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How Community Colleges and Other TVET Institutions Contribute to the United Nations Sustainable Development Goals

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Abstract

Even though the importance of technical and vocational education is acknowledged in the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015, the university sector has dominated the discourse on the role of postsecondary educational institutions in sustainable development. This comparative study widens the scope of the inquiry by highlighting various contributions that community colleges (CCs) and technical and vocational education and training institutions (TVETs) are making to sustainability in several developed and fast-developing countries. It examines five independent case studies conducted in Canada, Chile, China, Taiwan, and the United States. The study demonstrates that CCs and TVETs are uniquely positioned to make substantial contributions to sustainable development and should be an important part of the discussion. It also identifies and explores the special features that allow CCs and TVETS to play

a vital role in addressing the SDGs. The findings show that the SDGs related to economic development and social justice were a priority in all five case studies, while SDGs related to the environment were foremost in the two North American studies. The main barriers to sustainable development include the high cost of education, low completion rates, graduates' inability to secure employment commensurate with their education, inadequate funding and the reputation of CCs and TVETs as second-tier institutions.

Keywords

Community college, TVET, Sustainable Development Goals

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INTRODUCTION

The Sustainable Development Goals (SDGs) were adopted in 2015 by all 193 United Nations member countries as a common international framework to fight poverty, to protect the planet and to ensure prosperity (United Nations, 2015). The SDG development agenda, which is based on the Millennium Development Goals (MDGs), established in 2000 (Lee, 2018), includes 17 goals with 169 targets that seek to realize inclusive and equitable economic, social, and environmentally sustainable development (United Nations, 2015).

At a time of increasing political, economic, environmental, and humanitarian instability, the role that institutions of higher education play by supporting sustainable development is paramount. Even though the importance of technical and vocational education is acknowledged in the SDGs (United Nations, 2015), the university sector has dominated the discourse on the role of tertiary education in sustainable development (Beynaghi et al., 2016; Ferrer-Balas et al., 2009; Karatzoglou, 2013; Leal Filho et al., 2019; Lukman & Glavič, 2007). Even so, given that community colleges (CCs) and other technical and vocational education and training institutions (TVETs) make unique contributions toward sustainable development, it is critical that their role be given full attention.

CCs and TVETs address global challenges, such as poverty, inequality, climate change, and environmental degradation, in several ways. They have historically maintained close connections with industry and can respond to fast-changing economic conditions by quickly adjusting their curricula and teaching methods (Budhrani et al., 2018; Dennison, 1995; Meier, 2013; Raby & Valeau, 2009; Rizal et al., 2014; Wheelahan, 2016; Yuen, 1993). Their open-access policy makes post-secondary education available to a broad range of non-traditional students, providing them with opportunities for personal and professional development and social mobility (McGrath & Powell, 2016). Furthermore, CCs and TVETs often include various aspects of sustainable development in their curricula (Chepkemei et al., 2012; Gregson & Duncan, 2020).

A Dynamic, Innovative Post-secondary Education Cohort

Post-secondary, tertiary, or higher education is defined as any education beyond high school (World Bank, 2017). The oldest and best-known type of tertiary institution is the university (Altbach et al., 2011). A less-well-known category of post-secondary institution is the CC and TVET sector. As more people around the world obtain a post-secondary education, the number of CC and TVET graduates will also increase. In more than a century of existence, CCs and TVETs have evolved into more than 150 different kinds of institution, such as community colleges, vocational education colleges, technical and further education (TAFE) colleges, polytechnics, professional and technical lycées, colleges of applied arts and technology (CAATs), vocational training centers, university colleges, and university institutes of technology (Raby & Valeau, 2018), to name only a few.

Such variety allows for different institutional missions. For instance, in Germany, South Korea, and Taiwan, TVETs emphasize technical-vocational training, whereas in the Netherlands they concentrate on middle professional education (Marginson, 2016). Community colleges in India place particular value on skills development through apprenticeship education (Gross, 2018), whereas those in Hong Kong emphasize the transfer of academic-based education (Tang, et al., 2018). Their differences notwithstanding, all these institutions share some key characteristics (Raby & Valeau, 2018; Skolnik, 2018; Wheelahan, 2016). They have traditionally offered programs that specialize in apprentice training, paraprofessional training, and practical vocational or technical training. Today, most of them also offer a multifunctional, multipurpose mixture of programs for young and mature learners alike (Raby & Valeau, 2018; Wong, 2015). In addition, an increasing number of CCs and TVETs throughout the world are starting to offer three- and four-year applied-baccalaureate degrees (Gaisch & Aichinger, 2018).

Even though most CC and TVET institutions are post-secondary, some of them, such as Quebec's general and vocational colleges (referred to as CEGEPs, their French acronym) incorporate elements of secondary and post-secondary systems (Bégin-Caouette, 2013). Multiple accreditation agencies govern CCs and TVETs, including governmental ministries, local industry, and local universities (Raby, et al., 2016). Some CCs and TVETs offer terminal credentials leading to direct entry into the labour market and do not allow transfers to other institutions. Increasingly, others, such as Singapore's polytechnics (Wong, 2015), have transfer-credit agreements that give students the option to continue their education at the university level. Common to the sector is the process of academic drift whereby institutions with terminal credentials offer transfer options or upgrade from a college to an institute or a university (Skolnik, 2018).

Purpose of the Study

Even though research on the ways that CCs and TVETs are addressing the SDGs is growing, such studies tend to focus on less-developed countries (Chepkemei et al., 2012; Ho & Tran, 2018; McGrath, 2011; Minghat & Yasin, 2010; Okoye & Michael, 2015; Roofoe & Ferguson, 2018). This emphasis is understandable because CCs and TVETs have traditionally played a vital role in education and training in those countries. Furthermore, research on the role of CCs and TVETs in addressing sustainable development is often limited to SDGs 4, 6, 8, and 13 (York University, 2020), which are the most relevant to vocational and technical education, but do not capture the sectors' contribution in its entirety. The purpose of this study is therefore to widen the scope of the inquiry by highlighting various contributions that CCs and TVETs are making to sustainability in a number of developed and fast-developing countries. The study is guided by two broad research questions:

1. What unique contributions can the CC and TVET sector make to the sustainable development goals?
2. What are the challenges that CC and TVET institutions encounter as they try to achieve the SDGs?

LITERATURE REVIEW

This section reviews the relevant literature to position the study vis-à-vis existing knowledge and to identify research gaps. The review is conducted in accordance with the study's two research questions. It therefore examines the relevant literature that discusses the unique characteristics that make CCs and TVETs a vital contributor to sustainable development as well as the challenges they face.

CC and TVET Sector's Contribution to the SDGs

The literature identifies several specific characteristics that allow CCs and TVETs to make a meaningful contribution to sustainable development. One characteristic is embodied in their primary mission, namely to prepare job-ready, qualified graduates for a fast-changing labour market (Legusov, 2017; Skolnik, 2018).

Many CCs and TVETs are outside large urban centers and admit large numbers of non-traditional students who often live in rural and poor urban areas. Studies of such institutions in Latin America (de Moura Castro et al., 2001), Malaysia (Rizal et al., 2014), the Philippines (Segovia & Galang, 2002), and Vietnam (Hung, 2019) show that CCs and TVETs contribute to social mobility by providing education and training to underprivileged populations.

