**Blockchain technology’s impact on credentialing**

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As universities adapt to the need for workforce re-skilling and continuous learning across the lifespan, the current credentialing approach to evidentiary learning and qualification management stands as a barrier to entry for many; effectively stunting social and economic mobility for millions of people.

Universities have been the arbiter and paragon of accreditation and certification for centuries. With the help of private accrediting agencies and professional organizations, universities are recognized in our society as having the integrity, authenticity, structures, processes, manpower, and data management tools to more easily manage the credential issuance, validation, distribution, and verification process. Historically this has been the most functional and expeditious way to operate, however, it has also required us to seed authority and sovereignty over our identities (Grech & Camilleri, 2017), and limited what is validated as authentic knowledge or skills. With shifts in the speed of change, access to information, workforce skills gaps, and recognition that work experience is on par with formal classroom learning, this validation process has become a limiting, time consuming, and costly. Blockchain has the potential to change the issuance and data management of credentials, as well as the societal view of of knowledge and skills verification effectively knocking down enormous barriers to economic and social mobility.

Blockchain is a continuous and infinitely appendable series of records (blocks), with individual blocks being permanent and unalterable. Participants in any given Blockchain implementation can only add blocks, never alter or remove them.

This is because the technology underlying Blockchain software operates on a process called consensus. This means there is no one central database. Any given Blockchain implementation requires the participants to download a wallet (software). Their machine becomes a node within the networked system of participants. Their node holds what is essentially a replica of all of the data on the Blockchain. When a request to retrieve a block on the chain goes out, the nodes seek consensus regarding the content of the data being requested. The data matching a preponderance of nodes is returned to the requester, any nodes returning unverifiable data are rejected (in the case of an attempted hacker altering a record). Because of this distributed nature, there is no longer a need to rely on one single unit/organization to verify credentials.

The tamper proof nature of Blockchain can lower or even eliminate the cost of accessing transcripts and professional credentials. Moreover, it can create automated processes that removes the potential for human error or falsification. This will solve the challenge of exaggerated qualifications and fake credentials, and contribute to sovereignty over one's identity allowing those who are globally mobile, such as mobile workers, displaced persons, and refugees to have access and authority over their identity documentation.

Here is a possible scenario: Emily is going into her last year at State College University, her diploma (an artifact) will be added as a Block along side previously generated Blocks the University added during her four years. This includes details of the courses she completed, her internship evaluations, and several badges from competencies she attained through the University. Emily's Blockchain dossier already contains her personal identity profile including her birth certificate that City Hall generated and added as a Block when she was born, and her health and immunization records that City Hospital added. A month after she moves into her dorm, an earthquake hits the city and destroys the University. The City is chaotic and in disarray. Public and private services are back up for months. Her family's home is razed and they are living in a temporary shelter at the local elementary school. Emily decides to apply and transfer to another university to finish her last year. She decides she will also need to get a job to help her family recover. Emily is able quickly begin the process. With her private access she is able to view her personal profile and all her records. With this she is able to generate multiple unique public access keys designating the specific recipients, information each can access, and a timeframe when each key will expire. Emily knows she is lucky. Her city will recover. Millions of people around the globe in her situation would have to migrate across international borders. She knows that others are what is called stateless and are limited to locations such as a refugee camps or are directed to a country not of their choosing. Stateless people are individuals who do not have proof of identity. They cannot receive certain services, nor can they easily migrate to improve their situations. They likely cannot provide the proof of credentials needed to apply for jobs or to transfer schools.

This is just one example of why we need to create a digital credentialing system.

**Recommendations for the profession to consider regarding the implementation of blockchain technology**

Blockchain is still in its early stages in terms of development, operationalization, and implementation. There are very few case studies to go on. In the realm of credentialing, MIT has implemented a Blockcert system to issue digital certificates, as well as dual paper and blockchain diplomas to students in one of its programs. For the information profession, it is important to join online communities such as Blockcert and Blockgeeks and engage in the discussions and educate ourselves on the progress of this new technology. These communities have technical tutorials and conduct webinars on all aspects of Blockchain. Additionally, collaborating with other institutions is tremendously important for the greater higher education industry to pilot or participate in a cooperative Blockchain implementation in the future.

**References**

Grech, A., & Camilleri, A. F. (2017). *Blockchain in Education*. *JRC Science for Policy Report*. <https://doi.org/10.2760/60649>