

Intellectual capital in education*Introduction*

Schools, and especially universities, are currently undergoing major challenges as their role in society constantly changes. From a teaching perspective, the internet and online technologies have seen the introduction of massive online offered courses (MOOCs) and the opportunity for students to choose between online, distance, and mixed-modes of education. These changes are disrupting the foundations of traditional schools that must now compete with public and private online offerings that challenge face-to-face classroom teaching. Similarly, professional accreditations, such as the Microsoft Certification, are important qualifications that go beyond traditional education. Higher education is no longer the remit of a privileged social class. University and professional education are becoming more available, and online platforms can reach students worldwide. However, as higher education spreads, it no longer guarantees a job but has become a minimum requirement for one.

These changes are coupled with an inrush of students to established schools and universities in Australia, the USA, UK, and the EU from developing nations, such as China and India. The flood is changing the higher education landscape in these countries, transforming university education into a major export industry. However, exporting education does not guarantee a continuing income stream for these countries. Universities in developing nations are improving their courses and moving up the ranking tables. Thus, tomorrow's universities will be far different than what they are today.

The influx of foreign students is also creating a reliance on income from foreign students to fund universities. For example, in Australia in 2016 there were more than half a million foreign students contributing about AUS\$12 billion to the education sector, and more than AUS\$19.7 billion to the economy. This student income is necessary due to cuts in education funding. As a result, universities are becoming more entrepreneurial and are developing courses to attract and retain foreign students. However, the uncertainty of the income stream also results in increased use of adjunct staff, which puts pressure on existing human capital in teaching and in achieving high-quality research outcomes.

Since the beginning of the IC movement, universities are the subject of research, investigating issues such as intellectual property (Fine and Castagnera, 2003), management (Sánchez and Elena, 2006), research and development (Castellanos *et al.*, 2004), and reporting (Sánchez *et al.*, 2009; Low *et al.*, 2015). These approaches are what Petty and Guthrie (2000) identify as second-stage IC research. However, more recently, research has focussed on IC practice, or third-stage IC research (Guthrie *et al.*, 2012) inside universities (Vincenza *et al.*, 2013; Secundo *et al.*, 2015; Vagnoni and Oppi, 2015).

Additionally, research at the cutting edge is examining the third mission of universities from the perspective of technology transfer and innovation, continuing education, and social engagement (Secundo *et al.*, 2016, p. 299). The latter is in line with Dumay and Garanina's (2013, p. 21) fourth stage of IC research which helps "navigate the knowledge created by countries, cities and communities and advocates how knowledge can be widely developed thus switching from a managerial to an ecosystem focus". The transition from traditional academia to an enhanced third-mission role is crucial for transforming universities and higher education providers as they continue to consolidate their position as critical players in socio-economic development and regional growth (Foray *et al.*, 2012; Kempton *et al.*, 2013).

Because of the interest in IC and educational institutions and their dynamic operating environment, new opportunities for future research are emerging (Guthrie and Dumay, 2015).



This special issue is an outlet for that research. In this special issue, we present a variety of international studies at the forefront of IC in education research. In the following paragraphs, we highlight the themes represented in the papers. To conclude, we offer our views on the overall contribution of this special issue and highlight the research that still needs to be done.

Identifying future directions for IC research in education: a literature review

It is important to have a literature review to open any special issue as a way of introducing the state-of-the-art topics. In this special issue, we invited Bisogno *et al.* (2018) to conduct the task and to link past research with the papers appearing in this edition. Bisogno *et al.* (2018) find that IC in education research is concentrated in Europe and mainly addresses IC in universities. Additionally, current IC research is progressing by examining IC practices inside universities using a third-stage IC approach, with new research also concentrating on third-mission outcomes. Bisogno *et al.* (2018) conclude that there is scope to continue IC and education research beyond universities into other educational environments, such as primary and high schools and professional qualifications. Additionally, there is no research on how technology can be used to reshape the spread of education beyond the classroom and into countries and social classes that have not traditionally had access to education.

