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## Financial Capabilities

► Financial Literacy Education: Toward Reasonable, Just, and Sustainable Practices

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## Financial Literacy Education: Toward Reasonable, Just, and Sustainable Practices

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### Synonyms

Financial capabilities; Financial education; Rationale; Site specific; Socially just

### Definitions

A financially literate individual has the capacity to acquire financial skills and capabilities and is motivated to critically reflect on what influences their financial decision-making before applying their financial skills and capabilities to the financial dilemmas they face. Financial literacy education is about the teaching of personal financial skills and capabilities with the direct intention of increasing an individual's financial literacy through the acquisition of skills and capabilities.

### Introduction

Improving financial literacy is a global concern. Many countries have established initiatives and strategies to help citizens acquire the financial skills and capabilities that are deemed necessary to ensure effective management of personal finances over a lifetime (OECD 2012, 2013). However, most definitions of financial literacy imply that once financial skills and knowledge are acquired, an individual will be motivated to make effective financial decisions that lead to financial well-being, but such alignment does not follow as a matter of course because it does not consider the life experiences of marginalized and vulnerable populations. For example, Indigenous people were displaced and dispossessed from their lands during colonization, and this dispossession continues to have an impact on the economic participation of many Indigenous people who are living on low incomes and/or in poverty. Distinguished Professor Moreton-Robinson (2015) argues that "Indigenous people have


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never been recognized as property-owning subjects in our own right as Indigenous peoples, and this continues in current law and policy" (p. 94). Owning property and passing property ownership on through inheritance is how intergenerational wealth is maintained and preserved with "deeper wealth divisions in the longer term between those who own houses and those who do not" (Munro 1988, p. 435).

The United Nations report that there are 370 million Indigenous people worldwide (5% of the total population) and that Indigenous people represent 15% of the world's poor and one-third of the world's extremely poor (United Nations n.d.). Although this chapter only focuses on developed countries, Indigenous people in developed countries continue to lag behind on almost all indicators of well-being including life expectancy, health, educational outcomes, and employment (United Nations n.d.).

In this chapter the trend to educate some of the most vulnerable individuals in society with generic financial literacy education is examined. Generic and/or one-size-fits-all financial literacy education targeted at individuals living on low incomes developed by financial institutions (or organizations funded by these institutions) is commonplace in training offered and targeted at the adult population. This chapter is guided by answering the research question *how might financial literacy education practices be more reasonable, just, and sustainable*? The aim of this chapter is to articulate how financial literacy education practices can be conceived as a more meaningful process so as to be rationale and reasonable, productive and sustainable, and just and inclusive.

## Financially Educating Adults

Financial literacy education is often targeted at the adult population in the form of financial literacy seminars about managing personal finances. Despite the best intentions of educators, when training vulnerable individuals, there is a risk that the training may mislead participants into thinking that financial problems can be "fixed" once personal financial skills such as developing a budget are acquired (Pinto 2009; Willis 2008). Financial tools and skills do help to provide financial awareness; however, they may do very little to change behavior (Lyons et al. 2006). Basic personal finance skills are also unlikely to ameliorate difficult financial circumstances, especially when the individual is on a low income and struggling to afford the necessities of life (Blue 2016; Haiven 2017).

It may be misguided to target individuals living on low incomes with broad financial literacy education strategies and government policies that assume that financial skills are lacking, instead of trying to fix the systemic structural barriers that continue to stand in the way of full economic participation. Haiven (2017) states that individualistic conceptualizations of financial literacy include how "financial power resonates with and in many ways perpetuates and refurbishes long-existing systems and structures of power organized around race, class, gender, sexuality, citizenship status, colonialism, imperialism and environmental destruction" (p. 361). Unmasking of the social structures that reinforce inequities may expose the practices of architectures that enable and constrain financial practice of Indigenous people. When life stories of dispossession and loss of land are told, educators may begin to be aware "that debt and financialisation are not merely the results of the actions or choices of individuals but the product of structural and systemic forces" (Haiven 2017, p. 361). Haiven (2017) explains financialization as "(a) profound expansion of the magnitude of wealth and economic power wielded by the so-called FIRE (finance, insurance, and real estate) sector; (b) the way this wealth and power influences and reshapes the operations, logics, motivations, cultures, and processes of firms, social and public institutions, and diverse individuals well beyond the confines of that sector; and (c) the broader economic, political, social, and cultural transformations these portend" (p. 350). A move toward reasonable, just, and sustainable financial literacy education practices includes understanding the structural barriers that many Indigenous people living in developed countries continue to face.