Numerous studies have shown that CCs and TVETs offer apprenticeship and internship programs geared to the needs of local communities. Researchers in Latin America (de Moura Castro et al., 2001), the United States (Weber, 2016), Curaçao (Tormala-Nita, 2018), the Philippines (Budhrani et al., 2018), and Grenada (Gagnon & Telesford, 2018) have found that CCs and TVETs strive to address the needs of local labour markets. For example, in the Philippines, the goal of CCs and TVETs is to foster youth employment and entrepreneurship; in Grenada, they combine modern science with indigenous and local knowledge to teach students the skills required by the economy of their small island nation; and, in the countries of the Global South, they aim to address persistent poverty, unacceptable working conditions, and rising environmental degradation (McGrath et al., 2020).

Furthermore, many CCs and TVETs include instruction on the green economy in their curricula (Budhrani et al., 2018; Gagnon & Telesford, 2018) so as to prepare their students for this fast-growing sector of the labour market (Weber, 2016).

Challenges

Even though CCs and TVETs are in a strong position to promote the SDGs, various challenges are impeding their efforts.

Open access is a fundamental principle of the CC and TVET philosophy, yet rising tuition fees may place post-secondary education beyond the reach of the most impoverished students. Low completion rates are also a problem in many countries (Frumkin & Koutsoubou, 2013). Research shows that some CC and TVET graduates are employed in jobs not commensurate with their level of education, which leads to low social mobility (Education International, 2009). Moreover, CCs and TVETs generally receive only a small share of the governmental funding earmarked for higher education, which adversely affects education quality and student achievement (Wang & Seggie, 2013).

CCs and TVETs still tend to be regarded as second-tier institutions and are referred to as second-chance schools or the Cinderella sector (Rushbrook, 2010). Their graduates are perceived as less competitive than university graduates and are often directed into lower-status jobs (Shavit, 2007) that hold them back in the job market (Marginson, 2016). Such attitudes further reinforce the tendency for stronger students to pursue a university education, while less successful students, who are often from a lower socioeconomic class, are channeled into CCs or TVETs.

METHODOLOGY

Comparative Research Approach

This study uses a comparative approach to assess the contributions to sustainable development made by CCs and TVETs in different jurisdictions around the world. Phillips and Schweisfurth (2006) point out that international comparative studies seek to understand how similar social issues are addressed in different political, economic, and social environments. Such an approach can be used to measure the quality and efficiency of educational systems (Nóvoa & Tali, 2003); it can also help generate new ideas, counter existing stereotypes and lead to improvements in practice (Bray et al., 2007). Even though differences among various types of CC and TVET can pose challenges (Skolnik, 2018), their fundamental similarities permit valuable academic comparison (Raby & Valeau, 2018).

Case Study Selection

This paper reviews five independent international case studies that investigated the role of CCs and TVETs in sustainable development. The case studies examine CCs and TVETs in developed and fast-developing economies of East Asia, North America, and South America, focusing on under-researched issues with broad implications for sustainability. The study conducted in the Canadian province of Ontario analyzed the role of community colleges in mitigating the effects of Canada's slow population growth. The Taiwanese study investigated how the capabilities approach developed by Sen (1999) and Nussbaum (2000) helps cultivate productive capabilities in TVET students to support social inclusion and social justice. The third case study examined the contribution to sustainable development by the career services departments at several TVET

institutions in China. The fourth study showed how Chile’s TVET sector contributes to the SDGs by decreasing inequality. Finally, the fifth case study explored the role that American community colleges play by retraining workers for green jobs to satisfy fast-growing industry demands arising from climate change, fires, floods, earthquakes, and other natural disasters.

The presentation of each case study follows the same format: an introduction of the context followed by a discussion of the institutions’ specific contribution to sustainable development and the challenges that they face.

CASE STUDIES

The five case studies reviewed in this paper addressed different aspects of sustainable development and used different methods, which are described in Table 1.

Table 1

Summary of Research Methods Used in Each Case Study

Institution and Country	Literature and Policy Review	Document Analysis	Online Survey	Interviews	Country Visit
CAATs, Ontario	✓	✓			✓
TVETs, Taiwan	✓	✓	✓	✓	✓
TVET, China	✓			✓	✓
TVETs, Chile	✓	✓			✓
CCs, United States	✓	✓			✓

As can be seen from Table 1, all five case studies used a literature and policy review, and four used document analysis. Two empirical studies, the one on TVETs in Taiwan and the other on a JVIT in China, used interviews as the primary means of data gathering.

Case Study 1

How Community Colleges Help Canada Address Its Demographic Challenges

Like many other developed countries, Canada is facing drastic demographic changes: its baby boomers are retiring en masse, but it does not have enough young people to replace them. This imbalance will affect Canada's economy adversely in the not-so-distant future. Resolving or merely mitigating the effects of this complex problem requires a multifaceted approach. As a part of the solution, the Canadian government is actively seeking to attract skilled immigrants (Advisory Council on Economic Growth, 2016). International students, with their youth, language skills, education, and adaptability, have the potential to be ideal immigrants. The Canadian government has therefore set the goal of attracting more than 450,000 international students by 2022, estimating that they will help create at least 86,500 net new jobs, for a total of 173,100 new jobs in Canada (Canada's International Education Strategy, 2014). Historically, it was primarily universities that attracted international students. But in recent years the number of foreign students attending Canadian community colleges has risen dramatically, with the vast majority of such students enrolling in Ontario colleges of applied arts and technology (CAATs). These institutions, which are the analog of further education colleges in the United Kingdom and technical and further education (TAFE) institutes in Australia, offer a wide range of vocational-certificate, diploma, and applied-degree programs.