A highlight of this paper is their concluding comments about expanding IC in education into what Dumay, Guthrie, Ricceri, and Nielsen (2017) now refer to as the fifth stage of IC research, which abandons the boundaries of the educational institution. The fifth stage considers how IC can help to resolve social issues by viewing educational institutions as stakeholders within a larger ecosystem, for example, the provision of free vs paid university education. Thinking about relationships beyond the boundaries of an individual school or research centre to society in general moves beyond fourth-stage IC ecosystems. It implores educational institutions to be collectively involved in their community, rather than operate as a single, independent institution.

Ten years of using knowledge balance sheets in Austrian public universities – retrospective and perspective

Austrian public universities have made an outstanding contribution to IC research over the years. They implemented the first, and still only, mandatory IC statements. If there has been one continuously debated hot topic in IC and non-financial reporting, it is the debate as to whether IC reporting should be mandatory. Thus, the paper by Piber *et al.* (2018) adds to research about the impact of mandatory IC reporting from which other domains, such as integrated, corporate governance, and sustainability reporting can garner insights. The Austrian experience is especially enlightening because, regardless of consistent calls by scholars for policy makers to make IC and other forms of reporting mandatory, these calls fall on deaf ears.

In their paper, Piber *et al.* (2018) use longitudinal data to understand the top-down implementation of knowledge balance sheets and examine how numbers help describe the qualitative aspects of IC. The paper is interesting because it identifies both the functional and dysfunctional characteristics of mandatory IC disclosure. Thus, the paper contributes to understanding how IC theory becomes practice and shows that there are pitfalls alongside its intended benefits. The practical implications are twofold. First, in order to identify aspects of monetary, utilitarian, social, and environmental value, a concerted effort to embed quantitative data in a discourse on the qualitative impact on value would be needed. Second, Piber *et al.* (2018) support a “communicative culture first” rather than a “tool-box first” approach.

Human capital loss in an academic performance measurement system

The Martin-Sardesi and Guthrie (2018) paper is important because it examines one of Sveiby's (2010) main criticisms of IC – that IC should not be used for management control purposes. A similar sentiment echoes from Gowthorpe (2009) who questioned whether measuring IC performance was a new way to bully employees. What Martin-Sardesi and Guthrie (2018) offer in their paper is a nuanced examination of academic human capital in response to research performance measurement within the wider context of a university's research performance measurement system and a national research performance measurement exercise. The paper is important from a policy perspective as more and more countries implement research performance assessment, because policy makers, university administration managers, and academics need to understand the functional and dysfunctional outcomes of implementing these policies.

In the paper, Martin-Sardesi and Guthrie (2018) show how the performance management system had unintended consequences that eventually led to a loss in academic human capital. Thus, the paper addresses what might happen if a performance management system that measures intangibles is implemented without considering its potential negative effects. If we are not careful, the push to promote more academic research without ensuring its quality may backfire. Educators should not need to game the system by concentrating on the number of outputs, rather than the quality of the outputs. However, it is easy to judge research output by the number of publications; it is more difficult to judge output quality because it may take time for that quality to be recognised.

Intellectual capital and university performance in emerging countries: Evidence from Colombian public universities

The next paper by Greco *et al.* (2018) builds on university performance but tackles it on a national rather than an individual basis. Understanding how a university system, and the individual universities within it, performs is important to policy makers because there is increasing demand from the general public to ensure taxes are effectively spent on education. The paper is also interesting because it examines an emerging country context, which is under-represented in current IC in education research (Guthrie and Dumay, 2015). An interesting model for analysing the relationship between IC and university performance in Colombian public universities is presented and discussed. The model identifies the associations between the IC accrued in universities and their ability to transfer it to society in the form of science, innovation, and education, which links it to the fourth stage of IC research (Dumay and Garanina, 2013). Additionally, the paper serves as a guide for choosing public policies that are aimed at improving performance. Last, the paper uses a quantitative approach, which is also not commonly found in IC research (Dumay, 2014).