An understanding of the structural barriers individuals face may result in educators beginning to enact praxis.

## Structural Barriers

The structural barriers many Indigenous people face include lack of access to basic literacy and numeracy, remoteness, lack of access to financial services, and lack of access to capital (Collins 2011; Urbis Keys Young 2006). Indigenous populations in both Australia and Canada have lower overall educational achievement levels (Bradley et al. 2008; Collins 2011). Canadians are often at or near the top of the Human Development Index rating; however, in 1998 when Canada was ranked first, Aboriginal people were viewed separately, and "off-reserve natives" would have ranked 34th (ahead of Trinidad and Tobago) and "on-reserve natives" 63rd (between the United Arab Emirates and Brazil) (Anderssen 1988). This alarming example portrays the extreme hardships and inequities Indigenous people continue to face.

Remoteness, the second structural challenge, has to do with the location of some Indigenous communities. Lack of year-round road access and/or ferry access is often a challenge for Indigenous people living in remote and/or rural locations (Collins 2011). Limited access to goods and services also has an impact on the people living in these communities, which ties in with the third structural challenge, a lack of access to financial services. In Canada, a "sense of the scale of underbanking among Aboriginal people can be had by looking at the geographic distribution of the Aboriginal population and the availability of bank branches in Aboriginal communities" (Collins 2011, p. 22), and the same may be said for Australia. Although some strong relationships between regional bank managers and income-rich Aboriginal communities are forming (Collins 2011), many communities are a long way from achieving such relationships. As a result, a high number of unbanked individuals are relying on fringe financial institutions for their financial services (Bowles et al. 2011).

Another structural barrier is access to loan capital. Collins (2011) reports: "for years, commercial banks refused to consider loans to Aboriginal people, businesses, and communities unless government guarantees were supplied" (p. 23). Although this has begun to change, there are still low levels of access to capital. Reasons for this include difficulty in building equity through home ownership for on-reserve individuals, as occurs in Canada where the Indian Act administers the land, and home ownership regimes and high levels of Indigenous people living in public housing (Collins 2011; Urbis Keys Young 2006). For generations and even today, Indigenous people continue to have their full fiduciary rights withheld (Haiven 2017) which means they have not had the same access to financial investments and opportunities that non-Indigenous people and settlers have had to establish themselves (Pasternak 2015; Vowel 2016). It is an understatement to say that this lack of access and opportunities to participate in the consumer-driven economy has not had an impact of financial well-being facing many Indigenous people. It is alarming to learn that when Indigenous people do engage with financial institutions (i.e., banks) they are overly trusting (Gerrans et al. 2009). In Australia at the time of writing, a Royal Commission into the financial service sector in Australia is taking place where it has been revealed that vulnerable consumers are at increased risk of scams and purchasing financial products that benefit the seller instead of the policy holder (e.g., funeral insurance that costs more than it provides to the policy holder).

## Financial Literacy Education, Economic Education, and Numeracy

Globally, governments, policy makers, and researchers continue to focus on increasing the financial literacy levels of individuals, from primary school age to adulthood (OECD 2013; Australian Securities and Investments Commission 2011). Since 2012 the Program for International Student Assessment (PISA) has been assessing 15-year-olds' ". . . capacity to apply their financial knowledge and skills to real-life situations

involving financial issues and decisions" (OECD 2015, p. 3). The importance of ". . . having a solid foundation in mathematics and reading is critical for navigating the financial environment" (OECD 2015, p. 3); thus, increasing numeracy is an aim of financial literacy education. Poor numeracy skills have been found to affect how individuals participate socially, their self-esteem, their health, and their ability to successfully transition from school to work (Bynner and Parsons 2006; Council of Australian Governments 2008). Financial literacy is connected to numeracy in the Australian Curriculum and is taught in mathematics, humanities, and social sciences (Australian Curriculum 2017). Acquiring mathematics knowledge through financial literacy curriculum aims to improve numeracy skills.

