

Makerspaces: Equipping students with skills for employability in the 21st century

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We are in the cusp of the fourth industrial revolution (4IR) which is replete with major disruptions in almost every aspect of our lives and in this respect education is no exception. Whilst the corporate sector is busying itself in preparation of the new headwinds through innovations in robotics, automation and big data analytics, the higher education sector is seemingly lagging behind in preparation of our students for employability in the new world of work, spawned by the processes of digitisation and digital transformation.



Likewise, the nature of the new global economy, which is being radically changed around a framework of the 4IR digital innovation, has transformed how we do everything. Employers need graduates who can and will survive in a constantly evolving digitally grounded world supply economy. In the face of such rapid economic and social change, it is imperative that higher education promotes 21st century skills to prepare students for a future that is by design highly unpredictable. It is a future where jobs that have not yet been created and technologies that are yet to be invented will constantly disrupt the status-quo.

The Organisation for Economic Co-operation and Development (OECD) estimates that over the next 10 to 20 years, “14% of jobs are at high risk of being fully automated, while another 32% at risk of significant change”. The obvious outcome of this new scenario is that higher education institutions have to prepare students, in order to ‘right-skill’ them to adapt to the new world of work.

Employability skills which may also be referred to as ‘soft’ skills are personal and professional qualities and values of character and outlook that will enable students to thrive in the 21st century workplace. These skills include critical thinking, problem solving (and a willingness to seek solutions to rapidly emerging changes), effective communication, adaptability, and perseverance.

To a large extent Makerspaces can contribute significantly in helping students develop their skills and creativity, inspiring young learners to engage with the STEAM agenda – Science, Technology, Engineering, Arts and Mathematics. Although this is not a new concept, Makerspaces are gaining traction for the many benefits they provide students and the concept is increasingly being integrated into the education system.

In effect a 'Design Thinking Approach' is enshrined in the conceptual foundation of a Makerspace. Learning in this new ecosystem includes considering real-world problems, research, analysis, conceiving original ideas, experimentation, and sometimes building things by hand. The projects teach students how to make a stable product, prototype solutions, use tools, think about the needs of another, solve challenges collaboratively, overcome setbacks and stay motivated on a long-term problem. The projects also teach students to build on the ideas of others, generate questions, deeply analyse topics, and think creatively and analytically.

Academic Makerspaces are therefore increasingly being looked to as a method for engaging learners in creative, higher-order problem-solving and active learning skills through hands-on design, construction, and iteration. Consequently, the interdisciplinary, collaborative, and empowering natures of these Makerspaces help prepare students for a future that cannot be predicted.

Makerspaces provide powerful contexts and opportunities for students to draw upon the innately human desire to make things using our hands and our brains. They provide this necessary outlet for students, fuelling engagement, creativity, and curiosity. Research study conducted by Small (2014) found that students that participate in activities involving innovation were inquisitive, imaginative and motivated and eager to solve real world problems with practical applications.

Although Makerspaces vary in terms of the structuring of the learning environments, most spaces today tend to incorporate blended learning technologies to provide students with an immersive pedagogical experience. Student-centred learning in a Makerspace can also empower students, helping them to shift from being passive consumers of information to active creators and innovators. Ultimately the outcome of maker education and academic Makerspaces leads to determination, independent and creative problem solving, and an authentic preparation for the real world by simulating real-world challenges.

Makerspaces are therefore considered as an important bridge between higher education academic learning and the future world of work, and they are particularly useful when incorporated into the teaching of STEAM subjects and increasingly higher education providers are incorporating Makerspaces into their curriculum with the aim to promote STEAM education. It is important to instil quality STEAM skills to meet the needs of an ever-more-technologically integrated society. It must be remembered though that Makerspaces are used to complement and not replace academic learning.

In response to the exigencies of the technological disruptions of 4IR and the urgency to prepare our students for employability in the new world of work, Institutions such as Honoris United Universities have built curricula, teaching methods and a 'collaborative intelligence' model that places emphasis on preparing undergraduates for the world of work. It has developed a regional network and a learning ecosystem that equips students with the skills and knowledge that they need to succeed in the 21st century.

The regional network equips its students with the skills and knowledge that they need to succeed in the digital economy. Towards this end the platform has established Honoris 'iLeadLAB', which is a Makerspace at Regent Business School in South Africa, a state-of-the-art medical Simulation Centre and an Artificial Intelligence Laboratory in Tunisia.

Practically, the iLeadLAB provides its students, alumni communities and business partners with opportunities to bridge the gap between learning and work through STEAM immersion, work-related learning and internship boot camps, thus reducing the education-job mismatch and increasing employability competencies of its graduates.

Through these new pedagogical innovations, Honoris United Universities is challenging the idea of the traditional 'passive' classroom experience by exploring how new physical and virtual learning environments can affect and improve not only learning outcomes but also help students to become fast-learning and flexible professionals with technological capabilities that are in high demand across all economies globally.

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