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Education and Employability: An Adaptation of the Framework of the ‘Innovator’s DNA’ to the Curriculum and Pedagogy of Secondary and Higher Education.

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Abstract: The concept of student employability highlights the intersection between the world of schooling and of work, and it suggests the need for an interdisciplinary approach to the problem of the growing skills gap. We propose a framework on employability that is applicable to both the educational and work environments. The ‘Innovator’s DNA’ is an entrepreneurial model that combines: associating, questioning, observing, experimenting and networking as skills and behavioural attributes that typify an innovator. Although this model has not been previously suggested nor used in education research, this paper argues that an adaptation of this framework to the curriculum and pedagogy of secondary and higher education could be a useful contribution to the literature on student employability and thus bring about the cultivation of behaviours that enable students better positioned to thrive in the world of work today. As an adaptation to education research, the current study proposes to call it the ‘Academic Innovator’s DNA’ framework. This paper is a result of a systematic review of the literature on employability, and is premised on two research questions: 1) How is the notion of employability related to secondary and higher education? and 2) Is it possible to embed the ‘Innovative DNA’ within secondary and higher education curriculum and pedagogy? This paper raises challenging questions regarding how the Innovative DNA can be adapted across all secondary and higher education subject areas, curriculum as well as pedagogy.

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Employability, generally defined as the ability to secure and retain employment (Hogan, Chamorro-Premuzic, & Kaiser, 2013) has been extensively studied in an attempt to unify the domains of education and the world of work and also to facilitate the school-to-work transition of students (Römgens, Scoupe, & Beusaert, 2019). Traditionally, employability was strictly determined by academic degrees (Tomlinson, 2012). However, given the rapid changes in the world of work such as the increasing irrelevance of a graduate degree, the changing nature of work roles and the increasing demand for soft skills (Musset & Kurekova, 2018; Pitan, 2016; Römgens et al., 2019; Small, Shacklock, & Marchant, 2018; Tomlinson, 2012; William D. Eggers, 2012), the concept of ‘employability’ is changing. Beyond having a degree, employability now includes possessing certain behaviours (Clarke, 2008). There is thus a shift in the literature on employability from simply grooming employable graduates, to include the grooming of employable *individuals* (Chamorro-Pemuzic & Frankiewicz, 2019; Clarke, 2008; Tomlinson, 2012). This has popularized the idea of and the need for ‘soft skills’ (Clarke, 2008).

A common assumption in higher education (HE) is that students develop soft skills like teamwork and problem solving either from internships or extra-curricular activities (Lau, Hsu, Acosta, & Hsu, 2014; Shoenfelt, Stone, & Kottke, 2013). This implies a differentiation between the academic environment and the world of work as well as curricular and non-curricular activities. Implying therefore that the academic curriculum neither has nor is able to transmit these skills (Shoenfelt et al., 2013). Students are as such likely to perceive the acquisition of these skills as unimportant - since they are presented as separate from *academic work* (Rae, 2007). As proposed by Rae (2007), that this compartmentalization fails to communicate clearly to students the usefulness of employability skills, this paper likewise suggests that this approach would result in skills getting rusty from a lack of practice - because internships and extra-curricular activities would be one-off events, with students devoting more time to curricular learning. In order for students to embody employability skills and not just experience them, this paper proposes an integration of employability skills in the curriculum and pedagogy. In this way we contribute to and expand on the literature that recommends a ‘holistic curriculum’ (Rae, 2007; Speight, Lackovic, & Cooker, 2013).

While there is literature supporting the integration of employability skills in the school curriculum, rather than leaving it up to internships and extra-curricular activities (Shoenfelt et al., 2013; Wickramasinghe & Perera, 2010) some others advise caution, for fear that education may be relinquishing its autonomy to the world of work, thereby reducing the goal of education to job seeking behaviours only at the expense of academic training (Speight et al., 2013).

A concern for student employability however is not antithetical to academic learning but ought to be an integral part of it (Speight et al., 2013). This is because employability skills are not just useful to gain and retain employment, but to also experience a satisfying career (Sumanasiri, Yajid, & Khatibi, 2015), which can translate to a satisfying life (Cole & Tibby, 2013). This paper argues further that the extent to which training in these skills can coexist with academic training is dependent on pedagogical methods. That is, how academic subjects are taught (Wickramasinghe & Perera, 2010). This recommendation has however, received little attention in the literature (Sumanasiri et al., 2015).

Also, the discourse on student employability has centred mainly on HE students and graduates (Tomlinson, 2012; Wickramasinghe & Perera, 2010), with only a few studies including secondary school students in the conversation (Jayaram & Engmann, 2014). This paper argues that skills for employability should be initiated at the secondary school level, particularly among late adolescents because research shows that future orientation, otherwise known as thoughts and plans for one's future, begin to crystallize during late adolescence alongside the development of personal and vocational identity (Rogers, Creed, & Praskova, 2018; Skorikov & Vondracek, 2007).

Student Employability Framework: There are currently frameworks that conceptualize student employability as comprising of a range of certain skills, attributes and attitudes (Small et al., 2018; Sumanasiri et al., 2015). However, while the majority of these frameworks have been developed for HE students, some have also been considered too theoretical and thus difficult to embed in the curriculum (Sumanasiri et al., 2015). This paper also argues that these frameworks seem to have fragmented the understanding of student employability (Small et al., 2018); thereby necessitating a framework that encapsulates to a good extent, the different core elements of student employability. As such, the current study proposes a novel framework to the literature on student employability, known as 'The Innovator's DNA'.

Introducing the Academic Innovator's DNA: The Innovator's DNA was proposed by Dyer, Gregersen, & Christensen, (2009), as a business-entrepreneurial model, following a six-year study on innovators and business executives from around the world. It prescribes five core attributes which determine the success of a would-be innovator; namely: Associating, Questioning, Observing, Experimenting and Networking. The study concluded that these skills can be learned through practice (William Strange, 2012). We propose an adaptation of this unifying model to pedagogy as follows: *associating* will entail the ability of students to link ideas from different subject areas; *questioning* will involve the ability to critically evaluate knowledge; *observing* will heighten a conscious awareness of

the world and how academic subjects can be applied to the environment; *experimenting* will encourage a perception of ideas as working hypothesis and not as absolute truths; *networking* will engender a recognition of diversity among peers as a means to expand one's knowledge.

As a student employability framework, the attributes of the Academic Innovator's DNA can facilitate curiosity, interpersonal skills, cultural intelligence, adaptability, continuous learning and teamwork; which have been regarded as core skills for success in the world of work (Clarke, 2008). Another advantage of the Academic Innovator's DNA model is that unlike previous models on student employability, it comprises of *actual* behaviours that students can embody and also be taught.

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