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Getting Students Employed: 21st Century Learning Competences and Career Competences

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GETTING STUDENTS EMPLOYED:
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AND CAREER COMPETENCES

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LIST OF ABBREVIATIONS

Asia-Pacific Economic Cooperation	APEC
Assessment and Teaching of 21st Century Skills	ATCS
Coverage	COV
Educational Testing Service	ETS
European Union	EU
Global Agreement on Trades and Services	GATS
Information Communication Technologies	ICT
International Association for the Evaluation of Education Achievement	IEA
International Comparative Target Achievement	ICTA
International Knowledge Bank	IKB
International Society for Technology in Education	ISTE
Key Word in Context	KWIC
Massive Open Online Courses	MOOC
Organisation for Economic Co-operation and Development	OECD
Programme for International Student Assessment	PISA
Progress in International Reading Literacy Studies	PIRLS
References	REF
Trends in International Mathematics and Science Study	TIMSS
United Nations Educational, Scientific and Cultural Organization	UNESCO
World Trade Organization	WTO

ABSTRACT

This thesis explores the nexus between education and the economy in the 21st century knowledge-based economy to understand the relationship between the learning competences – as described in 21st century frameworks – and career competences – as recommended in the job descriptions of available employment opportunities. Theoretically, this study is grounded in human capital theory and it explores the indiscriminate nature of the data regarding a student's required education level to achieve the prescribed learning competences. With the aid of a quantitative content analysis of selected employment opportunities, the research sought to explore: How are learning competences, as outlined by international organizations, aligned to career competences in the knowledge-based economy? The main conclusion suggests two major findings. First, there is a degree of alignment in the existence of learning competences as outlined in international frameworks and career competences as delineated in employment opportunities. Second, there is a divergence in the way the economic and education systems prioritize the career and learning competences respectively, which may account for the disagreement in the preparedness of students for employment in the knowledge-based economy. Finally, I conclude by asserting that investments should be made in compulsory education to align the priorities of these competences ensure all students are competent for employment in the knowledge-based economy.

CHAPTER I

INTRODUCTION

The intersection of education and the economy has emerged as a prominent discourse in the 21st century. In the late 20th century the knowledge-based economy emerged in which knowledge and information replaced manufacturing and physical labor as the primary source of productivity and economic growth (Dale, 2005; Friedman & Mandelbaum, 2011; Organisation for Economic Co-operation and Development (OECD), 1996; Robertson, 2005; Wodak & Fairclough, 2010). This shift places knowledge as the primary driver of economic activity (Cussó & D'Amico, 2005; Dale, 2005; OECD, 1996). In education, the rise of the knowledge-based economy had led to increased enrollment in higher education institutions and the rise of continuing education and professional development for those already employed. Since education is the principal source of knowledge transfer, the systems of education and the economy are linked through the power of knowledge in the 21st century (OECD, 1996). However, if and how this linkage exists for individuals is yet unexplored. Individuals move from being students in the education system to employees in the economic system but the transferable competences that are supposed to allow them to navigate that transition have yet to be cross-referenced to ensure applicability in both systems.

The knowledge-based economy has furthered globalization whereby geographic barriers, which formerly limited economic activities are diminished or removed, through its basis in technology enabling more communication and therefore more knowledge sharing (Friedman &

Mandelbaum, 2011; OECD, 1996). Because of this, national economies, governments, and International Knowledge Banks (IKBs) (Jones, 2004) , and non-state actors (such as environmental groups, human rights groups, and health organizations) are interconnected and integrated like never before which enables more economic opportunities for both nations and individuals (Rizvi & Lingard, 2010; The Global Economy, 2016). The rate of innovation has increased due to this interconnectedness, also, which has accelerated the rate at which new knowledge and skills are created and needed (Castano, Mendez, & Galindo, 2016; Moloi, Gravett, & Petersen, 2009; OECD, 1996) This leads to a knowledge transfer challenge for education such that knowledge is created faster in the knowledge-based economy than it can be codified in curriculum and textbooks. Traditional content delivery methods, such as paper-based textbook and lecture, continuously decrease in efficacy which has led to the development of new formats such as the flipped classroom. Additionally, the pervasiveness of technology has eased the acquisition of facts and information causing schools to no longer be the primary agents for the transfer of this type of knowledge (Friedman & Mandelbaum, 2011; Neumann, 2016; Simard & Karsenti, 2016; Voogt & Roblin, 2012). This then has led to a shift in how schools prepare students for employment in the knowledge-based economy in that schools are focusing on teaching competences in addition to static facts and information (Bevins, Carter, Jones, Moye, & Ritz, 2012; Dede, 2010; Moloi et al., 2009). These learning competences are relevant to multiple fields, inclusive of knowledge, skills, and attitudes, and connected to the competent handling of complexity and unpredictability, both characteristic of 21st century workplace activities (Voogt & Roblin, 2012).

Due to the global nature of knowledge and the interconnectedness of national economies in the 21st century knowledge-based economy, student preparation is being prescribed by IKBs, such as the OECD, World Bank, International Monetary Fund, United Nations Educational, Scientific and Cultural Organization, and "educational brokers" (Jules & Jefferson, 2016) through educational governance arrangements, such as public-private partnerships, which are regulated as a subset of frameworks called 21st century learning frameworks (Dede, 2010; Robertson, 2005; Verger, 2009; Voogt & Roblin, 2012). Thus, these global entities endorse and prescribe frameworks around learning competences that students should achieve to be successful in the knowledge-based economy of the 21st century (Dede, 2010; Voogt & Roblin, 2012). The validity of this assertion is the inflection point for my proposed study. By juxtaposing the learning competences prescribed within international frameworks against job descriptions and candidate qualifications in employment opportunities, this study proposes to examine the likelihood of a student's success in the knowledge-based economy through the acquisition of the prescribed learning competences.

Using the terms organized thematically found in international organizations' 21st century learning frameworks (hereinafter international frameworks), this study outlines a content analysis of the job descriptions and candidate qualifications posted in employment opportunities to answer the research question: How are learning competences, as described by international frameworks, aligned to career competences in the knowledge-based economy?

In the following sections, I will use the history and literature regarding the intersection of education and the knowledge-based economy to inform my proposed study. I will first examine

the history of human capital theory that led to the emergence of the knowledge-based economy. I will then discuss three of the primary discourses found in the literature discussing the intersection of education and the economy: human capital, globalization, and neoliberalism. Finally, I will show how a content analysis of international framework and employment opportunity postings will answer my research question.

CHAPTER II

BACKGROUND

Human capital was popularized in the 1960s as the way in which education is linked to economic development and theories of modernization (Becker, 1962; Lauder, 2015). At the same time studies sought to understand to what extent an empirically identifiable modern man exists and, if so, what qualities he possesses (Gusfield, 1976; Inkeles, 1969). These studies conclude that a globally-applicable definition of the modern man exists and that the amount of formal schooling a man has is the single most significant indicator in determining his modernity score (Inkeles, 1969). As these studies were based on factory work and physical labor in the industrial economy, it follows that in the knowledge-based economy and society, the competences of modernity would shift to align with the new workplace requirements. Thus, today's career competences in the employment opportunities are the modern competences of the knowledge-based economy.

The following has two sections. First, I will briefly outline the history of human capital theory, its relationship and its institutionalization of the rates of return in education as the dominant measurement. Second, I will discuss the risk of unemployment or underemployment if there is misalignment between learning competences and career competences.

Human capital theory states that an increase in productivity is linked to better education, which in turn will afford higher earning power for an individual (Haddad, Carnoy, Rinaldi, & Regel, 1990; Lauder, 2015; Montenegro & Patrinos, 2014; Psacharolpoulos & Patrinos, 2004).

This link between economics and education also positions education as the primary mode for idea sharing, which can accelerate economic modernization through the use of comparative advantages (Ricardo, 1817; Rostow, 1991; Rothbard, 2012). Prior to this, natural resources and physical capital were seen as primary economic drivers (Nafukho, Hairston, & Brooks, 2004; Walters, 2004). Human capital theory emerged when these factors were unable to explain the growth of the United States' economy during the 1960s (Nafukho, Hairston, & Brooks, 2004; Walters, 2004). The acknowledgement of the shift in economic drivers was the precursor to the introduction of the knowledge-based economy.

As human capital gained traction, the necessity of education grew which led to the proliferation of postsecondary schooling, beyond what was already compulsory (Resnik, 2006; Walters, 2004). The acceptance of human capital theory globally is evidenced in the continued demand for higher education services (Breton, 2013; Spring, 2008; Verger, 2009). Nations are requesting these services to meet the demand of their citizens to improve their earning potential (Lauder, 2015; Spring, 2008; Tan, 2014; Verger, 2009). This cycle of demand for knowledge through education, dissemination of knowledge across geographic boundaries and implementation of knowledge in the workplace by economic actors has led to the emergence of the knowledge-based economy.

Tangential to the human capital theory movement is the investigation into rates of return on education, first introduced in the early 1970s and since updated and upheld despite changes in the global landscape (Psacharolpoulos & Patrinos, 2004). This work investigates the profitability of education to both private citizens, as they invest in their own education, and social groups, as

investments are made in public financing of education. Several studies, between 1973 and 2004, conclude that investment in education, namely in primary education, continues to be an attractive investment opportunity (Psacharopoulos, 1973; Psacharopoulos, 1985; Psacharopoulos, 1994; Psacharolpoulos & Patrinos, 2004).

Human capital theory has been widely criticized. One such criticism is that of credentialism (Lin & Lin, 2011; Walters, 2004). Credentialism is the direct result of the proliferation of human capital theory. It is the ever-increasing demand for formal education qualifications and certificates for employment (Lin & Lin, 2011; Walters, 2004). Credentialism proponents argue this is leading to over-qualification of skilled workers and driving a deeper divide between socioeconomic groups (Lin & Lin, 2011; Mgobozi, 2004).