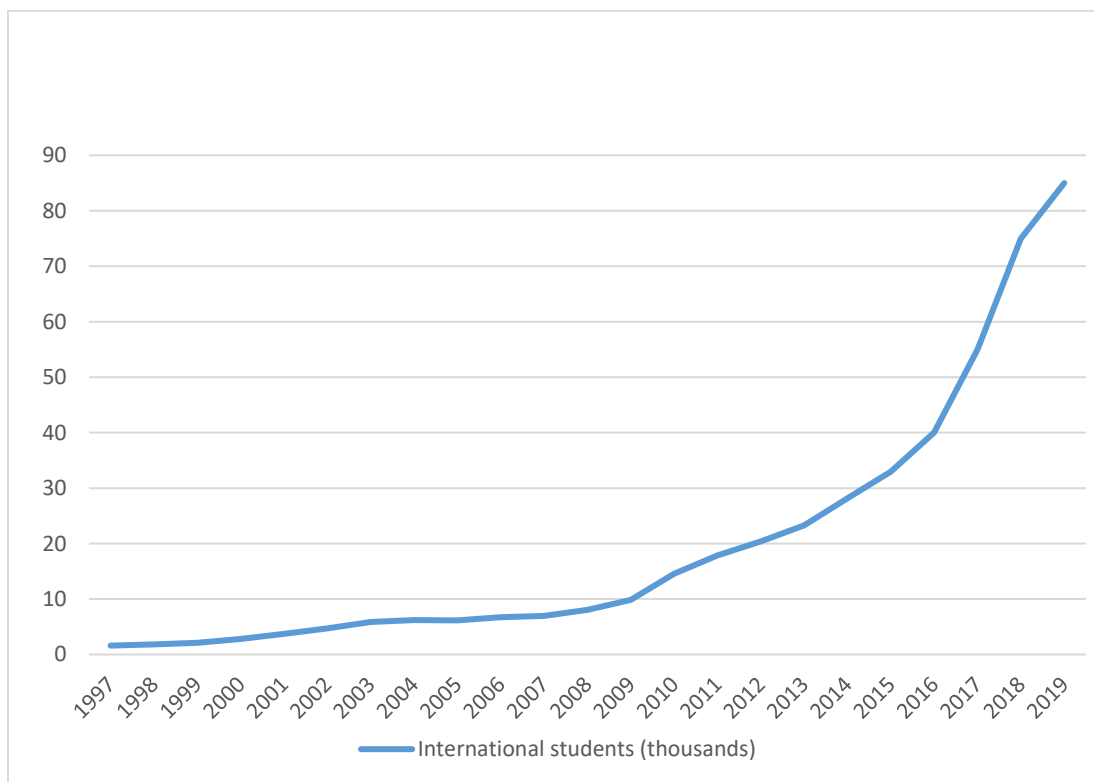
This case study examined the role that CAATs play in helping the government address demographic problems by providing international students with an expeditious way to immigrate, thereby contributing to more sustainable economic and social development. It also examined the challenges created by the rapid increase in the number of international students.

Contribution to Sustainable Development

As Figure 1 shows, the number of international CAAT students rose from 6,958 in 2006-07 to more than 85,000 in 2019-2020, as domestic student enrolment declined during the same period (Colleges Ontario, 2017; 2018; 2019; 2020).

Figure 1

International Students Enrolled at Ontario CAATs



Source: Colleges Ontario.

Larger numbers of international students can help Canada address its demographic challenges because many of them plan to stay in Canada after graduation (CBIE, 2018). They in turn contribute to several SDGs, such as Quality Education (goal 4), Decent Work and Economic

Growth (goal 8), Industry, Innovation, and Infrastructure (goal 9), and Sustainable Cities and Communities (goal 11) (United Nations, 2015).

International students are attracted to a CAAT education because they see it as an expeditious way to immigrate to Canada as a result of immigration regulations that make it easier for international graduates of a post-secondary program at an eligible Canadian institution to obtain permanent-resident status (Citizenship and Immigration Canada, 2014). According to CBIE (2018), as many as 60% of the international students in Canada plan to apply for permanent residence. No such data are available for international college students, but in all likelihood the number is substantially higher than 60%.

Challenges

Ontario's community college system is proving to be effective in helping the province and the country address their sustainability goals by enrolling a large number of international students who contribute to population growth. Given the high level of interest in studying in Canada, it is not difficult for Ontario colleges to recruit students abroad. On arrival, they encounter numerous challenges, however. In addition to the traditional challenges, such as mastering academic English, adjusting to the North American classroom, and learning the rules of academic honesty (Lipson, 2010), they increasingly face new challenges, such as concerns about finding work and coping with stress and mental-health issues. Because the number of international students is increasing so rapidly, colleges may not have enough resources to address the students' challenges in a timely fashion. It is also important to bear in mind that Canada gains tremendously by attracting talented young people from around the world, but that the sending countries lose valuable human capital.

Case Study 2

TVET Contributions to Social Justice, Social Inclusion, and Sustainable Development in Taiwan¹

Taiwan's TVET sector operates in parallel to the general education stream and includes high school, undergraduate, master's and doctoral education (International Affairs Office, 2016). Strong links have been forged between TVETs and industry with internships and research agreements (Wu & Liu, 2014). A distinctive feature of Taiwanese TVETs is their emphasis on cultivation of the whole person and virtue education (Wu, 2012; Yuan, 2005).

This case study was part of a project initiated and supported by Education International to investigate TVETs' contribution to social justice, social inclusion, and sustainable development in different countries (Moodie et al., 2019). The project used the capabilities approach (Nussbaum, 2000; Sen, 1999) to underpin the concept of "productive capabilities" in developing for TVETs a conceptual basis that supports social justice. The capabilities approach emphasizes the role of local institutions in enabling individuals to develop knowledge and skills for productive lives, and in building strong communities and workplaces to support socially just outcomes. This case study examined empirical data from semi-structured interviews and an online survey to determine how planned goals, educational resources, and policy support can harness the capabilities of Taiwan's TVET students for long-term sustainable development.

¹ The Taiwan case study is part of a project involving global case studies of TVETs commissioned by Education International under the direction of Professor Leesa Wheelahan of the Ontario Institute for Studies in Education at the University of Toronto. Thanks are due to Professor Wheelahan for permission to use the project data in this paper.

Contribution to Sustainable Development

The participants, namely administrators, faculty, support staff, students, and policymakers, revealed that Taiwan's TVETs have made substantial progress in social and economic development by enabling students to acquire versatile skills, helping students explore broader interests, facilitating their transition to the labour market, and generally promoting social justice. The findings show that Taiwanese TVETs have two key goals: to provide students with skilled training and to help them become active citizens by focusing on developing the whole person with comprehensive capabilities for further development. TVETs' curricula, pedagogical methods, and training models are designed to achieve the goal of capabilities cultivation. For example, the curriculum allows students to enroll in humanities and arts courses alongside applied courses. Students are encouraged to work on projects in groups to develop a sense of cooperation and a spirit of teamwork. Outside the classroom, faculty and staff pay attention to student behavior and promote strong moral standards. As a result, TVET students develop valuable attitudes and solid, practical problem-solving skills that make them well-rounded, competent employees.

Moreover, many of the study participants were of the view that cultivating sustainable capabilities, such as social ethics and cooperation, was more important than skills training for a specific occupation because such capabilities are crucial for the successful long-term development of individual and society alike. Finally, because TVET education in Taiwan is on a track parallel to general education, TVET graduates enjoy the flexibility of also pursuing education that is more research oriented. The emphasis on whole-person development and the opportunity to do further studies in the general education stream equips TVET graduates with capabilities for future development.

Challenges

One of the key objectives of Taiwanese TVETs is to encourage students to stay in the TVET stream after secondary school. That being said, the study revealed that retention is a challenge because TVET universities are regarded as second-choice institutions compared with comprehensive universities. Taiwan's low birth rate has aggravated this situation in recent decades. Even though TVETs strive to prepare students for the labour market and to develop each individual as a whole person, their resources and policy planning are not adequate to support all students, with those from disadvantaged backgrounds being especially affected. Furthermore, because more resources are devoted to skill training and economic development than to civic development, the goal of comprehensive capabilities has not been achieved fully.