With or without corporate universities: a comparative study of efficiency of European and Russian corporate universities

Continuing the performance debate, Parshakov and Shakina (2018) paper look at privately funded universities as opposed to public universities. Here, the debate is about whether or not there is value in investing in corporate universities that are specifically created to develop structural and human capital for the companies that create them. And further, whether operating a corporate university is a signal of being an industry leader. Thus, the paper develops an analysis of corporate universities by identifying how they develop competitive advantages and are regarded favourably by investors. Additionally, Parshakov and Shakina (2018) investigate corporate university functions as substitutes for the educational programs offered by traditional academic and professional institutions. The results presented by Parshakov and Shakina (2018) are interesting because

they find that, while there are espoused benefits to developing a corporate university, they come at a considerable cost, which may destroy more value than they create. They advocate that leveraging the strong relational capital of an existing public university may achieve the same outcomes for developing human capital without the significant costs of operating a corporate university.

Transmitting competencies at Kazakhstan universities: intellectual capital of teachers

Next, the Sultanova *et al.* (2018) paper is interesting because it moves from looking at the performance of universities to the performance of teachers. No doubt, measuring teacher performance is a contentious issue and, again, we are reminded of the dangers of using IC as a management control (Sveiby, 2010). However, the paper is innovative because, through empirical research and a case study, it attempts to create IC-based indicators for understanding the IC of teachers and how their performance then impacts the employability of graduates (i.e. intellectual capital and employability readiness indicators). Considering graduate employment is a key outcome of a university education, the paper offers some unique insights into how universities can measure and improve their human capital and then transfer the IC into positive employment outcomes for students to increase the human capital of a society. The paper introduces a regression model that tests the influence of IC-based indicators as a university management tool. However, Sultanova *et al.* (2018) also underline the need to introduce a longitudinal analysis that includes several universities courses at different levels to explain causality. They also recommend further improvements to their model including, for example, analysing student and administrator motivations.

The impact of higher education on entrepreneurial intention and human capital

Moving from the performance argument to the third mission, Passaro *et al.* (2018) begin another theme of this special issue based on entrepreneurialism. As Passaro *et al.* (2018) argue, entrepreneurialism is needed in universities in Europe to be consistent with the European Union and national policies. The paper investigates the impact of higher education on the emergence of entrepreneurial intention and human capital as a component of intellectual capital that strongly influences the entrepreneurial process. As a result, Passaro *et al.* (2018) call for universities to develop practice-oriented entrepreneurial courses and activities for students (first mission) and aspiring academic entrepreneurs (third mission) to encourage entrepreneurialism and develop human capital that will allow students to pursue entrepreneurial careers, rather than become job seekers after graduating. The paper contributes to an emerging research theme that analyses whether and how entrepreneurial intention can mediate the relationship between higher education and human capital, thus helping to build a link between IC and entrepreneurial development.

Intellectual capital management in the fourth stage of IC research: a critical case study in university settings

This paper by Secundo *et al.* (2018) also builds on investigating the third mission of universities using a case study of Ca' Foscari University of Venice. Using Secundo *et al.*'s (2016) collective intelligence framework, the research highlights how the university incorporates its core goal (what) with the collective involvement of stakeholders (who), and its motivations behind achieving goals (why) with the processes inside the university (how) to demonstrate the indicators that measure value creation. The findings demonstrate that IC management needs to change to incorporate an ecosystem perspective. The paper contributes to fourth-stage IC research by demonstrating how the university extends value creation beyond its boundaries to impact the society in which it operates. The practical

implications reflect how more stakeholders are involved in IC management and that IC management requires a critical rethinking given the evolving role of universities. Secundo *et al.* (2018) bring together issues that are usually dealt with in separate domains of the literature: IC management and collective intelligence in the university setting.

A quality evaluation approach to disclosing third mission activities and intellectual capital in Italian universities

In keeping with the third mission theme, Di Bernardino and Corsi (2018) investigate how IC contributes to the third mission of universities in Italy. Through a quality evaluation approach, the research statistically analyses data emerging from the national assessment for research activity and third mission performance from 71 universities during the period 2004-2014. Thus, the study investigates whether mandatory reporting on the quality assessment of Italian universities discloses IC's contribution to value creation. Di Bernardino and Corsi (2018) find significant IC disclosure in the quality evaluation model and verify the usefulness of mandatory reporting in achieving more awareness of third mission strategies and IC management. The research is novel because it explores the convergence between research quality and IC culture in Italian universities, including how social and economic value is created by intangible activities outside university boundaries. As their analysis is based on investigating research and third mission activity, Di Bernardino and Corsi (2018) recommend that future research should focus on the role of teaching activities and on university managers, researchers, and administrative staff.