Evidence suggesting human capital theory may be invalid is presented in employment statistics. Against a United States national employment rate of 5.5%, recent college graduate had an unemployment rate of 7.2% and recent high school graduates had an unemployment rate of 10.5% (Davis, Kimball, & Gould, 2015). Underemployment statistics were more discouraging, with 14.9% of recent college graduates and 37% of recent high school graduates being underemployed (Davis, et al., 2015). While the difference between the college and high school graduates supports human capital theory, the discrepancy between the national average and that of recent graduates suggests human capital theory may not be valid. Further criticisms have been levied against the alignment of education and economy globally with the claims of an existing skills gap, whereby entry-level employment candidates are not presenting the skills that employers are seeking (Arum & Roska, 2010; Barber, Donnely, & Rizvi, 2013; Gergen & Rego,

2014; Kaka, Madgavkar, Manyika, Bughin, & Parameswaran, 2014; Mourshed, Patel, & Suder, 2014; Van Velsor & Wright, 2015; YouGov Survey, 2013). The fear is that without alignment between the competences being taught in educational institutions and the competences being requested by employers, either rates of unemployment and underemployment will continue to rise as more ill-equipped workers enter the workforce or employers will be required to hire less qualified candidates and lost productivity due to greater training needs to teach the skills they were once requesting as a prerequisite for employment.

Regardless of the criticisms, the current prescribed relationship between education and the knowledge-based economy of the 21st century is based in human capital theory. This theory provides the basis for the current literature on this relationship and will inform my study. The examination of the current literature corroborates the role of human capital theory in the relationship between education and the economy in the global landscape of the 21st century. In the next chapter I will synopsize this literature and discuss the three major discourse strands of human capital, globalization, and neoliberalism that run throughout that literature.

CHAPTER III

REVIEW OF RECENT LITERATURE

The recent literature examining the intersection of education and the knowledge-based economy contains the three major discourse strands of human capital, globalization, and neoliberalism. These strands are used to explain the relationship between the systems of education and the knowledge-based economy. These strands also contextualize my proposed thesis by explaining the environment in which the systems of education and the knowledge-based economy exist and aiding to refine my research question through exposing gaps in the literature.

In the following section I will discuss how the three themes of human capital, globalization and neoliberalism that run through the recent literature are demonstrative of the way in which global organizations are influencing and shaping nations in the 21st century, in this case IKBs are shaping national education systems. In this way, world culture theory offers but one way for us to understand the similarities and differences between national education systems and how countries commit themselves to the international frameworks.

The first discourse strand of human capital focuses on the economic opportunity afforded to an individual by way of education (Lauder, 2015; Robertson, 2005). The knowledge-based economy is then indicative of the distribution and use of knowledge and education as the primary economic driver (Cussó & D'Amico, 2005; Dale, 2005; King & McGrath, 2002; Lingard & Rawolle, 2011). This is supported by evidence that the gross domestic product is higher in

economies that are heavily weighted toward the technology industry (OECD, 1996; Robertson, 2005; Sidhu, 2007). Additionally, knowledge-based jobs in service sectors continue to be in highest demand (OECD, 1996; Robertson, 2005; Spring, 2008). This demand, coupled with improved communication and collaboration tools, is driving greater levels of global migration of workers, particularly from poorer to wealthier nations (OECD, 1996; Sidhu, 2007; Spring, 2008). This migration, also called brain circulation, is an additional driver of economic performance (OECD, 1996; Sidhu, 2007; Spring, 2008). The migration is driving faster levels of innovation through increased collaboration which means individuals need to consistently revise and improve their knowledge in order to stay competitive for continuous employment, a concept called lifelong learning (OECD, 1996; Robertson, 2005; Spring, 2008) This continuous innovation has also led to the need to revise schooling, as new knowledge is being created faster than it can be codified in curriculum. This has led to the emergence of education teaching competence in addition to content to ensure students have the skills to maintain relevance in the 21st century knowledge-based economy (Dale, 2005; Moloi et al., 2009; OECD, 1996; Spring, 2008). The discourse on human capital connects the knowledge-based economy and economic drivers to the impact on education and students through its demand for continued learning and knowledge building, driven by the increased rate of innovation through global migration.

The discourse of globalization focuses on how the world is connected, due in large part to the aforementioned global migration, through concepts of world systems, world society and world polity (Caruso, 2008; Moloi et al., 2009; Robertson, 2005; Sidhu, 2007; Spring, 2008; Wodak & Fairclough, 2010). The world systems lens of globalization sees a core set of nations

driving global activities through an unequal network of relationships with peripheral and semi-peripheral nations (Caruso, 2008; Sidhu, 2007; Spring, 2008). The core is comprised of the United States, the European Union and Japan which seeks to impose its economic and political agendas on the periphery through postcolonialism (Spring, 2008). The concept of world society connects groups of people with similar characteristics across geographic boundaries through boundless communications (Beer, 2016; Caruso, 2008; Kessler, 2016; Spring, 2008). The literature discussing education and the knowledge-based economy primarily dismisses the world systems and world society views because neither lens can account for the influential power that IKBs have expanded with the arrival of the World Trade Organization (WTO) in the 21st century (Caruso, 2008; Spring, 2008). The lens that is adopted by the majority of the literature is that of world polity which suggests the existence of a global set of cultural norms which governs the behavior of nations, organizations and individuals in addressing problems and procedures (Caruso, 2008; Cussó & D'Amico, 2005; Sidhu, 2007; Spring, 2008; Wodak & Fairclough, 2010). World polity is the preferred lens of globalization in the literature discussing the intersection of education and the knowledge-based economy because it accounts for both institutional isomorphism and the influence of IKBs in education (Caruso, 2008; Cussó & D'Amico, 2005; Sidhu, 2007; Spring, 2008; Wodak & Fairclough, 2010). In this way, world polity accounts for the 21st century learning frameworks authored by transnational organizations and public-private partnerships that each prescribe a single set of learning competences for students globally.

The final discourse strand of neoliberalism examines vehicles by which education is traded and compared and the organizations driving such activities (Sidhu, 2007; Spring, 2008; Verger, 2008; Verger, 2009; Verger & van Paassen, 2013). IKBs have become major actors in driving institutional isomorphic activities of education in the 21st century knowledge-based economy (Caruso, 2008; Cussó & D'Amico, 2005; Dale, 2005; Lingard & Rawolle, 2011; Robertson, 2005; Sidhu, 2007; Spring, 2008; Verger, 2008; Verger, 2009). Additionally private companies have become involved in these activities, furthering the neoliberal rhetoric (Binkley et al., 2012; Metiri Group, 2003; Partnership for 21st Century Skills, 2009). The two primary isomorphic activities are those surrounding education as a tradable service and normative assessments. Just as the knowledge-based economy was a shift away from physical production and manufacturing, in 1995 the Global Agreement on Trades and Services (GATS) was entered into as a treaty of the WTO as the successor to the 1947 General Agreement on Tariffs and Trade (Dale, 2005; Sidhu, 2007; Spring, 2008; Verger, 2008; Verger, 2009). GATS enabled education to be traded as a service between nations under Mode 4, which supports commitments in the areas of primary education services, secondary education services, higher education services, adult education, and other education services (World Trade Organization, 2017). The trading of these educational services advances the agenda of knowledge creation, diffusion, and transfer beyond geographic boundaries (Dale, 2005; Sidhu, 2007; Spring, 2008; Verger, 2008; Verger, 2009). Subsequent to GATS was the establishment of multinational normative assessments, or "international comparative target achievements" (ICTAs) (Jules, 2016, p. xxii), namely the Programme for International Student Assessment (PISA) by the OECD and the Trends in

International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Studies (PIRLS), both by the International Association for the Evaluation of Education Achievement (IEA) (Cussó & D'Amico, 2005; Lingard & Rawolle, 2011; Robertson, 2005; Spring, 2008; Verger, 2009). The establishment of these normative assessments and the ability to trade education as a service inculcates education as an economic participant with little regard to geographic boundaries.

The literature discussing education and the knowledge-based economy largely focuses on the interaction of systems, organizations, and governments with little discussion of the impact on individuals. Any discussions of individuals are done through the human capital lens but there is a gap in the literature linking an individual's education to their success in the economy through participation in the workforce. That link has been made at the systems level (Cussó & D'Amico, 2005; Dale, 2005; King & McGrath, 2002; Lingard & Rawolle, 2011). This study proposes to fill the gap in research by examining the validity of this linkage at the individual level. This linkage is important because due to human capital theory, globalization and neoliberalism, schools are competing for students and need to ensure they are delivering value to those students. At the same time, students are competing for education and for employment and need to ensure they are deriving value from their investment in schools. Given this, in the next section I will discuss why content analysis was the best method by which to conduct my study and the process I employed to collect and analyze the data.

CHAPTER IV

RESEARCH METHODOLOGY

I have chosen content analysis as the methodology that allows me to best obtain the data that will inform the answer to my research question: How are learning competences, as outlined by international organizations, aligned to career competences in the knowledge-based economy? Content analysis enables text to be analyzed and compared in a quantifiable manner in order to ascertain its perceived meaning (Krippendorff, 2004; Neuendorf, 2017). "[C]ontent analysis is an *empirically grounded method*, exploratory in process, and predictive or inferential in intent" (Krippendorff, 2004, p. 1). By converting text into objective data points through content analysis, the unstructured nature of text becomes more easily compared between authors and documents, regardless of semantic variations. Hence content analysis provides "objective accounts of what messages were *intended to convey* or *actually contain*" (Krippendorff, 2004, p. 2). The categories outlined in the international frameworks are the objects to which I determined the frequency and use of in the employment opportunities. By comparing these two sets of documents using content analysis, the alignment between them should be ascertained.

In the following section, I will outline the documents I examined, describe the process of content analysis I performed in order to derive raw data for my research, and the analysis I performed which frame my findings.