Case Study 3

Challenges the Chinese TVET Sector Faces in Preparing Students for the Labour Market

China's remarkable economic progress of recent decades has enabled it to become the world's largest economy as measured by gross domestic product based on purchasing power parity (IMF, 2018). Its rapid economic growth has led to a severe shortage of skilled labour, however. Bai and Yan (2016) argue that a lack of adequate vocational and technical skills has long hindered the country's technological advancement and jeopardized its sustainable economic development. To address this challenge, the Chinese government resolved to pay increasing attention to the country's TVET system (China State Council, 2005). In 2006, the Ministry of Education and the Ministry of Finance launched the National Demonstration Project, which identified 100 vocational colleges as exemplary national vocational institutions to highlight the vital role of the TVET sector (Bai & Yan, 2016).

One feature of Chinese vocational education is its emphasis on preparing students for the job market and enabling employed individuals to enhance their qualifications through further training (Mouzakitis, 2010). Even so, little is known about the mechanisms whereby Chinese

TVET institutions facilitate their students' transition to the labour market or the challenges that such graduates face. The objective of the study was therefore to address this knowledge gap by examining the career preparedness approach taken by China's TVET-sector institutions.

Contribution to Sustainable Development

Twenty-seven semi-structured, in-depth interviews were conducted with faculty members and administrative staff at three TVETs in three Chinese provinces. The findings show that many TVET students in China come from underprivileged families and, unlike their counterparts in the West, do not have a tradition of working part-time while attending high school or a post-secondary institution; thus they are less prepared for the labour market upon graduation. Helping students gain a better understanding of their career objectives and of the labour market was therefore identified as one of the TVET sector's key responsibilities. According to the interviewees, TVETs must provide formal and informal career-related support to their students in order to fulfill this objective. Such support is essential, for it helps students better understand their strengths and weaknesses, enables them to explore various career options, and empowers them to build individualized career planning frameworks.

The study put forward several practical recommendations to address these challenges. The first is to implement career-mentor programs that would allow students to learn from their more experienced peers and to develop valuable social capital. The second is to improve TVET personnel's understanding of the job market, for the findings showed that some faculty members and administrative staff were not up to date with employment trends. The third is to provide more relevant apprenticeships and internships so that students can acquire vital practical skills. By addressing these challenges and helping students fulfill their career objectives, the Chinese TVET sector helps achieve several sustainable development goals, such as Quality Education (goal 4), Decent Work and Economic Growth (goal 8), and Industry, Innovation, and Infrastructure (goal 9).

Challenges

The study identified several important barriers that hinder TVET efforts to facilitate students' transition to the labour market. Such barriers include students' lack of interest in career planning,

a poor understanding of current workplace trends on the part of some career development personnel, and inadequate cooperation between the TVET sector and industry.

Case Study 4

Higher Education Law 21091 and Chilean TVETs' Contribution to Sustainable Development

Globalization, advances in information technology and recent changes to the workplace resulting from the COVID-19 pandemic have intensified the need for advanced technical skills in a rapidly changing economy. Educational systems around the world have been responding to these new challenges. As a result, their quality, inclusiveness, accountability, and relevance to broader society have become of paramount importance. The Chilean TVET system, which comprises two types of educational institution, namely technical vocational centers and professional institutes, and enrolls about 40% of the country's tertiary students, has gained in popularity in recent years as a result of several new policies that have improved quality assurance and financial assistance, especially for students from the lower social strata of society (Zancajo & Valiente, 2019).

Contribution to Sustainable Development

Chile's TVET sector has historically contributed to sustainable development in two broad ways: by training a competent labour force in response to market demands (goal 8) and by providing educational and career opportunities to all (goal 10) (Larrañaga et al., 2013; OCDE, 2008). The Higher Education Law 21091, introduced in May 2018, places greater emphasis on the role of the Chilean higher education system in sustainable development. Traditionally, Chile's public education policies were geared to universities, with scant attention paid to the TVET sector. That situation changed with the enactment of the New Higher Education Law, which stipulates that quality assurance is crucial in all sectors of higher education in Chile.

The purpose of this theoretical study was to assess the impact of the Higher Education Law 21091 on Chilean TVETs' ability to contribute to the Sustainable Development Goals.

Even though quality-assurance mechanisms were present in the Chilean TVET sector before the law was passed, they were oriented mainly toward student monitoring and program accreditation (VERTEBRAL, 2017). The new law established multiple requirements to ensure high-quality educational processes and outcomes. These requirements included planning, measuring, adhering to standards, receiving feedback, monitoring, and responding effectively to changes in the external environment. As a result of these measures, Chilean TVETs are making an enhanced contribution to sustainable development, especially poverty reduction (goal 1), improvement of quality education (goal 4), enhancing gender equality (goal 5), and reduction of inequality (goal 10).

Challenges

Even though the new law can help address existing barriers that limit individual development and social mobility, the Chilean TVET system still lacks flexible pathways and articulation options that would make it easy for students to pursue professional degrees. The challenge is exacerbated because many employers, trade unions, and other key stakeholders do not regard a TVET education as being of high quality.

Case Study 5

American Community Colleges and the Green Economy

The 21st-Century Commission on the Future of Community Colleges encourages all American community colleges to devote special attention to knowledge and skills that will be required by the regional and global economies of the future (AACC, 2019). Such an approach to preparing students for the labour market must consider issues related to sustainable development in the United States and around the world. Contributing to the Sustainable Development Goals, such as Quality Education (goal 4), Industry, Innovation, and Infrastructure (goal 9), and Sustainable Cities and Communities (goal 11), is an essential part of the American Association of Community Colleges' (AACC) 2017-2020 Strategic Plan (AACC, 2017). The purpose of this case study was to examine the role that American community colleges play in preparing students for careers in the green economy.

Contribution to Sustainable Development

A new and evolving role of American community colleges is to train workers for jobs in the green economy, which is developing rapidly in response to growing concerns about global warming, forest fires, tornados, ice storms, haboobs, blizzards, droughts, and floods. Moreover, such jobs are expected to be a cornerstone of the future economy (AACC, 2011; Moran, 2011). The hallmark of American community colleges has always been their ability to respond quickly to societal changes; as a result, they are the “perfect venue for training people for green jobs” (Pierce, 2020, p. 1). The AACC’s Sustainability Education & Economic Development (SEED) Center was created to design green-job training programs and to provide strategic guidance for leadership roles so as to advance sustainable development (AACC, 2018). Many American community colleges are incorporating green-growth topics into their curricula, developing green-job programs, and working with local communities and industries to secure support for such programs.

The statement by Dallas College (2020) aptly summarizes American community colleges’ attitude toward sustainable development: the “College has committed to using the United Nations 17 Sustainable Development Goals (SDGs) as a framework for teaching our students, employees and community members about sustainability.” The college has introduced several green initiatives, including curricula on clean water and responsible consumption, as well as a clean-energy pledge to have the entire campus switch to renewable energy by 2025. By adopting such strategies, community colleges demonstrate how green-economy principles can be incorporated across academic institutions.

The 2019 Sustainable Campus Index, published by the Association of Sustainability in Higher Education, recognizes top-performing institutions of higher education in 17 areas of sustainable development. Community colleges occupy the top spots in several categories: curriculum, campus and public engagement, buildings, and energy (AASHE, 2019). Moreover, green sustainability initiatives are being integrated into campus governance structures and operations development Moran (2011).