Academic spinoffs as a value driver for intellectual capital: the case of the University of Pisa

The last paper exploring university entrepreneurship and IC is Mariani *et al.* (2018), who investigate the impact of spinoff businesses from the University of Pisa in Italy. Academic spinoffs demonstrate the value created by university technology transfer investments. Most importantly, the paper shows how the technology and knowledge developed by universities are transferred to communities, and how the benefits are multiplied rather than directly transferred. Through measurements of value and multipliers, Mariani *et al.* (2018) demonstrate the relationship between investment in innovation and the enterprise value of academic spinoffs, which they use as a proxy for investment output and an expression of IC creation. The paper is innovative because it provides insights into how a university can create value for an economy and help build the IC of the communities in which the spinoffs exist. In the long run, the spinoffs also help to develop an entrepreneurial mindset in the local Pisa community. In the long term, this investment enriches research and the entrepreneurial mindset.

Conclusion

To conclude this special issue on IC in education, the editors want to encourage a further expansion of IC research. While we find comfort in seeing IC research progressing to the third and fourth stages, it is not comforting to note that most IC research on education has a European context and, most recently, mainly on Italian universities. The Italian university system is under increasing pressure to establish third mission activities, but there are considerably more and broader opportunities to report beyond what universities do and examine what they contribute internationally to society.

As Martin-Sardesi and Guthrie (2018) and Di Bernardino and Corsi (2018) show, universities are obsessed with ranking people and research outcomes, even ranking the universities themselves. It seems that measuring performance and comparing people and institutions has become an overbearing managerial mindset that may destroy value rather

than create it. Performance management systems can be just as dysfunctional as they are functional, as Martin-Sardesi and Guthrie (2018) and Piber *et al.* (2018) show. Unsurprisingly, the warning of using IC as management control was heralded by Karl-Erik Sveiby (2010) many years ago. IC measurements can be used as just another interesting way for powerful managers to bully people (Gowthorpe, 2009). Thus, we need research that continues to explore both the good and the bad of using IC measurements in universities to assess performance. By reducing people (HC), practices (SC), and relationships (RC) to numbers and rankings we seem to have lost sight of the purpose of education – to impart knowledge to students, who are the foundation of society’s future.

So while we lament, discussing what has now passed in the form of performance metrics and rankings, we often lose sight of the real outcome, which is a better future for those who will live in the world after we have gone. And there are many social issues that IC in education still needs to discuss, like equitable and accessible education for all people regardless of age, sex, race, or religion. Unfortunately, these problems exist and are steeped in a traditional approach to education as the right of the privileged and ruling classes. While education is mainly free in what we know as the developed world, it is not free in other countries. Yet, our research focusses on such narrow issues as how to manage or report IC. These kinds of problems are what Horst and Webber (1973) call “tame” problems – problems that can be tackled by applying a management theory to come up with some relatively easy solutions.

Unfortunately, education must deal with social problems, and what IC researchers do (as do researchers in other fields) is try to apply science to find a solution. But in the end, science cannot solve “wicked” societal problems. For example, IC researchers were originally more concerned with measuring IC than they were with managing IC (Guthrie *et al.*, 2012). However, even as we go forth into the third mission, it seems that policy makers and researchers are more interested in measuring and ranking outcomes based on performance measures (e.g. Di Bernardino and Corsi, 2018) that are totally irrelevant to an aspiring student who is not allowed an education because they are in the wrong socio-economic situation. It is these kinds of wicked problems that IC researchers need to address alongside solving the tamer issues. To do so, we need to be transformative, interdisciplinary, open-minded, and critical of the status quo (Dumay, Guthrie, and Rooney, 2017). These are the challenges for the future of research on IC in education.

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