Data Collection

The source texts for this study were the 21st century learning frameworks. In order to ensure all relevant frameworks were gathered for analysis, I used the following process. Initially all the documents referenced in articles which compare 21st century learning frameworks were procured (Buck Institute for Education, 2010; Dede, 2010; Voogt & Roblin, 2012). Next additional documents were obtained through comprehensive Internet and journal database searches utilizing the words and phrases "21st century", "learning", "skills", "competence", "competencies", "education", "framework" and "policy" in varying phrase and Boolean combinations. Those searches continued until no additional frameworks were uncovered. In total 23 documents were obtained. Due to the limited number of organizations able to produce these texts, sampling was not necessary. In this way, "sampling problems do not arise when analysts can answer their research questions by examining all texts of a particular population of texts … on a certain issue, and during a certain period in time" (Krippendorff, 2004, p. 114). Since no additional documents could be found and these documents are publicly available to be leveraged by educators, a sampling technique was not used. The 23 potential international framework documents were then screened for multinational focus and prescriptive competence content. The remaining documents which passed that screening total 7. These frameworks are detailed in Table 1.

Table 1. International competence frameworks.

Title	Author	Public Organization	Private Organization	Geography	Date of Publication	Abbreviation
Assessment and Teaching of 21st Century Skills (ATCS)	Marilyn Binkley, Ola Erstad, Joan Herman, Senta Ra	University of Melbourne	Cisco, Intel, Microsoft	Australia, Finland, Singapore, US, Costa Rica, Netherlands	2012	ATCS
ISTE Standards for Students	Susan Brooks-Young	The International Society for Technology in Education (ISTE)	None	Unspecified	2016	ISTE
Measuring 21st Century Competencies	Jim Soland, Laura S. Hamilton, Brian M. Stecher	Asia Society	RAND Corporation	Asia, United States	2013	Asia Society
Digital Transformation: A Framework for ICT Literacy	None given	International ICT Literacy Panel	Educational Testing Service (ETS)	Unspecified	2007	ETS
Overview of 21st Century Competencies and Skills	Maria Laura Munoz Villanueva	Asia-Pacific Economic Cooperation (APEC)	None	China, Chinese Taipei, Hong Kong, Australia, New Zealand, Japan, Brunei Darussalam, U.S.A, Thailand, and Peru	2008	APEC
Key Competences for Lifelong Learning	None given	European Union (EU)	None	European Union	2007	EU

21st Century Skills and Competences for New Millennium Learners in OECD Countries	Katerina Ananiadou, Magdalean Claro	OECD	None	Australia, Austria, Belgium, Canada, Finland, Ireland, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Turkey	2009	OECD

Data Coding

To combat the potential limitations that result from content analysis, namely validity and reliability, I employed the use of the computer program NVivo (Neuendorf, 2017; Weber, 1990). My procedure below was based on Weber (1990) and Krippendorff (2004).

1. *Defined the sampling units.* My first step was to obtain employment opportunities which describe position duties and candidate requirements. These were obtained through a comprehensive search of employment opportunity posting web sites. After review, two web sites were selected for use because both sites offered a comprehensive variety of listings, including direct listings and links to company postings. Additionally, both sites hosted numerous country-specific sites, allowing for multinational searches. To obtain the employment opportunity documents, I visited each country-specific site. For non-English sites, I used a Bing web site translator to translate the sites into English. Once at a site, I searched on the term "entry level". No additional filters or search terms were used in order to have a generic set of data with no industry or education level focus. After obtaining the initial results, I sorted the results by date. I then only obtained the results posted from the most recent day. Duplicate listings for multiple locations were excluded so each listing contained a unique job description. After conducting the same search and obtaining the relevant listings on each site for non-United States countries, I then visited the United State web site, which was the host country for both sites and contained the most listings of any other country. To ensure the results were not skewed by an American-centric data

set, I limited the results I obtained to the same quantity as the largest quantity for a non-American country on the same web site, in both cases this was the United Kingdom. To ensure a random representation, a random number generator was used in Excel and the employment opportunity posting corresponding to the number generated was saved until the appropriate total quantity was obtained. Each opportunity was extracted from the web site using the "Print to PDF" function, which allowed for the web-only postings to be transferred into NVivo.

2. *Defined the recording units*. After a review of the opportunity descriptions, sentences were chosen as the recording unit due to the variety and ambiguity of language and structure of the employment opportunity documents. This allowed me to code for phrases (Weber, 1990).
3. *Defined the categories*. The categories were defined by the international frameworks and were not mutually exclusive. I reviewed each framework and noted the category or categories of learning competences presented. Each framework was coded in NVivo against the categories to allow for analysis on prevalence of categories in the frameworks. Table 2 represents the categories and corresponding definitions used for coding.

Table 2. Category definitions.

Category	Definition
Academic Mastery	Mastery of core subject matter requiring formal education including, but not limited to, mathematics, sciences, history, medicine, law, foreign language, programming language, etc.
Adaptability	Ability to change and adjust actions and communications based on the context of a situation.
Collaboration	Ability to work with others.
Communication	Includes all forms of communication (written, oral, electronic).
Creativity	Ability to create new ideas.
Critical Thinking	Ability to use higher order cognitive processes to analyze complex situations.
Decision Making	Ability to evaluate multiple criteria to confidently come to a decision and act upon the decision.
Global Awareness	Ability to understand and engage with people from different societies. Empathize with people in diverse situations and be aware of diverse social context and norms.
ICT Literacy	Knowledge of technology tools and how to use them effectively.
Information Literacy	Ability to gather, manage, and evaluate information from multiple sources for accuracy and reliability.
Intrinsic Motivation	Ability to motivate oneself to act in the absence of external pressures.
Leadership	Ability to gather and motivate others to act based on a shared best interest.
Life and Career	Ability to effectively plan and manage personal and professional goals and responsibilities.
Lifelong learning	Ability to seek out and obtain new information and knowledge.
Perseverance	Ability to push through obstacles and distractions to achieve a goal.
Personal and Social Responsibility	Ability to be aware of and act according to ethical and moral responsibilities to oneself and others.
Problem Solving	Ability to analyze a set of criteria and formulate solution options.

4. *Initial coding of text*. After the categories and sampling units had been inputted into NVivo, I coded all the employment opportunities against the categories. Because of the variety of language and structure, it was best to manually review all the documents to ensure the variety of document structures, language variety and challenges due to printing output were addressed.
5. *Assessed accuracy or reliability*. After the initial coding of the text, I reviewed the output of the software to determine any coding errors.
6. *Revised the coding rules*. After removing any coding errors, I noted all the words and phrases that were coded in a category.
7. *Coded all the text*. A compound query was performed searching for all occurrences of the words noted in step 6 in each category including stemmed words and synonyms that were not already coded into that category. I reviewed the keyword in context (KWIC) to code any instances previously missed.
8. *Assess achieved reliability or accuracy*. Based on the data produced and using KWIC, I assessed the correct usage and definitions of the recording units to ensure the coding rules were applied accurately and consistently. By leveraging the computer program NVivo, I was able to eliminate human error thereby diminishing any concerns about stability or reproducibility.
9. *Analyze the raw data*. The analysis performed was to compile the data into charts which illustrate the extent to which a category was or was not present in the

employment opportunity documents. In the discussion and conclusion sections I will interpret the data as I seek to answer my research question and sub-questions.

Sample Coding

Table 3 represents a sample of text taken from an employment opportunity and the corresponding category to which each was coded based on the language used in the opportunity.

Table 3. Sample coding.

Employment Opportunity Statement	Category
Reporting to the Manager of Client Services, the Junior Administrative Assistant is passionate about achieving organizational results and strives to attain these results through effective communication, problem solving, time management and multi-tasking.	Problem Solving
Reporting to the Manager of Client Services, the Junior Administrative Assistant is passionate about achieving organizational results and strives to attain these results through effective communication, problem solving, time management and multi-tasking.	Communication
Accountabilities for this role include, but are not limited to, general reception/ administrative duties, making timely and accurate decisions and ensuring all business is conducted with the utmost confidentiality.	Decision Making
Ability to work independently and collaboratively within a team: has a can-do attitude and a willingness to take the initiative	Collaboration
Ability to work independently and collaboratively within a team: has a can-do attitude and a willingness to take the initiative	Intrinsic Motivation
Attention to detail, strong organizational skills, and ability to take initiative and function effectively in a fast-paced environment	Intrinsic Motivation
Flexible to the changing demands of the job	Adaptability
Excellent verbal and written English communication skills	Communication
Must possess good communication skills, both verbal and written.	Communication
Intermediate Microsoft skills in Word, Excel	ICT Literacy

CHAPTER V

FINDINGS

The data presents two findings. First, there is alignment between the learning competences of the international frameworks and the career competences of the employment opportunities. Second, there is a difference in how the learning competences and career competences are prioritized in the documents.

In the following section I will detail my findings first in my analysis of the international frameworks and then in the employment opportunities. I will conclude by discussing the alignment between the career competences and learning competences presented in the documents.

International Frameworks

The initial analysis of the international frameworks exposes the motivations of the text but not necessarily the competences. The lack of reference to career or the economy indicates that the international frameworks are focused on educating a learner to be a successful global citizen but not necessarily a successful worker in the economy. So, while human capital theory states the more an individual is educated, the greater her earning potential, education is not aligned with the goal of improving the earning potential of its students in the economy. As the source texts, the first step of analysis is to understand how these sources were discussing learning competences. To begin to understand the language used, I had conducted two word frequency

searches in NVivo. The first search was for the 20 most frequently use words including stemmed words. The results of this search can be found in Table 4 and shows that the words most commonly used in the frameworks relate to traditional educational pursuits, such as assessments, learning, and standards. The second search was for the 20 most frequently used words including synonyms. The results of this search can be found in Table 5 and shows that by expanding the search, the results did not vary greatly from the first search. However, they did expand into technology-related terms, including ict, technology, and information. While the word "work" appears in both lists, neither career, economy, or any of the derivations of those words appears. The words that appear more frequently in those lists, though, include "assessment" and "education". None of the words presented in these results appears to be informative as to the competences discussed in the frameworks.