Challenges

Even so, several challenges are preventing American community colleges from implementing green initiatives more quickly and successfully. The first is the lack of consensus among key

players on returns on investments in green certifications, credentials, and competency models (Collett, 2014). The second is the lack of upgrading curricula to retrain graduates whose jobs quickly become obsolete. The third is inadequate communication among different educational sectors and industry, with the result that colleges are graduating too many students who must vie for limited numbers of jobs. The fourth is a financial squeeze resulting from declining enrollment and underfunding by government. Finally, community colleges must continually gain buy-in from all their stakeholders.

FINDINGS AND DISCUSSION

Special Features Enabling CCs and TVETs to Contribute to Sustainable Development

The literature on the contribution to the SDGs by institutions of higher education focuses mainly on universities. Such an approach is understandable because, as research-producing institutions, universities are well placed to shed light on vital issues. Even so, the research also shows that CCs and TVETs have specific characteristics enabling them to make essential contributions to sustainability. Table 2 summarizes the features of CCs and TVETs that are relevant to sustainable development.

Table 2

Features of CCs and TVETs Relevant to Sustainable Development

	CAATs Canada	TVETs Taiwan	TVETs China	TVETs Chile	CCs United States
Special Features					
Fulfilment of labour-market needs	✓	✓	✓	✓	✓
Open-door policy	✓	✓	✓	✓	✓
Orientation toward local communities	✓	✓	✓	✓	✓
Close links with industry	✓	✓	✓	✓	✓
Pathway to a university education					✓
Parallel to the academic system	✓	✓			
Lifelong learning	✓	✓			✓
Emphasis on whole-person development		✓			
Pathway to immigration for international students	✓				

In line with previous research, the participating institutions in all five case studies were found to focus on the labour market's need for qualified, job-ready graduates, to provide education to non-traditional and underprivileged students, and to offer apprenticeship and internship programs geared to the needs of local communities. All the institutions in the study also had strong links to industry. Moreover, in the case of Ontario colleges, it was also observed that some international students returned to their home countries after graduating and obtaining western work experience, which signifies the growing international influence of CCs and TVETs.

This review also identified several new characteristics of CCs and TVETs as highly relevant to sustainable development. Many of the institutions studied provide their students with opportunities to switch between technical and academic fields, to pursue a university education after graduating, and to engage in lifelong learning, all of which afford students the flexibility needed for today's fast-changing world. For example, by focusing on developing a whole person with comprehensive capabilities, Taiwan's TVETs encourage their students to become active citizens whose concerns extend beyond their immediate jobs or industries. As well, Ontario's colleges of applied arts and technology are playing an increasingly active role in the government's strategy of encouraging international students to remain in Canada permanently. International students are viewed as ideal immigrants who can help Canada resolve its demographic challenges. As John McCallum observed while serving as the country's minister of immigration, "International students are among the most fertile source of new immigrants for Canada. By definition, they are educated. They speak English or French, they know something about the country, so they should be first on our list of people who we court to come to Canada" (Zilio & Chiose, 2016, para. 4).

Contributing to the Sustainable Development Goals

The literature tells us that community colleges and TVET institutions play an active role in fighting poverty, improving working conditions, resisting environmental degradation and preparing students for the fast-changing labour market (Budhrani et al., 2018; Gagnon & Telesford, 2018; McGrath et al., 2020; Weber, 2016).

Accordingly, the researchers participating in the five case studies described in this paper were asked to identify those SDGs that the institutions in their studies make the most significant contributions to. Table 3 summarizes their answers.

Table 3*Contribution by CCs and TVETs to the Sustainable Development Goals*

	CAATs Ontario	TVETs Taiwan	TVETs China	TVETs Chile	CCs United States
GOAL 1: No Poverty	✓	✓	✓	✓	✓
GOAL 2: Zero Hunger					
GOAL 3: Good Health and Well-being	✓	✓	✓	✓	✓
GOAL 4: Quality Education	✓	✓	✓	✓	✓
GOAL 5: Gender Equality	✓	✓		✓	✓
GOAL 6: Clean Water and Sanitation	✓		✓		✓
GOAL 7: Affordable and Clean Energy	✓		✓	✓	✓
GOAL 8: Decent Work and Economic Growth	✓	✓	✓	✓	✓
GOAL 9: Industry, Innovation, and Infrastructure	✓	✓	✓	✓	✓
GOAL 10: Reduced Inequality	✓	✓	✓	✓	✓
GOAL 11: Sustainable Cities and Communities	✓	✓	✓	✓	✓
GOAL 12: Responsible Consumption and Production	✓		✓	✓	✓
GOAL 13: Climate Action	✓			✓	✓
GOAL 14: Life Below Water	✓				✓
GOAL 15: Life on Land	✓				✓
GOAL 16: Peace, Justice and Strong Institutions	✓	✓		✓	✓
GOAL 17: Partnerships to Achieve the Goal	✓	✓		✓	✓

The United Nations' 17 Sustainable Development Goals can be divided into three broad categories: economy, social justice, and environment. As Table 3 shows, the participating institutions contribute to the SDGs in all these categories. Community colleges and TVETs have traditionally contributed to their countries' economic development; thus the institutions in all five case studies were actively supporting Decent Work and Economic Growth (goal 8), Industry, Innovation and Infrastructure (goal 9), and Sustainable Cities and Communities (goal 11).

The goals related to social justice are also relevant to CCs and TVETs. Interestingly, Zero Hunger (goal 2) was not cited as a priority in any of the five case studies, possibly because the research covered institutions in developed and fast-developing countries that have largely eradicated hunger.

By welcoming underprivileged students who come from low-income families and may not otherwise have the opportunity to obtain a higher education, CCs and TVETs contribute to Reduced Inequality (goal 10). Furthermore, a large number of the institutions in the five case studies have support programs, such as bursaries, scholarships, free transportation, and fundraising

campaigns to help students in need (goals 1 and 3). Many institutions in this study had policies to enhance diversity through the inclusion of people representing different ages, genders, sexual orientations, socioeconomic backgrounds, and races (goals 5, 10, and 16). Clean, accessible water and green space (goal 15) are crucial for the health and well-being of all living things. Thus responsible management of these essential resources is imperative for a sustainable future. A number of the institutions discussed in the five case studies have specific measures to promote water conservation (goals 6 and 14), tree planting, and creation of green space, as well as recycling and reduced power use at home and at work (goal 12). Even though the United States and China are the two biggest producers of carbon pollution globally, the CCs and TVETs in those countries are playing a pivotal role by training workers for the transition to renewable energy sources, such as wind and solar power (goal 7).

The SDGs related to economic sustainability and social justice were a priority in all five case studies, whereas those related to the environment were reported to be more important in the two North American case studies; Western countries, with their higher level of development, have been able to extend their focus to environmental protection sooner than emerging economies.

Challenges

The literature identifies barriers that hinder CCs and TVETs in their ability to contribute to sustainable development, such as the high cost of education, low completion rates, graduates' inability to secure suitable employment, inadequate government funding and the sector's second-tier status. Table 4 summarizes the barriers that the institutions covered by this research have encountered in trying to achieve the SDGs.