Geiger et al. (2015) define numeracy as having "the capacity to make effective use of mathematics in contexts related to personal life, the workplace, and in exercising civil responsibilities" (p. 611). Financial literacy education has a numeracy and literacy component. Grohmann et al. (2015) found that high school courses in economics were shown only to influence numeracy, but did not increase financial literacy. The abovementioned authors did find that family background, financial socialization by parents, education quality, and financial socialization through money and work all influence an individual's financial literacy.

In mathematics education, D'Ambrosio (2007) advocates for ethnomathematics ". . . to build a civilization that rejects inequity, arrogance, and bigotry, education must give special attention to the redemption of peoples that have been, for a long time, subordinated and must give priority to the empowerment of the excluded sectors of societies" (p. 29). Furthermore, D'Ambrosio (2007) highlights that ethnomathematics pays particular attention to respect, solidarity, and cooperation with all citizens. With regard to financial literacy, Lucey et al. (2015) advocate for a critically compassionate approach to financial literacy education where the life stories of others are listened to and understood. Both D'Ambrosio (2007) and Lucey et al. (2015) bring our attention to the social inequities that continue to perpetuate disadvantage and reinforce the exclusion of non-dominate members of society. Jablonka and Gellert (2012) remind us that critical mathematics literacy is:

> . . . an umbrella term that includes conceptions that aim at identifying and analysing critical features of social realities and at contributing to the development of social justice. One strategy of pursuing these goals is sensitising students to social problems and helping them to articulate their interests as citizens. These social problems include the particular hidden injustice students face because of their race, social class, cultural origin etc. (p. 299)

Conversations about social problems and hidden injustices people face may be an essential element to acquiring criticality in financial literacy education in order to move to reasonable, just, and sustainable education practices.

## Challenging the Notion of What It Means to Be Financially Literate

Financial literacy has been defined as having two dimensions: the knowledge and application dimension (Huston 2010), which has recently been expanded by Blue (2016) to include a third dimension – the critical dimension. The critical dimension of financial literacy allows for consideration of other influences that affect financial decision-making. Geiger et al. (2015) argue that ". . . a critical orientation to the application of mathematics in the real world" (p. 613) is embedded in the numeracy model developed by Goos et al. (2011). The numeracy model includes four dimensions: context, mathematical knowledge, tools, and dispositions. The context dimension is about using mathematics in the real world (Steen 2001). Mathematical knowledge is about capacity and being able to perform higher thinking and problem-solving that may include calculating reasonable estimations (Zevenbergen 2004). Geiger et al. (2015) explain that utilizing the right tools to help make sense of real-world issues and to reason and to act (the tools dimension) includes both digital and non-digital tools. The authors describe the disposition dimension by stating that "a numerate person must possess a disposition that motivates the use of mathematics, when

appropriate, to solve problems in the real world" (p. 613). The way motivation is described in the abovementioned numeracy definition – that is, as an act to choose to use mathematics to solve problems – may have real potential for changing how motivation is used and understood in a financial literacy context (Steen 2001).

Financial literacy has been defined as "knowledge and understanding of financial concepts, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve financial well-being of individuals and society, and to enable participation in economic life" (OECD 2012, pp. 12–13). Taking issue with how motivation is used in this definition of financial literacy, an argument is now developed for motivation to be included in a definition of financial literacy similar to how motivation is used in the numeracy definition. By doing so, motivation in the financial literacy definition would include the motivation to use mathematics to solve financial dilemmas rather than about just choosing to make effective financial decisions because not everyone participates in the consumer economy on an equal playing field. The pedagogical focus of financial literacy education then becomes more about being able to equip students with the financial skills and capabilities to perform appropriate and efficient mathematical calculations when faced with everyday financial decisions. This is what Sawatzki (2013, p. 557) refers to as the ability to problem-solve your way through real-life "financial dilemmas."

Financial literacy is about an individual's capacity to acquire financial skills and capabilities, being motivated to critically reflect on what influences financial decision-making and the application of financial skills and capabilities to financial dilemmas. Financial literacy education is about the teaching of personal financial skills and capabilities with the direct intention of increasing an individual's financial literacy through the acquisition of these skills and capabilities (Blue et al. 2014). These definitions of financial literacy and financial literacy education consider the life stories of individuals and are not concerned with individual wealth accumulation practices but rather financial practices that expose the social structures that reinforce wealth inequities. Financial literacy therefore includes having compassion for others (Lucey et al. 2015) and understanding how financial practice is enabled and constrained by practice architectures (cultural-discursive, material-economic, and social-political arrangements) involved in financial decision-making. Such an understanding of financial practice requires an individual to question the simplicity of conventional approaches to financial literacy that assume financial skills and capabilites are lacking and that once acquired an improvement in financial well-being will occur.