Table 4. Top 20 words based on word frequency count of international organization frameworks including stemmed words.

students	competing	measuring	teachers'
assessments	developments	ict	century
Skills	informed	community	digital
learning	technology	works	including
educators	tests	schools'	standards

Table 5. Top 20 words based on word frequency count of international organization frameworks including synonyms.

education	work	make	need
assessment	information	project	set
students	technology	standards	ict
skills	competencies	issues	world
learning	test	communication	design

The learning competences extracted from the international frameworks are consistently present in multiple frameworks, thereby improving global applicability and validating the impact of globalization on education which is resulting in shared ideals amongst the IKB authors of the international frameworks. The learning competences to be used as categories in my research are presented clearly in the frameworks, typically as headings of a section. Each competence was added as a node to NVivo and was coded as such. Subsequent occurrences of the competence were coded in similar fashion to allow for analysis of the presence of competences in the frameworks. The results of this coding can be found in Table 6. Figure 1 and Table 7 present the reference counts for the categories by framework. Because the recording unit selected was sentences, the coverage calculations do not provide an accurate representation of the data, as a category can be describe succinctly or verbosely. This variance drives a variance in coverage but not in reference, or frequency, count. Therefore, my subsequent findings will focus only on frequency counts. Full tables with coverage calculations can be found in Appendix A.

17 categories were derived from the frameworks. Each category occurred in at least 2 frameworks, with the categories of collaboration and communication both presenting in 6 out of the 7 frameworks. As noted above, the target countries of these frameworks were Australia, Finland, Singapore, US, Costa Rica, Netherlands, Austria, Belgium, Canada, Ireland, Korea, Mexico, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Turkey, China, Chinese Taipei, Hong Kong, Japan, Brunei Darussalam, Thailand, and Peru. The European Union and the continent of Asia were both additionally targets of frameworks. The only framework to only present one competence was that of the ETS framework, which was solely

focused on the many iterations of information communication technologies (ICT) literacy. The framework that presented the most references to multiple competences was the framework from the European Union, which presented 16 of the 17 competences in a total of 62 references.

Table 6. Competence search results.

Category	Framework	
	References (REF)	Coverage (COV)
Academic Mastery	4	4.13%
Adaptability	5	3.69%
Collaboration	15	11.46%
Communication	11	5.87%
Creativity	10	7.33%
Critical Thinking	8	5%
Decision Making	3	0.97%
Global Awareness	13	8.25%
ICT Literacy	7	4.9%
Information Literacy	6	4.32%
Intrinsic Motivation	5	2.62%
Leadership	6	5.58%
Life and Career	6	5.83%
Lifelong learning	5	2.14%
Perseverance	8	5.87%
Personal and Social Responsibility	15	15.53%
Problem Solving	8	6.5%

Figure 1. Competence search results by international framework.

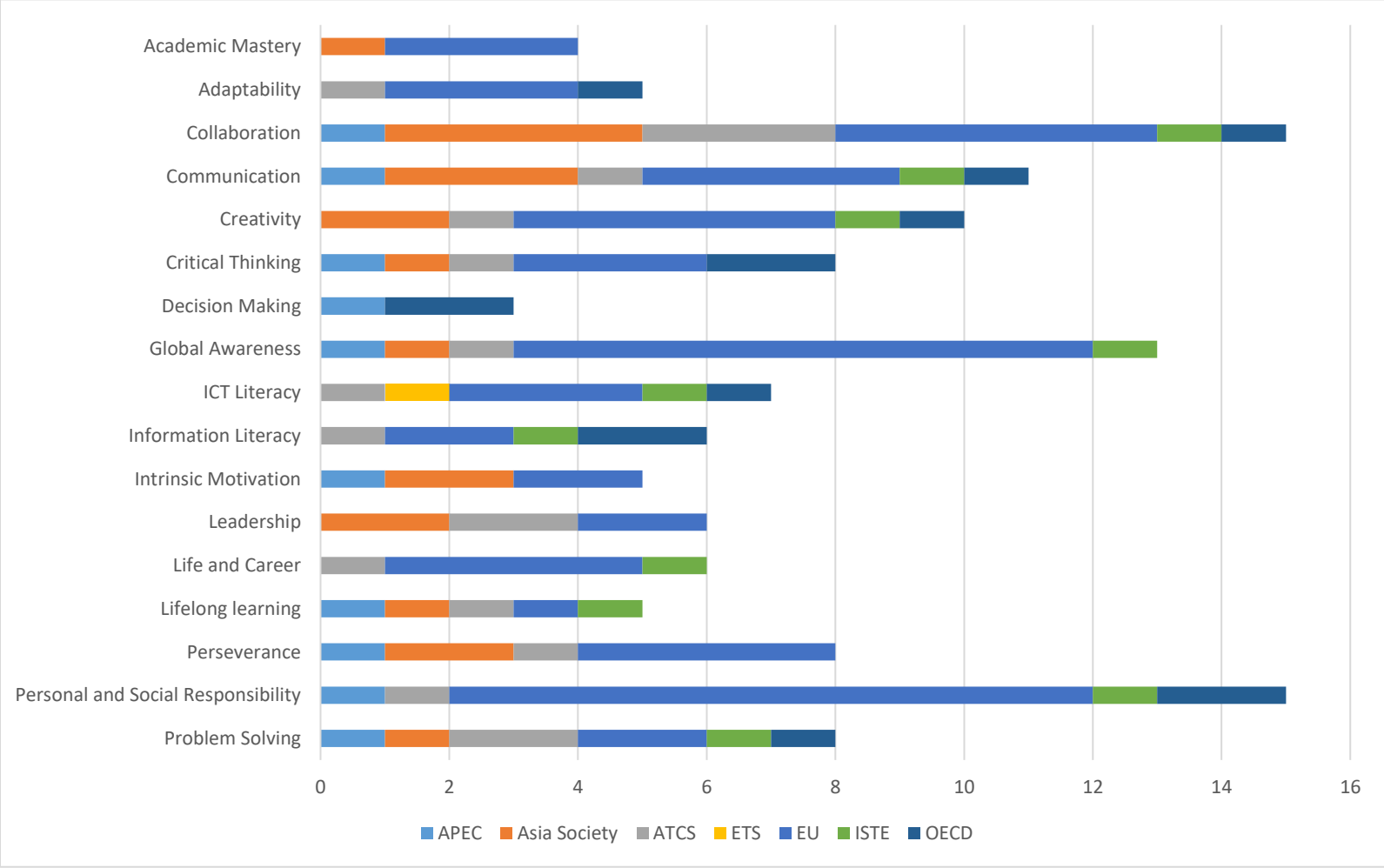

Table 7. Competence search results by international organizations' frameworks.

	APEC	Asia Society	ATCS	ETS	EU	ISTE	OECD
Academic Mastery	0	1	0	0	3	0	0
Adaptability	0	0	1	0	3	0	1
Collaboration	1	4	3	0	5	1	1
Communication	1	3	1	0	4	1	1
Creativity	0	2	1	0	5	1	1
Critical Thinking	1	1	1	0	3	0	2
Decision Making	1	0	0	0	0	0	2
Global Awareness	1	1	1	0	9	1	0
ICT Literacy	0	0	1	1	3	1	1
Information Literacy	0	0	1	0	2	1	2
Intrinsic Motivation	1	2	0	0	2	0	0
Leadership	0	2	2	0	2	0	0
Life and Career	0	0	1	0	4	1	0
Lifelong learning	1	1	1	0	1	1	0
Perseverance	1	2	1	0	4	0	0
Personal and Social Responsibility	1	0	1	0	10	1	2
Problem Solving	1	1	2	0	2	1	1

Employment Opportunities

With the categories for coding defined, analysis then turned to the employment opportunities. The variety of available employment opportunities for analysis is limited by language and availability. The search for the best employment opportunity databases yielded only two results with multi-national results, CareerBuilder and Monster. Within those, the only countries that were included were Canada, France, Germany, Greece, India, the Netherlands, the United Kingdom, the United States, and Vietnam. The results of the search can be found in Table 8 below. Germany, Greece, India, the Netherlands, and Vietnam each had six or less unique listings in English. A total of 166 employment opportunity documents were obtained for analysis.

Table 8. Number of employment opportunities by database and country.

Country	CareerBuilder.com	Monster.com	Total
Canada	7	15	22
France		6	6
Germany	2		2
Greece	1		1
India	3		3
Netherlands		3	3
United Kingdom	13	51	64
United States	13	51	64
Vietnam	1		1

Deriving the competences from the employment opportunities proved to be difficult due to inconsistent structure and language used in the opportunity listings. Additional challenges were presented by document formatting, since the postings were not meant to be printed and only

consumed directly online. Additionally, coding descriptions for industries with which I was unfamiliar was challenging due to industry-specific language, such as medical terminology.

The frequency of category presence in frameworks varied dramatically between categories, ranging from 4 to 173. The average occurrence was 51.8 references. Every category was represented in the employment opportunity documents. Table 9 represents the frequency counts for the categories.

Table 9. Frequency of references.

Category	References
Academic Mastery	94
Adaptability	35
Collaboration	173
Communication	163
Creativity	13
Critical Thinking	18
Decision Making	5
Global Awareness	4
ICT Literacy	76
Information Literacy	14
Intrinsic Motivation	110
Leadership	50
Life and Career	8
Lifelong learning	43
Perseverance	41
Personal and Social Responsibility	10
Problem Solving	24

To further explore the implications of these counts, each employment opportunity was defined by the country to which it belonged. Figure 2 and Table 10 represent the occurrences of the categories by country. The references are skewed by the number of opportunities belonging to each country. Canada, France, the United Kingdom, and the United States have the largest

variety of competences, with 14 to 16 of a possible 17 competences requested. Germany, Greece, and India were the least varied with only 3 to 4 of a possible 17 competences requested in the employment opportunities.

Figure 2. Category frequency by country.