Table 4*Barriers to Achieving the Sustainable Development Goals*

	CAATs Canada	TVETs Taiwan	TVETs China	TVETs Chile	CCs United States
Low institutional status	✓	✓	✓	✓	✓
Affordability	✓				✓
Insufficient funding	✓	✓	✓	✓	✓
Low student enrolment	✓	✓			
Low completion rates	✓	✓	✓	✓	✓
Mismatch between programs and job market	✓	✓	✓		✓
Student unpreparedness for life after school			✓		
Lack of consensus among key stakeholders					✓

As can be seen from Table 4, the institutions in all five case studies face similar challenges, which points to the universal nature of CC and TVET education.

In line with previous research (Rushbrook, 2010), all five case studies revealed that technical and vocational institutions of higher education are still widely viewed as inferior to comprehensive universities. Moreover, this review shows much misunderstanding and confusion about the types of education provided by CCs and TVETs. For example, potential international students and their parents are often surprised to discover that Ontario CAATs offer applied degrees and advanced post-graduate programs in addition to technical diplomas. Such misunderstanding is due partially to the large variety of non-university institutions of higher education around the world.

All the institutions in the study have low completion rates. This phenomenon is anything but new and has been covered by previous studies (Frumkin & Koutsoubou, 2013). But the current study highlights the global nature of this challenge. Another challenge affecting all the institutions in the study was insufficient resources. Most CCs and TVETs are public institutions that rely heavily on governmental funding; thus funding cuts to the sector appear to be a global phenomenon.

The high cost of education, which affects disadvantaged students, was noted as a serious challenge by the two North American studies, and low domestic enrolment was found in the Canadian and Taiwanese studies, owing to the low birthrates in those countries.

The institutions in all the case studies had difficulty upgrading their programs to meet the rapidly changing demands of the labour market. This finding was unexpected because CCs and

TVETs have traditionally been known for their ability to adjust quickly to changing labour-market conditions.

Some challenges were confined to a single study. For example, students who attend China's TVETs are less prepared for life after school because they usually live on campus and focus exclusively on their studies, in contrast to their Western counterparts, who often hold part-time jobs during their post-secondary education.

Conclusion

The objective of this research project was not to provide a comprehensive analysis of various case studies but rather to highlight the wide range and significance of the contributions that CCs and TVETs make to sustainable development. The five case studies described in this paper were conducted in five different international jurisdictions and dealt with different issues. For instance, by facilitating international students' transition to the labour market and integration into Canadian society, colleges of applied arts and technology in the province of Ontario help mitigate an impending demographic crisis in that country. The TVET sector in Taiwan contributes to the SDGs by concentrating on whole-person education and equipping its students with comprehensive capabilities rather than focusing solely on specific technical skills. Similarly, the study on TVETs in China highlighted the need for comprehensive preparation of students for the job market to prevent disruptions to the country's economic development. The Chilean study explored the impact of quality-assurance improvements in the TVET sector and its ability to contribute to the SDGs. Finally, the fifth case study examined the role that American community colleges play in preparing students for careers in the green economy.

This paper contributes to the dialog on the role of post-secondary institutions in sustainable development by demonstrating that, owing to their diverse but distinctive characteristics, CCs and TVETs are uniquely positioned to play a vital role in the Sustainable Development Goals.

Sweeping economic, cultural, and social changes are transforming the way we live, work, and relate to one another and to the environment. These changes have been so exacerbated by the COVID-19 pandemic that researchers and the public agree that our lives will never be the same again. This new reality challenges all educational institutions to equip students with knowledge relevant to our future world and to address the fact that sustainability is central to that world.

As with any study, this research has its limitations. Although the five case studies were chosen for the breadth of the issues they deal with, they cover only a small sample of the contributions that CCs and TVETs make to the SDGs. Further studies exploring such contributions in various settings and jurisdictions will help us understand the full scope of the impact that CCs and TVETs are having on sustainable development.

References

- Advisory Council on Economic Growth. (2016, October 20). *Attracting the talent Canada needs through immigration*. <http://www.budget.gc.ca/aceg-ccce/pdf/immigration-eng.pdf>
- Altbach, P. G., Gumport, P. J., & Berdahl, R. O. (2011). *American higher education in the twenty-first century: Social, political, and economic challenges*. JHU Press.
- American Association of Community Colleges. (2011). *Community colleges in the emerging green economy: Charting a course and leadership role*. <https://theseedcenter.org/wp-content/uploads/2018/01/AACC-SEED-Strategic-Plan-FINAL-03-11.pdf>
- American Association of Community Colleges. (2017). *2017-2020 Strategic plan*. <https://www.aacc.nche.edu/about-us/mission-statement/strategic-plan/>
- American Association of Community Colleges. (2018, August 19). *AACC SEED Center*. GPSEN. <https://gpsen.org/project/aacc-seed-center/>
- American Association of Community Colleges. (2019). *21st-Century commission recommendations*. www.aacc21stcenturycenter.org/recommendations/
- AASHE Releases the 2019 Sustainable Campus Index. (2019, August 23). The Association for the Advancement of Sustainability in Higher Education. https://www.aashe.org/news/2019-sustainable-campus-index-released/?gclid=CjwKCAjw8MD7BRArEiwAGZsrBfJ7tjx5prk2XJMYCdFsjRBQv2P-YVGNouxZIMPx5awm0_Bp4qGqURoC5zIQAvD_BwE
- Bai, B., & Yan, J. (2016). History, Current Status and Future Trends of Higher Vocational Education in PR China. In M. Schönebeck, & A. Pellert. (2016). *Von der Kutsche zur Cloud: Globale Bildung sucht neue Wege*. (pp. 151-173). Springer.
- Bégin-Caouette, O. (2013). Meeting the Challenges of Globalization while Preserving Institutional Singularity: The Case of Quebec CEGEPs. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 603-618). Springer.
- Beynaghi, A., Trencher, G., Moztarzadeh, F., Mozafari, M., Maknoon, R., & Leal Filho, W. (2016). Future sustainability scenarios for universities: Moving beyond the United Nations Decade of Education for Sustainable Development. *Journal of Cleaner Production*, 112, 3464-3478.

