a lifelong, but also a life-wide, and a life-deep process (Belanger, 2016; Walters, 2010). Lifelong, life-wide, and life-deep learning forms support all people in society on several counts (Figure 1), and these learning processes involve formal, non-formal, and informal learning practices (UNESCO Institute for Lifelong Learning, 2014; 2018). The division between these learning modalities was more apparent in the past, but in today's technology enhanced and enriched world, the distinction between these modalities is becoming blurred.

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