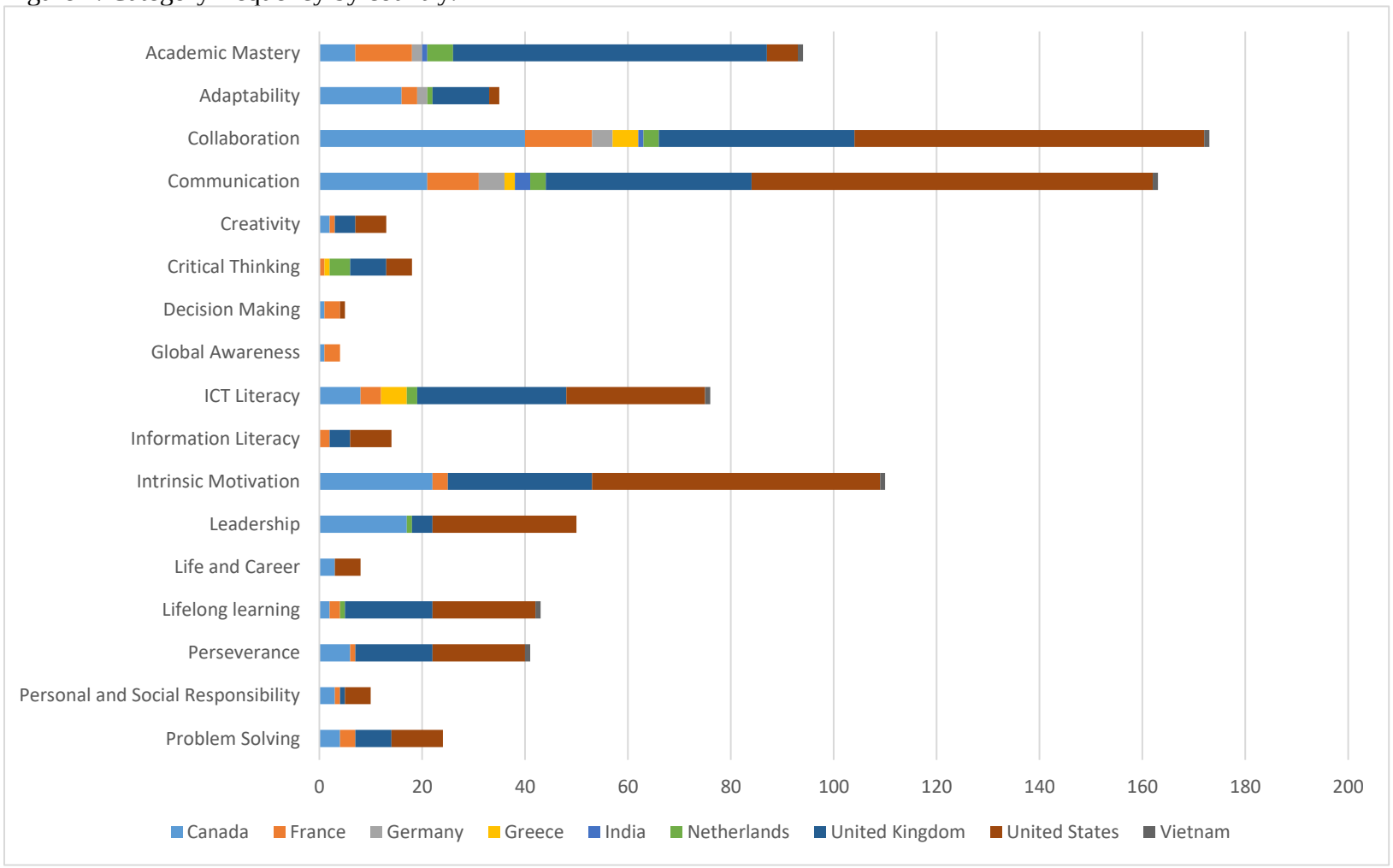

Table 10. Category occurrence by country.

	Canada	France	Germany	Greece	India	Nether-lands	United Kingdom	United States	Vietnam
Academic Mastery	7	11	2	0	1	5	61	6	1
Adaptability	16	3	2	0	0	1	11	2	0
Collaboration	40	13	4	5	1	3	38	68	1
Communication	21	10	5	2	3	3	40	78	1
Creativity	2	1	0	0	0	0	4	6	0
Critical Thinking	0	1	0	1	0	4	7	5	0
Decision Making	1	3	0	0	0	0	0	1	0
Global Awareness	1	3	0	0	0	0	0	0	0
ICT Literacy	8	4	0	5	0	2	29	27	1
Information Literacy	0	2	0	0	0	0	4	8	0
Intrinsic Motivation	22	3	0	0	0	0	28	56	1
Leadership	17	0	0	0	0	1	4	28	0
Life and Career	3	0	0	0	0	0	0	5	0
Lifelong learning	2	2	0	0	0	1	17	20	1
Perseverance	6	1	0	0	0	0	15	18	1
Personal and Social Responsibility	3	1	0	0	0	0	1	5	0
Problem Solving	4	3	0	0	0	0	7	10	0

Alignment

After examining both sets of data, the alignment between the documents was clear. All 17 categories were present in both the international frameworks and the employment opportunities. The filtering of data by geography did not affect the overall data points. This implies that the same learning competences and career competences will lead a student to success in the knowledge-based economy regardless of their geographical location in the world. Furthermore, it suggests that learning competences and career competences have converged into the same set of competences. This new ‘educational convergence’ indicates alignment between businesses desired competences for their workers and the competences schools are teaching students. Table 11 provides a sample category and a sample sentence from an employment opportunity coded to that category.

Table 11. Sample alignment.

Category	International Framework Text	Employment Opportunity Text
Information Literacy	This competence also includes the abilities to distinguish and use different types of texts, to search for, collect and process information, to use aids, and to formulate and express one's oral and written arguments in a convincing way appropriate to the context.	Research skills in a variety of medium to remain up to date on benefits trends and laws.
Academic Mastery	Learning academic content is fundamental to education, and mastery of such content serves as the basis for higher-order thinking skills as well as the impetus for improved interpersonal and intrapersonal competencies. Academic content includes instruction in subjects such as mathematics, science, reading, global studies, and foreign languages.	The successful candidate will be an ambitious recent graduate with specialization in structures and have successfully passed the Engineer Intern Examination.
Adaptability	Individuals should have the skills to communicate both orally and in writing in a variety of communicative situations and to monitor and adapt their own communication to the requirements of the situation.	Ability to cope with change and meet challenging deadlines under pressure.

CHAPTER VI

DISCUSSION

In answering the question of how are learning competences, as outlined by international organizations, aligned to career competences in the knowledge-based economy, two findings have emerged. The first finding is that the overall learning competences are aligned to career competences in that the same sets of competences are listed in both documents. The second finding is that the frequency counts of each competence indicate a divergence in the way in which education and workplaces prioritize the competences.

All categories were present to some extent in both the international frameworks and the employment opportunities for entry level employment in a variety of countries. The presence of these same categories regardless of geographical focuses supports both world culture and human capital theories. First, it supports earlier findings on human capital theory which advances education as a means to increase earning potential in the knowledge-based economy. Second, it supports world culture theory in that the competences did not vary by geography, implying a single set of competences are relevant to a world culture rather than a different set of competences for each different culture based on geographical differences. Additionally, this indicates there is some congruence between the competences delivered by education and the competences requested by employers. This is in direct contrast to how businesses feel but supports statements from educational institutions. As a McKinsey and Company survey states,

"nearly 70% of employers blamed inadequate training for the shortfall in skilled workers, yet 70% of education providers believe they suitably prepare graduates for the jobs market" (Barton, 2012, p. 1). Education thinks it is preparing students to enter the workforce and businesses are claiming there is a lack of qualified candidates for entry level positions, often referred to as the skills gap. However, if frequency of usage in the frameworks and employment opportunity documents is taken as an indication of prioritization, the implication is the difference between education and the workplace exists in how those values are prioritized.

In the following sections I will discuss how the frameworks and the employment opportunities are aligned and how, through analysis of the data, the discrepancy between priorities has emerged. Finally, I will discuss the impact of these findings on the educational level at which investments should be made.

Convergence

As noted in the findings, all 17 categories of learning competences presented in the international frameworks were also present to varying degrees in the employment opportunities. The way in which those competences were listed and the verboseness with which they were referenced varied greatly but their presence was enough to implicate alignment between the sets of documents and, subsequently, the sets of competences. Through this alignment, or a new form of 'educational convergence', it becomes evident that the societies in which these IKBs and employers exist, regardless of geographical location, are converging to value the same competences in successful members of these societies in all arenas, as evidenced by the international frameworks focus on developing citizens and employers' focus on developing

workers. Because geographical boundaries do not affect the words used in describing the career competences sought by employers or learning competences taught by schools, it is further indicative of a global language and discourse around these competences.

This convergence also drives alignment with the credentialing critique of human capital theory in that as employment needs change, more education is required to fulfill the job requirements. In this way, with the consistent innovation that has become pervasive in the knowledge-based economy, job requirements are also constantly changing and requiring new knowledge to work with and in the new innovations. Because there is convergence between learning and career competences, education will be in constant demand by all to deliver the new competences required to maintain employability.

Divergence

While the alignment of the frameworks and employment opportunities was evidenced by the existence of the same categories, the divergence of the documents was evidenced in the analysis of the data. In the following sections I will discuss how the frameworks and the employment opportunities are prioritizing the learning competences based on the frequency of their usage in the documentation. I will conclude by examining the discrepancy in the importance of the academic mastery competence, intrinsic motivation, and personal and social responsibility.

Frameworks

Based on the word frequency search, the frequency of categories coded and the text, it is evident that the international organizations' learning competences frameworks are targeting

competences for more than success in the workforce. The frameworks vary in their stated goals but only the European Union and OECD frameworks overtly discuss the importance of the competences in the context of the economy or workplace. The other frameworks discuss the usefulness of the attainment of the presented competences in the context of success in life at large in the 21st century, which is inclusive of participation in government, society, and the workplace. Additionally, all the frameworks address how technology has changed schools and the availability of information, but they do not address how those same changes have subsequently affected the workplace or job duties.

These deductions are supported by the frequency of category usage in the frameworks as well as the word frequency search presented above. The five categories referenced the most in the frameworks were collaboration, personal and social responsibility, global awareness, communication, and creativity. When taken by coverage, that list is the same except communication is replaced with problem solving. The high placement of personal and social responsibility and global awareness can be indicative of an effort to ensure students are accounting for their impact and place in the global society. In the word frequency list, the high placement of the words “assessment”, “education” and “learning” and the noted absence of mentions about the economy or careers support this more generalized goal of preparing for life in general rather than entrance into the workforce.