- Bray, M., Adamson, B., & Mason, M. (2007). *Comparative education research: Approaches and methods*. Springer.
- Budhrani, K. S., D'Amico, M. M., & Espiritu, J. L. D. (2018). Developing a skilled workforce through technical vocational education and training (TVET) in the Philippines. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 693-719). Springer.
- Canada's International Education Strategy. (2014). *Harnessing our knowledge advantage to drive innovation and prosperity*. <http://international.gc.ca/global-markets-marches-mondiaux/assets/pdfs/overview-apercu-eng.pdf>
- CBIE. (2018). *The student's voice: National results of the 2018 CBIE international student survey*. https://cbie.ca/wp-content/uploads/2018/08/Student_Voice_Report-ENG.pdf
- Chepkemei, A., Watindi, R., Cheron, K. L., Ng'isirei, R. J., & Rono, A. (2012). Towards achievement of sustainable development through technical and vocational education and training (TVET): A case of middle level colleges-Kenya. *Journal of Emerging Trends in Educational Research and Policy Studies*, 3(5), 686.
- China State Council. (2005). *Decision to vigorously develop vocational education*. http://gov.cn/zwgk/2005-11/09/content_94296.htm
- Citizenship and Immigration Canada. (2014). *Immigrate as a skilled worker through Express Entry*. <http://www.cic.gc.ca/English/immigrate/skilled/index.asp>
- College Ontario. (2017). *Environmental scan 2017. Student and graduate profile*. http://www.collegesontario.org/research/2017_Environmental_Scan/CO_EnvScan_2017_PROFILES_WEB.pdf
- College Ontario. (2018). *Environmental scan 2018. Student and graduate profile*. https://www.collegesontario.org/research/2018_Environmental_Scan/CO_EnvScan_2018_PROFILES_WEB.pdf
- College Ontario. (2019). *Environmental scan 2019. Student and graduate profile*. https://www.collegesontario.org/research/2019_Environmental_Scan/CO_EnvScan_2019_PROFILES_WEB.pdf

- College Ontario. (2020). *Environmental scan 2020. Student and graduate profile*.
https://www.collegesontario.org/research/2020_Environmental_Scan/CO_EnvScan_2020_PROFILES_WEB.pdf
- Collett, S. (2014). Still in BLOOM? *Community College Journal* 85(1), 30-33.
- Dallas College. (2020). *How Dallas College Supports the 17 Sustainable Development Goals – UN Sustainable Development Goals – Dallas College*.
<https://www.dcccd.edu/about/sustainability/initiatives/un-sdgs/pages/dallas-college-supports-sdgs.aspx>
- de Moura Castro, C., Bernasconi, A., & Verdisco, A. (2001). Community colleges: Is there a lesson in them for Latin America? *Sustainable Development Department Technical Paper Series, EDU 118*. Inter-American Development Bank Press.
- Dennison, J. D. (1995). *Challenge and opportunity: Canada's community colleges at the crossroads*. (Eds.). University of British Columbia Press.
- Education International. (2009). Literature Review: Vocational Education and Training: Geneva. http://download.ei-ie.org/Docs/WebDepot/091213_VET_Literature_EDITED%20AA.pdf
- Ferrer-Balas, D., Buckland, H., & de Mingo, M. (2009). Explorations on the University's role in society for sustainable development through a systems transition approach. Case-study of the Technical University of Catalonia (UPC). *Journal of Cleaner Production*, 17(12), 1075-1085.
- Frumkin, L. A., & Koutsoubou, M. (2013). Exploratory investigation of drivers of attainment in ethnic minority adult learners. *Journal of Further and Higher Education*, 37(2), 147-162.
- Gagnon, P. L., & Telesford, J. N. (2018). Promoting green skills in the Caribbean: A Grenada-Canada partnership to educate and train the sustainable development practitioner for the 21st century. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 555-575). Springer.
- Gaisch, M., & Aichinger, R. (2018). Second-tier higher education institutions and the diversity challenge: Structural components adopted through a Germanic lens. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 217-233). Springer.

- Gregson, M., & Duncan, S. (2020). *Reflective teaching in further, adult, and vocational education*. Bloomsbury.
- Gross J. (2018). Translating the Community College Concept in India. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 177-196). Springer. https://doi.org/10.1007/978-3-319-50911-2_22
- Ho, T. T. H., & Tran, L. T. (2018). Appropriation of foreign approaches for sustainable development and transformational changes in Vietnamese vocational education. *Higher Education, Skills and Work-based Learning*, 8(4),527-543.
- Hung, B. P. (2019). Impacts of urban institutions of higher education on the community: A social approach. *Eurasian Journal of Educational Research (EJER)*. 80(1), 39-58. <https://doi.org/10.14689/ejer.2019.80.3>.
- International Affairs Office. (2016). *TVET Education in Taiwan*. <https://www.youtube.com/watch?v=dLNMvthbzZk>
- International Monetary Fund. (2018). *Projected GDP ranking (2018-2023)*. <http://statisticstimes.com/economy/projected-world-gdp-ranking.php>
- Karatzoglou, B. (2013). An in-depth literature review of the evolving roles and contributions of universities to education for sustainable development. *Journal of Cleaner Production*, 49, 44-53.
- Larrañaga, O., Cabezas, G., & Dussailant, F. (2013). Informe completo del Estudio de la Educación Técnico Profesional. Programa de las Naciones Unidas para el Desarrollo- *Chile Área de Reducción de la Pobreza y la Desigualdad*. http://www.undp.org/content/dam/chile/docs/pobreza/undp_cl_pobreza_etp_2013.pdf.
- Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L. V., Brandli, L. L., & Caeiro, S. (2019). Sustainable development goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production*, 232, 285-294.
- Lee, J. (2018, August 27). *100 Days, 5 Facts, and the Millennium Development Goals*. Unfoundation.Org. https://unfoundation.org/blog/post/100-days-5-facts-and-the-millennium-development-goals/?gclid=Cj0KCQjwyPbzBRDsARIsAFh15Jbgg1cP2evL6aSJ8wO4LON5lb14pMqv_sNucbjOK8GzskEhOViyP9U8aAtAnEALw_wcB

- Legusov, O. (2017). The growing reliance of Ontario colleges of applied arts and technology on educational agents for the recruitment of international students. *College Quarterly*, 20(1). <http://collegequarterly.ca/2017-vol20-num01-winter/index.html>
- Lipson, C. (2010). *Succeeding as an international student in the United States and Canada*. University of Chicago Press.
- Lukman, R., & Glavič, P. (2007). What are the key elements of a sustainable university? *Clean Technologies and Environmental Policy*, 9(2), 103-114.
- Marginson, S. (2016). The worldwide trend to high participation higher education: Dynamics of social stratification in inclusive systems. *Higher Education*. 71(6), 413-34. <https://doi.org/10.1007/s10734-016-0016-x>.
- McGrath, S. (2011). Where to now for vocational education and training in Africa? *International Journal of Training Research*, 9(1-2), 35-48.
- McGrath, S., & Powell, L. (2016). Skills for sustainable development: Transforming vocational education and training beyond 2015. *International Journal of Educational Development*, 50, 12-19.
- McGrath, S., Powell, L., Alla-Mensah, J., Hilal., R., & Suart, R. (2020). New VET theories for new times: The critical capabilities approach to vocational education and training and its potential for theorising a transformed and transformational VET. *Journal of Vocational Education & Training*. 1-22. DOI: 10.1080/13636820.2020.1786440
- Meier, K. (2013). Community college mission in historical perspective. In J.S. Levin, & S.T. Kater. (Eds.), *Understanding community colleges* (pp. 23-38). Routledge.
- Minghat, A. D., & Yasin, R. M. (2010). Sustainable framework for technical and vocational education in Malaysia. *Procedia-Social and Behavioral Sciences*, 9, 1233-1237.
- Moodie, G., Wheelahan, L., & Lavigne, E. (2019). *Technical and vocational education and training as a framework for social justice: Analysis and evidence from world case studies*. Education International.
- Moran, C. (2011). Facilities management operations. In S. E. Sutin, D. Derrico, R. L. Raby, & E. J. Valeau. (2011). *Increasing effectiveness of the community college financial model: A global perspective for the global economy*. (pp. 151-165). Palgrave Macmillan.