The frameworks exist to encourage schools to teach these competences, but they are not indicative of what is actually being taught in schools. These frameworks present an idealized list of competences believed to lead to a successful life in the 21st century in all arenas, including the

workplace. They suggest what should be taught in schools, and while some schools may follow these suggestions, evidence is not presented here to validate to what degree that occurs.

Employment Opportunities

While the frameworks present an idealized version of what students should be taught, the employment opportunities present the real competences that will earn an individual employment today. The list in each opportunity may be an idealized list for the perfect candidate, but an individual likely must possess some of the competences listed in order to reach consideration for employment. Thus, the competences presented in the employment opportunities should earn an entry-level candidate gainful employment in the knowledge-based economy. For example, an employment opportunity for a Revenue Specialist position states,

> "You are the perfect person for this position if you have: knowledge of the transportation industry, ability to review and interpret freight bills, completion of some college level business courses, experiences in PC applications and mainframe systems, high level attention to detail, effective verbal, written and interpersonal communication skills, an ability to type 50 wpm and 10 key by touch" (Accounting Principals, 2017, p. 1).

The most frequently referenced competences for employers in employment opportunities are collaboration, communication, intrinsic motivation, academic mastery and ICT literacy. This is evidenced in an employment opportunity for an associate accountant in Vietnam, which lists the following qualifications: "Bachelor's degree in Accounting and Finance. Proficient skills in MS Office and good command of English. Good at team work and communication skills. Proactive, passionate to learn, careful and dedicated" (Ho Chi Minh, 2016, p. 1).

The two most frequently referenced competences presented by the employment opportunities, collaboration, and communication, are also in the five most frequently referenced competences with the international organizations' frameworks, but not in the same priority. As

illustrated in an employment opportunity for a junior data scientist, a position focused primarily on technology and data, communication skills are required for even technical positions: “strong communication skills with the ability to converse on all levels” (Analytics, 2016, p. 1)

The other competences in the five most frequently referenced competences list, intrinsic motivation, academic mastery, and ICT literacy, bear no alignment to the frameworks’ list. As illustrated in an employment opportunity for a junior web developer, which states under its who you are section,

> “Self-motivated, with the ability to work effectively under pressure and the ability to meet tight deadlines both individually and as part of a team. University degree in the field of computer science, information systems/software engineering or equivalent experience” (Cymax Stores, 2016, p. 1)

There were slight variations of importance when competences were examined by country. The United Kingdom had many more references to academic mastery than any other country but that could be attributed to the types of employment opportunities that were available, which included a junior architectural technician, junior electronics engineer, and thirteen listings for software developers. Any position that is industry-specific, such as a registered nurse or a computer programmer, is going to have a higher number of academic mastery references than a general business position such as an administrative assistant or sales representative position. There seems to be no discernible difference between the competences requested by Asia, Europe, or North America, implying a potential sameness in career competences regardless of geographical boundary.

The varying degrees to which learning competences are referenced in employment opportunities is encouraging in the way that schools, if they heed the suggestions of the

frameworks, are preparing their students for employment in the knowledge-based economy. However, the variation in prioritization of those competences indicates that schools may not be affording their students the greatest chance of employment by emphasizing the competences to the same extent that employers are emphasizing them.

Disputed Prioritization

The key finding in this study is that while there is alignment between learning competences and career competences, they are not prioritized in the same way which is leading to the apparent conflict between education and employers regarding student preparation for the workforce. Table 12 presents a direct comparison of the top 5 most requested competences by employers in employment opportunities and the top 5 most referenced competences in international frameworks.

Table 12. Comparison of top 5 competences

Employment Opportunities	International Frameworks
1. Collaboration	1. Collaboration
2. Communication	2. Personal and Social Responsibility
3. Intrinsic Motivation	3. Global Awareness
4. Academic Mastery	4. Communication
5. ICT Literacy	5. Creativity

While collaboration is top for both sets of documents, and communication exists in both top five lists, albeit in different orders, the remainder of the lists are completely different. Data shows that the same competences populate both lists but are prioritized differently for each group.

The potential implication of this finding is that schools are equipping students with the correct competences, according to the employment opportunities set forth by employers.

However, based on the feedback from employers, students are still not presenting those competences to employers, or they are unable to present those competences despite possessing them as a result of their completed education. This revelation indicates that schools do not need to change what they are teaching students but rather equip them with the appropriate language and circumstances in which to present these competences. Students may not know they possess these competences or may be unsure of their value in the workplace. Schools, then, must be more purposeful and explicit about the competences that are being taught in the context of coursework and the environments in which those competences are most valuable. With the addition of this explicit discourse, students will be better prepared to present the competences they are already being taught in the appropriate settings as they encounter them when entering the workforce.

Academic Mastery, Intrinsic Motivation, and Personal and Social Responsibility

Of the seventeen competences, there are three that the misalignment of which was most noted because of the implications of the misalignment: academic mastery, intrinsic motivation, and personal and social responsibility. Academic mastery was the fourth most referenced competence by employment opportunities but was sixteenth out of seventeen in international frameworks, beating out decision making by only one reference. Similarly, intrinsic motivation was the third most referenced competence by employment opportunities and was tied for thirteenth in international frameworks. Finally, personal and social responsibility was the second most referenced competence in international frameworks and was fourteenth in employment opportunities. In the following section, I will discuss the significant discrepancies in prioritization of these three competences and why these should be concerning for each.

As the international frameworks, based on reference frequency, contend that competences are more important than specific academic skills or traditional subjects, such as math or science, the employment opportunities are requesting those skills frequently. The inclusion of academic mastery as a top competence for employment and the discussion of its decreasing importance in education appear to be contradictory, albeit ironically, with education frameworks claiming the relative insignificance of traditional academic teachings while employers request them in their employment candidates. This contradiction may be indicative of a misunderstanding between education and the workplace, or it could represent the difference between the idealized set of competences students should have, as represented by the frameworks, and the actual set of competences entry-level employees are presenting with, as represented by the employment opportunities. The existence of another explanation is enabled by the prevalence of technology and globalization.

Technology and globalization have been shown above to have affected the landscape of both the economy and education systems, but their effects are much broader and have shifted lifestyles. The competences defined as academic mastery in the frameworks are being taught outside the classroom. In a recent study, "respondents are nearly four times more likely to credit the skills they use for their work to outside activities rather than the classroom" (Microsoft Partners in Learning, 2013, p. 7). Skills such as foreign language attainment or computer networking can be learned outside the classroom, through tools such as Massive Open Online Courses (MOOCs), Rosetta Stone or Cisco Academy. Students are now able to access the information and work with leaders in their academic area of interest through technology at any

time on any day in a way that was only once available in a formal educational setting during school hours. This shift is empowering for students and allows them to engage in their academic area of interest as quickly and as deeply as they wish but it erodes the value that schools can offer students.

While the importance of academic mastery has not diminished in its importance to the workforce and employability, schools' ability to deliver valuable content that surpasses that which a student can access on his own has diminished. This accounts for the contradiction of the inclusion of academic mastery as an important competence to employers but not an important competence to schools. It is not that the competence is not important to schools but it is that they cannot deliver it to students in a meaningful way that aligns deeply to each student's academic interest so the time in the classroom is potentially focused on exposing students to their industry and academic options and harvesting the competences that students are not able to obtain on their own, such as collaboration and communication, which both necessitate the engagement and feedback of others to cultivate the competence.

Along with academic mastery, intrinsic motivation is a highly sought-after competence in employment opportunities and is minimized in the international frameworks. This discrepancy illustrates the competing views that intrinsic motivations is either an inherent characteristic, or it is a competence that can be learned. By deprioritizing it, international frameworks may be signaling a belief that is an inborn characteristic while the high prioritization by employment opportunities could indicate businesses' belief that it is a learned competence. Without a clear answer, a third option must be considered in which schools must help students understand what

is motivating to them, how to articulate it, and how to maximize it in the context of a workplace, while employers must understand that not all employees will be motivated in the same manner and be open to adjusting incentives based on an employee's articulated motivation in order to maximize that employee's contribution. In this way, intrinsic motivation should perhaps be reconsidered as a more generic identified motivation category within which both the employee and employer can work most effectively.

The third and final misaligned competence of note is that of personal and social responsibility. The high prioritization by international frameworks speaks to education's goal of producing global citizens for the 21st century, which includes an element of integrity and responsibility to take care of others. The lack of mention in employment opportunities is cause for concern, as businesses are increasingly scrutinized for unethical behaviors with certain industries having reputations for serial immorality. The hope is that this competence is inherently expected amongst job candidates, but it would be more reassuring if employers began to be more explicit about the expectation.

Of the seventeen competences identified in this study, the discrepancy between the prioritizations of academic mastery, intrinsic motivation, and personal and social responsibility were most notable because of the associated effects of each misalignment. By improving the overall alignment of competence priorities, any negative effects from the misalignment of these three competences should also be mitigated.

Investment Implications

The alignment between learning competences and career competences without regard to a required education level indicate that employers expect all employees to possess these competences in the knowledge-based economy. Therefore, if investments are being made to improve the alignment of priorities between employers and education to increase student employability, those investments are most effective at the compulsory education levels, wherever those are for each locality. By investing in compulsory education to teach these competences, all students are more likely to emerge from school with the requisite competences for employment.

By withholding the competences to later years of education, often elective, the result would be further stratification of socio-economic classes. Students with the means to complete advanced education would be taught the competences which enable them to be more employable in the knowledge-based economy while students who only complete compulsory education suffer from a lower education level and lack of competences, making them significantly less desirable than their counterparts. It is crucial that in order to provide equal opportunity for employment to all students, that investments be made at the compulsory education level. This investment recommendation is in line with the recommendations based on the return on investment in education, which conclude primary education yields the highest rate of return for both private and public investments (Psacharopoulos, 1994).