- Nóvoa, A., & Tali Y. M. (2003). Comparative research in education: A mode of governance or a historical journey? *Comparative Education*, 39(4), 423-438.
- Mouzakitis, G. S. (2010). The role of vocational education and training curricula in economic development. *Procedia-Social and Behavioral Sciences*, 2(2), 3914-3920.
- Nussbaum, M. C. (2000). *Women and human development: the capabilities approach*. Cambridge University Press.
- OCDE. (2008). *Sistemas de cualificaciones. Puentes para el aprendizaje a lo largo de la vida*. OCDE.
- Okoye, K. R. E., & Michael, O. I. (2015). Enhancing technical and vocational education and training (TVET) in Nigeria for sustainable development: Competency-Based training (CBT) approach. *Journal of Education and Practice*, 6(29), 66-69.
- Phillips, D., & Schweisfurth, M. (2006). *Comparative and international education: An introduction to theory, method and practice*. Continuum.
- Pierce, D. (2020). Going for the green: As 'green' jobs grow, community colleges are changing curricula and practices to educate students and the communities they serve. *Community college Journal*. https://www.ccjournal-digital.com/ccjournal/december2019_january2020/MobilePagedArticle.action?articleId=1545112&app=false#articleId1545112
- Raby, R. & Valeau, E. (2009). *Community college models: Globalization and higher education reform*. Springer.
- Raby, R., Friedel, J.N., & Valeau, E. J. (2016). A discussion on community colleges and global counterparts completion policies. *Community College Journal of Research and Practice*, 40(11) 961-964. <https://doi.org/10.1080/10668926.2015.1108253>
- Raby, R., & Valeau, E. (2018). *Handbook of comparative studies on community colleges and global counterparts*. Springer.
- Rizal., A., Bin, M., Binito, R., & Hamid, A. (2014). A theoretical review on critical success factors (CSFS) of entrepreneurship programs in community college. *International Journal of Sustainable Development & World Policy*, 3(36), 138-145.

- Roofe, C., & Ferguson, T. (2018). Technical and vocational education and training curricula at the lower secondary level in Jamaica: A preliminary exploration of education for sustainable development content. *Discourse and Communication for Sustainable Education*, 9(2), 93-110.
- Rushbrook, P. (2010). Bringing Cinderella to the ball: constructing a federal system of technical and further education in Australia, 1971–1975. *Journal of Educational Administration and History*, 42(1), 33-54. DOI: 10.1080/00220620903462140
- Segovia, V. M., & Galang, A. P. (2002). Sustainable development in higher education in the Philippines: The case of Miriam College. *High Education Policy* 15(2), 187-195. [https://doi.org/10.1016/S0952-8733\(02\)00013-2](https://doi.org/10.1016/S0952-8733(02)00013-2)
- Sen, A. (1999). *Development as Freedom*. Anchor Books.
- Shavit, Y. (2007). *Stratification in higher education: A comparative study*. Stanford University Press
- Skolnik M. L. (2018) Dimensions of Collaboration Between Community Colleges and Universities in Facilitating Attainment of Baccalaureate Degrees in Career and Technical Education. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 775-797). Springer. https://doi.org/10.1007/978-3-319-50911-2_3
- Tang, H, H., Tsui, C, G., & Chau, W. (2018). Sustainability of massification in East Asian higher education: Community colleges in Hong Kong in retrospect and prospects. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 63-83). Springer. https://doi.org/10.1007/978-3-319-50911-2_3
- Tormala-Nita, R. (2018). Educational reform through sponsored projects in Curacao: government-sponsored technical and career institutions, postsecondary education, and the challenges of workforce development. In R. L. Raby, & E. J. Valeau. (2018). *Handbook of comparative studies on community colleges and global counterparts*. (pp. 653-673). Springer. https://doi.org/10.1007/978-3-319-50911-2_3
- United Nations. (2015). *Higher education and the Sustainable Development Goals* <https://en.unesco.org/themes/higher-education/sdgs>

- Wang, W. N., & Seggie, F. N. (2013). Different missions of community college systems in two different countries: Community education in Taiwan versus vocational education in Turkey. *Community College Journal of Research and Practice*, 37(1), 18-36.
- VERTEBRAL. (2017). Primer Estudio Comparativo sobre Mecanismos De Aseguramiento De La Calidad En La Educación Superior Técnico Profesional. *Consejo de Institutos Profesionales y Centros de Formación Técnica Acreditados*.
https://issuu.com/vertebralchile/docs/informe_final_estudio_comparativo_v
- Weber, J. (2016). What leaders need to know for sustainability. *Community College Journal*, 87(1), 6.
- Wheelahlan, L. (2016). ‘College for all’ in Anglophone countries—meritocracy or social inequality? An Australian example. *Research in Post-Compulsory Education*, 21(1-2), 33-48.
- Wong, Y. L. (2015). Community college policy in Hong Kong: Intention, practices, and consequences. *Community College Journal of Research and Practice*, 39(8), 754-771.
<https://doi.org/10.1080/10668926.2014.880164>
- World Bank. (2017). *Tertiary Education*. <https://www.worldbank.org/en/topic/tertiaryeducation>
- Wu, C. (2012). *Reflection on Taiwan’s technical and vocational education whole person education, pragmatic and practical*. Education and Teaching Forum.
<http://www.qikan.com/article/892D6212-60AA-4C3D-833C-9BAB7059E732>
- Wu, R., & Liu, B. (2014). The advantages of Taiwan’s technical and vocational education that mainland China can learn from. *China Youth*.
<http://edu.people.com.cn/n/2014/1215/c1053-26206242.html>
- York University. (2020). *TVET in the SDGs*. <https://Unescochair.Info.Yorku.ca/Tvet-in-Sdgs/>.
<https://unescochair.info.yorku.ca/tvet-in-sdgs/>
- Yuan, Y. (2005). Why Taiwan’s technical and vocational education so successful? *China’s Education*. http://www.jyb.cn/china/gat/201508/t20150819_634246.html
- Yuen, S. C. (1993). *Vocational education and training plays an important role in Taiwan’s economic miracle*. Paper presented at the Joint Meeting of the International Vocational Education and Training Association and the American Vocational Association, Nashville, TN. <http://myaccess.library.utoronto.ca/login?url=https://search-proquest-com.myaccess.library.utoronto.ca/docview/62803766?accountid=14771>

Zancajo, A., & Valiente, O. (2019). TVET policy reforms in Chile 2006–2018: between human capital and the right to education. *Journal of Vocational Education & Training*, 71(4), 579-599.

Zilio, M., & Chiose, S. (2016, March 14). Ottawa looks to ease international students' path to permanent residency. *Globe and Mail*. <https://www.theglobeandmail.com/news/politics/ottawa-looks-to-ease-international-students-path-to-permanent-residency/article29242266/>