In summary, while this study originally sought to identify a binary answer as to whether there was alignment between the learning competences of international frameworks and the career competences of employment opportunities, the data yielded more nuanced results. There

is convergence between the competences listed in both sets of documents to the extent that all categories exist in both sets of documents. However, the frequency with which each is referenced varies between the sets of documents. This variance in frequency implies a difference in how education and employers prioritize those competences. This conclusion affirms education's claim that students are being taught the competences employers are requesting while also affirming employers' claims that students are not presenting the desired competences when applying for jobs. By investing in compulsory education to ensure all students are taught not only the competences that employers are requesting with the same prioritization, but also how to present those competences to employers during interviews, the perceived skills gap will be closed and students will become more employable in the 21st century knowledge-based economy.

CHAPTER VII

LIMITATIONS AND AGENDA FOR FUTURE RESEARCH

The limitations to this study are generalizability, methodology, and cultural perception. Though I sought to obtain international framework and employment opportunity documents from every available country, not all countries had documents available. Additionally, the limitation of my ability to only analyze employment opportunities in the English language minimized the available documents. The result was a heavier focus on Europe and America with minimal analysis on Asia and none in Africa.

The second limitation of methodology is due to the inability of my data to speak to the economic status of each country, which could dictate the availability and variety of employment opportunities for analysis.

The third limitation of this study is due to the chosen job databases. Because they were both based in the United States, the perception of those sites in other countries could have affected the types of employment opportunities posted to them and, therefore skewed the results of the study.

Thus, I want to suggest that future research related to my findings may corroborate these findings on a broader scale across more countries and inclusive of more languages. A larger selection of frameworks, inclusive of national policies, and a larger selection of employment opportunities across a wider span of time may also reveal more nuances of the dynamics between

the economic and education systems. Conversely, a concentrated investigation into specific industries would provide more specific guidance for students seeking employment in those industries. Finally, a deeper understanding of the assumptions and beliefs held by the organizations in this system may validate the alignment of competences and differences in prioritization.

CHAPTER VIII

CONCLUSIONS

This thesis set out to understand the extent to which learning competences, as prescribed by international frameworks, aligned to career competences, as prescribed by employment opportunities from various countries. Businesses complain that students entering the workforce do not have the skills that are being requested. Meanwhile, schools contend that they are teaching students the skills that are being requested. This study sought to understand the data behind this conflict through content analysis of international frameworks and employment opportunities. Because of this conflict, the hypothesized answer was a misalignment of learning competences and career competences. However, the findings of the study resulted in a more nuanced result.

The analysis shows that while international frameworks minimally discuss learning competences in relation to career success in the knowledge-based economy, there is evidence of the same competences in both international organizations' learning frameworks and employment opportunity listings. This evidence is encouraging, as it implies some element of convergence between education and economic systems on an individual level. At the same time, there exists a divergence in the prioritization of these competences. This divergence of priorities may account for the disparity in viewpoints between businesses claiming a lack of qualified candidates for

entry-level positions and schools believing they are adequately preparing students for employment.

The variance in prioritization of the competences of academic mastery, intrinsic motivation, and personal and social responsibility is noteworthy due to the implications of the disparity. Academic mastery of traditional subjects has been downplayed by schools in favor of other competences while it remains a top requested competence by employers. This suggest that schools should not forsake the traditional curriculum but rather embrace it while incorporating new competences into coursework. Likewise, intrinsic motivation was highly prioritized by employers while minimized in the international frameworks. This variance could indicate a difference in belief with employers believing all employees should be intrinsically motivated, thereby indicating it is a competence that can be learned while schools believe it is a characteristic that a student may or may not possess and therefore not all students are intrinsically motivated. Finally, personal and social responsibility is highly prioritized by schools but rarely mentioned as a sought-after career competence. This variance is disturbing due to the implication that ethics, morality, and integrity, which is included in the definition of personal and social responsibility, either are not desirable characteristics of potential employees or are assumed to be such and therefore are not worth mentioning. The current economic climate, however, indicates that businesses must put a higher priority on ethical behavior in order to ensure corruption, fraud and other illegal activities do not find their way into their culture. The differences in prioritization and the implications of such for these three competences are

indicative of the need for a deeper dialogue between schools and businesses to ensure better alignment.

These results indicate that while the knowledge-based economy has shifted the competences needed for employment, both education and employers have also made that shift, which indicates the continued validity of human capital theory as well as substantiates the credentialism critique of human capital theory. Based on the results of this study, as students acquire more learning competences, they are likewise acquiring career competences, making them more desirable as potential employees and likely to increase their earning potential. This validation should be welcome news to students seeking employment in the knowledge-based economy because it means that, as long as they acquire the competences taught in school, they have the competences to be successful in the workplace upon graduation.

To address the issue of unemployment and underemployment immediately, schools can add explicit language into coursework about the competences being learned and the circumstances in which those competences are valuable in the knowledge-based economy. Long term, however, businesses and educational institutions must refine their alignment through an ongoing collaboration to ensure the success of the organizations in both systems. This is similar to what Barton (2012) calls "the heart of the matter is helping the young learn relevant skills more effectively, and that requires greater co-operation—and communication—between companies, governments and education providers" (p. 1). By ensuring alignment in the prioritization of competences, schools will be better equipped to compete for students and

students will be enabled to derive more value from schools as they compete for education and employment.

APPENDIX A

TABLES INCLUDING COVERAGE DATA

Table 13. Top 20 words based on word frequency count of international organization frameworks including stemmed words.

Word	Length	Count	Weighted %	Similar Words
students	8	1038	1.52	student, students, students’
assessments	11	963	1.41	assess, assess’, assessed, assesses, assessing, assessment, assessments
skills	6	772	1.13	skill, skilled, skillfully, skills, skills’
learning	8	670	0.98	learn, learned, learning
educators	9	635	0.93	educ, educate, educated, educating, education, educational, educator, educators
competing	9	563	0.82	compete, competed, competence, competences, competencies, competency, competent, competently, competing
developments	12	522	0.76	develop, developed, developer, developers, developing, development, developments, develops
informed	8	509	0.75	inform, informal, informally, information, informative, informed, informs
technology	10	509	0.75	technological, technologies, technology
tests	5	473	0.69	test, tested, testing, tests
measuring	9	411	0.60	measurable, measure, measureable, measured, measurement, measurements, measures, measuring
ict	3	368	0.54	ict, icting
community	9	359	0.53	communicate, communicated, communicating, communication, communicational, communications, communicative, communicator, communicators, communicators’, communities, community
works	5	349	0.51	work, worked, working, workings, works
schools’	8	334	0.49	school, schooling, schools, schools’
teachers’	9	324	0.47	teacher, teachers, teachers’
century	7	305	0.45	centuries, century
digital	7	294	0.43	digital, digitally
including	9	289	0.42	include, included, includes, including
standards	9	272	0.40	standard, standardization, standardized, standards

Table 14. Top 25 words based on word frequency count of international organization frameworks including synonyms.

Word	Length	Count	Weighted %	Similar Words
education	9	1977	2.05	civil, cultivate, cultivates, cultivating, derive, derived, derives, develop, developed, developer, developers, developing, development, developments, develops, educ, educate, educated, educating, education, educational, educator, educators, elicit, eliciting, elicits, extract, instruction, instructional, instructionally, instructions, pedagogic, pedagogical, pedagogically, pedagogies, pedagogy, preparation, prepare, prepared, preparing, school, schooling, schools, schools', teach, teaches, teaching, trained, training, trains
assessment	10	1605	1.78	assess, assess', assessed, assesses, assessing, assessment, assessments, evaluate, evaluated, evaluates, evaluating, evaluation, evaluations, evaluative, evaluators, judgements, judgment, judgments, measurable, measure, measureable, measured, measurement, measurements, measures, measuring, tax, value, valued, values
students	8	1048	1.53	pupil, pupils, pupils', scholars, student, students, students'
skills	6	1202	1.48	accomplish, accomplished, accomplishing, accomplishment, accomplishments, acquire, acquired, acquiring, acquisition, attain, attained, attaining, attainment, expert, experts, good, practicable, practical, practicality, practically, practice, practices, proficiencies, proficiency, proficient, science, sciences, skilful, skill, skilled, skillfully, skills, skills'
learning	8	1690	1.46	acquire, acquired, acquiring, acquisition, ascertain, check, checked, condition, conditions, determination, determinations, determine, determined, determining, discover, discovered, discovering, hearing, instruction, instructional, instructionally, instructions, know, knowing, knowledge, knows, learn, learned, learning, letter, letters, memorization, memorizing, read, reading, see, seeing, sees, studied, studies, study, studying, take, takes, taking, teach, teaches, teaching

work	4	1363	1.06	act, acted, acting, acts, bring, bringing, brings, cultivate, cultivates, cultivating, employ, employability, employed, employer, employers, employers', employing, employment, employs, exercise, exploit, form, formed, forms, function, functional, functionalities, functioning, functions, going, influence, influenced, influences, influencing, make, makes, making, molding, operate, operating, operation, operational, operations, operator, operators, play, playing, plays, process, processed, processes, processing, run, running, shape, shaped, shapes, shaping, solve, solved, solving, studied, studies, study, studying, turn, turned, work, worked, working, workings, workplace, works
information	11	864	1.03	colloquial, colloquialism, conversation, conversational, conversationally, conversations, conversely, conversing, cozy, data, ease, illuminate, inform, informal, informally, information, informative, informed, informs, instruction, instructional, instructionally, instructions, intimately, loose, loosely, source, sources, witnessing
technology	10	663	0.86	engine, engineering, engines, technical, technically, technological, technologies, technology
competencies	12	583	0.83	capabilities, capability, capable, compete, competed, competence, competences, competencies, competency, competent, competently, competing
test	4	598	0.76	essay, essays, exam, examination, examinations, examine, examined, examining, exams, prove, proved, run, running, screen, test, tested, testing, tests, trial, trials, tries, try, trying

make	4	1153	0.67	attain, attained, attaining, attainment, build, building, builds, cause, caused, causes, causing, clear, clearing, clearly, constituted, constitution, construct, constructed, constructing, construction, constructive, constructively, constructs, create, created, creates, creating, devising, draw, drawing, drawings, draws, earn, earned, earning, establish, established, establishing, establishment, fix, fixed, form, formed, forms, gain, gained, gaining, gains, get, gets, getting, give, gives, giving, haves, hold, holding, holds, make, makes, making, name, named, namely, names, naming, preparation, prepare, prepared, preparing, pretending, produce, produced, producing, qualifications, reach, reached, reaching, readiness, ready, realise, realizations, realized, realizing, score, scored, scores, scoring, stimulate, stimulated, stimulating, take, takes, taking
project	7	841	0.66	design, designate, designated, designed, designer, designers, designing, designs, envisions, expulsions, external, externally, figure, figures, image, images, labor, labored, picture, picture', pictures, plan, planned, planning, plans, project, projects, proposals, propose, proposed, proposes, see, seeing, sees, stick, sticking, task, tasked, tasks, undertake, undertakes, undertaking, visual, visualization, visualizations, visualize, visually, visuals
standards	9	784	0.66	criterion, exchange, exchanges, exchanging, interchangeably, measurable, measure, measureable, measured, measurement, measurements, measures, measuring, normal, receive, received, receives, receiving, similar, similarities, similarly, standard, standardised, standardization, standardized, standards
issues	6	955	0.65	consequence, consequences, consequently, cut, cutting, effect, effecting, effective, effectively, effectiveness, effects, emergence, emergency, emergent, emerging, event, events, exit, issue, issued, issues, matter, matters, number, numbers, outcome, outcomes, proceed, proceeding, proceedings, proceeds, public, publication, publications, publicly, publish, published, publisher, publishers, publishing, release, released, result, resultant, resulted, resulting, results, return, returned, returning, returns, subject, subjective, subjects, supplies, supply, take, takes, taking, topic, topics, yield, yielded, yielding

communication	13	531	0.65	communicate, communicated, communicating, communication, communicational, communications, communicative, communicator, communicators, communicators', communities, community, convey, nation, national, nationality, nationally, nations, pass, passed, passing, transmit, transmitted, transmitting
need	4	699	0.56	ask, asked, asking, asks, demand, demanded, demanding, demands, inevitable, inevitably, involve, involved, involvement, involves, involving, motivate, motivated, motivating, motivation, motivational, motivations, necessarily, necessitates, need, needed, needs, require, required, requirement, requirements, requires, requiring, requisite, take, takes, taking, want, wanted, wants
set	3	758	0.55	adjust, adjusting, adjustment, adjustments, arrange, background, backgrounds, band, circumstances, context, contexts, correct, correction, correctly, correctness, define, defined, defines, defining, determination, determinations, determine, determined, determining, dictate, fit, fix, fixed, laid, lay, laying, limit, limitations, limited, limiting, limits, local, locales, locality, locally, locate, located, locating, location, locations, lot, mark, marking, place, placed, places, pose, posed, posing, position, positive, positively, preparation, prepare, prepared, preparing, prime, put, putting, readiness, ready, scope, set, sets, setting, settings, situation, situational, situations, specified, specifies, specify
ict	3	368	0.54	ict, icting
world	5	614	0.53	creation, creations, domain, domains, exist, existe, existed, existence, existing, exists, global, globalization, globalized, globalizing, globally, globe, human, humanities, humans, populace, public, publication, publications, publicly, realities, reality, universal, universities, university, world, worlds, worldwide

design	6	955	0.50	advise, aim, aimed, aiming, aims, appointed, appointment, appointments, assign, assigned, assigning, assignment, assignments, concept, conception, conceptions, concepts, delegate, delegates, delegations, deliberate, deliberately, deliberations, design, designate, designated, designed, designer, designers, designing, designs, fate, figure, figures, identification, indicate, indicates, indicating, indication, indications, indicator, indicators, innovate, innovating, innovation, innovations, innovative, innovativeness, intend, intended, intent, intention, intentional, intentionality, intentionally, invent, inventing, invention, inventive, name, named, namely, names, naming, pattern, patterns, plan, planned, planning, plans, point, pointed, points, purpose, purposeful, purposes, purposively, scheme, schemes, show, showed, showing, shows, specified, specifies, specify

Table 15. Competence search results by international organizations' frameworks including coverage data

	APEC		Asia Society		ATCS		ETS		EU		ISTE		OECD	
	REF	COV	REF	COV	REF	COV	REF	COV	REF	COV	REF	COV	REF	COV
Academic Mastery	0	0%	1	1.2%	0	0%	0	0%	3	5.1%	0	0%	0	0%
Adaptability	0	0%	0	0%	1	3.8%	0	0%	3	4.1%	0	0%	1	4.2%
Collaboration	1	9.1%	4	30.7%	3	23.5%	0	0%	5	9%	1	10%	1	4.2%
Communication	1	9.1%	3	16.3%	1	0.8%	0	0%	4	5.4%	1	10%	1	2.1%
Creativity	0	0%	2	1.2%	1	2.3%	0	0%	5	7.9%	1	10%	1	16.8%
Critical Thinking	1	9.1%	1	1.2%	1	5.3%	0	0%	3	5.4%	0	0%	2	4.2%
Decision Making	1	9.1%	0	0%	0	0%	0	0%	0	0%	0	0%	2	19.0%
Global Awareness	1	9.1%	1	1.2%	1	3.0%	0	0%	9	9.9%	1	10%	0	0%
ICT Literacy	0	0%	0	0%	1	1.5%	1	100%	3	4.9%	1	10%	1	16.9%
Information Literacy	0	0%	0	0%	1	1.5%	0	0%	2	4.6%	1	10%	2	11.6%
Intrinsic Motivation	1	13.6%	2	15.1%	0	0%	0	0%	2	1.6%	0	0%	0	0%
Leadership	0	0%	2	14.5%	2	21.2%	0	0%	2	3.9%	0	0%	0	0%
Life and Career	0	0%	0	0%	1	2.3%	0	0%	4	7.1%	1	10%	0	0%
Lifelong learning	1	13.6%	1	2.4%	1	3.8%	0	0%	1	1.9%	1	10%	0	0%
Perseverance	1	9.09%	2	1.81%	1	11.4%	0	0%	4	6.2%	0	0%	0	0%
Personal and Social Responsibility	1	9.09%	0	0%	1	3.03%	0	0%	10	19.0%	1	10%	2	4.2%
Problem Solving	1	9.09%	1	14.46%	2	16.67%	0	0%	2	4.19%	1	10%	1	16.8%

Table 16. Frequency of references including coverage data.

Category	References	Coverage
Academic Mastery	94	2.52%
Adaptability	35	5.82%
Collaboration	173	30.78%
Communication	163	20.63%
Creativity	13	1.47%
Critical Thinking	18	1.19%
Decision Making	5	0.19%
Global Awareness	4	0.12%
ICT Literacy	76	9.39%
Information Literacy	14	1.2%
Intrinsic Motivation	110	20.11%
Leadership	50	2.83%
Life and Career	8	0.28%
Lifelong learning	43	1.48%
Perseverance	41	1.15%
Personal and Social Responsibility	10	0.21%
Problem Solving	24	0.63%

Table 17. Category occurrence by country including coverage data.

	Canada		France		Germany		Greece		India	
	REF	COV	REF	COV	REF	COV	REF	COV	REF	COV
Academic Mastery	7	0.5%	11	3.3%	2	4.5%	0	0%	1	21.3%
Adaptability	16	11.7%	3	0.9%	2	2.2%	0	0%	0	0%
Collaboration	40	48.5%	13	40.2%	4	5.3%	5	49.1%	1	8.5%
Communication	21	2.8%	10	30.7%	5	88.1%	2	1.4%	3	70.2%
Creativity	2	0.6%	1	0.5%	0	0%	0	0%	0	0%
Critical Thinking	0	0%	1	0.1%	0	0%	1	0.5%	0	0%
Decision Making	1	0.3%	3	1.2%	0	0%	0	0%	0	0%
Global Awareness	1	0.1%	3	1.3%	0	0%	0	0%	0	0%
ICT Literacy	8	5.91%	4	0.71%	0	0%	5	49.05%	0	0%
Information Literacy	0	0%	2	0.51%	0	0%	0	0%	0	0%
Intrinsic Motivation	22	18.66%	3	17.9%	0	0%	0	0%	0	0%
Leadership	17	8.47%	0	0%	0	0%	0	0%	0	0%
Life and Career	3	0.32%	0	0%	0	0%	0	0%	0	0%
Lifelong learning	2	0.62%	2	0.86%	0	0%	0	0%	0	0%
Perseverance	6	0.47%	1	0.2%	0	0%	0	0%	0	0%
Personal and Social Responsibility	3	0.35%	1	0.54%	0	0%	0	0%	0	0%
Problem Solving	4	0.64%	3	1.03%	0	0%	0	0%	0	0%

	Netherlands		United Kingdom		United States		Vietnam	
	REF	COV	REF	COV	REF	COV	REF	COV
Academic Mastery	5	4.9%	61	5.1%	6	1.3%	1	11.8%
Adaptability	1	2.8%	11	9.6%	2	0.3%	0	0%
Collaboration	3	1.9%	38	29.1%	68	18.0%	1	13.7%
Communication	3	82.5%	40	12.5%	78	33.8%	1	13.7%
Creativity	0	0%	4	0.7%	6	3.6%	0	0%
Critical Thinking	4	3.4%	7	3.3%	5	0.3%	0	0%
Decision Making	0	0%	0	0%	1	0.1%	0	0%
Global Awareness	0	0%	0	0%	0	0%	0	0%
ICT Literacy	2	0.83%	29	10.24%	27	9.49%	1	19.61%
Information Literacy	0	0%	4	3.13%	8	0.79%	0	0%
Intrinsic Motivation	0	0%	28	21.56%	56	25.93%	1	13.73%
Leadership	1	1.86%	4	0.44%	28	2.27%	0	0%
Life and Career	0	0%	0	0%	5	0.69%	0	0%
Lifelong learning	1	1.86%	17	2.35%	20	1.66%	1	13.73%
Perseverance	0	0%	15	1.52%	18	1.84%	1	13.73%
Personal and Social Responsibility	0	0%	1	0.06%	5	0.22%	0	0%
Problem Solving	0	0%	7	0.44%	10	0.88%	0	0%

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