Issues also emerge about evaluating the effectiveness of a financial literacy program when the very notion of what it means to be financially literate is contested. Haiven (2017) argues that financial illiteracy is a social epidemic that both entails a lack of access to financial information and encompasses "illiteracy towards the infrastructures of racism, colonialization, and other modalities of oppression and exploitation that financialisation both depends on and reinforces" (p. 361). Viewing financial illiteracy from Haiven's (2017) perspective shifts the focus off individuals and onto the social structures that props up financialization. Therefore, moving toward a more reasonable, just, and sustainable approach to financial literacy education requires accepting that financial illiteracy also encompasses inequities in social structures, not just a lack of financial skills and capabilities.

## Enacting Praxis

Grootenboer (2013) argues for the importance of having skillful and knowledgeable educators and that good "teaching is more than knowledge and technique – it is a form of *praxis*" (p. 1). Praxis is a concept that has its roots in Aristotelian philosophy and refers fundamentally to morally informed action (Grootenboer 2013; Grootenboer and Edwards-Groves 2014; Kemmis 2008; Kemmis et al. 2014a). Consistent with analyses by D'Ambrosio (2007) and Lucey et al. (2015), praxis is an important element in financial literacy

education and is required to prevent the inequalities and marginalization that may occur when vulnerable individuals who may be financially educated are unable to act on the financial knowledge they receive. In financial literacy, education practices require a shift from the one-size-fits-all and/or "fly in/fly out" models if the needs of the participants are to be understood, especially since these generic financial literacy workshops tend to be based on White middle-class values and assumptions without consideration of the learning needs of the participants. The relevance of the content taught and the impact of the training on the participants require more consideration by educators enacting praxis. Moreover, financial literacy education is not the solution to poverty as "poverty is . . . an issue of low wages (Ivanova and Klein 2014, p. 2), long working hours and lack of access to social goods" (Raffo 2011). Enacting praxis by a financial literacy educator may begin by acknowledging the practice architectures that enable and constrain an individual's ability to participate in the economy.

## Moving Toward Reasonable, Just, and Sustainable Financial Literacy Education Practices

Kemmis and Grootenboer (2008) state that practices are composed of sayings, doings, and relatings that occur in particular sites amid particular arrangements in three kinds of intersubjective spaces:

- *Semantic space* (through shared language in which meanings are shared and mutual understanding is possible)
- *Physical space-time* (through shared locations in space and time in which interactions in shared activities and work are possible)
- *Social space* (in which shared encounters affording different kinds of relationships are possible) (Grootenboer and Edwards-Groves 2013)

In these spaces, people encounter one another (and things) through interaction and interrelationships (Kemmis et al. 2014a) in practices that are held in place or that *hang together* (Schatzki 2002) amid arrangements of three kinds – the practice architectures:

- *Cultural-discursive* arrangements found in a site (e.g., the technical language of finance that has particular meanings attributed to it in financial literacy education situations)
- *Material-economic* arrangements found in a site (e.g., how the resources are arranged in a community so that particular activities can occur)
- *Social-political* arrangements found in a site (e.g., how individuals relate to financial institutions or to one another)

In this way, practices constitute, and are constituted by, the particular language used, the particular activities that occur, and the particular relationships that form in the connections and interactions between the people and the objects in the site. These form the practice architectures of a practice – the characteristic arrangements that exist in a site (Kemmis and Grootenboer 2008). Moreover, Kemmis et al. (2014b) outline what good critical participatory action research practices involve. Although this chapter does not specifically discuss critical participatory action research, the understanding of practice and the practice architectures that enable and constrain financial literacy education are important to comprehend. The authors state that regarding sayings and cultural-discursive arrangements, it is important to ask whether the sayings and arrangements are "rationale and reasonable." This question ensures that individuals' ideas are "comprehensible, coherent, accurate, sincerely stated (not deceptive), and morally right and appropriate" (Kemmis et al. 2014b, p. 82). Regarding the doings and the material-economic arrangements, it is also important to ask whether the actions and arrangements are "productive and sustainable." This question is tied to ensuring that outcomes are benefitting the people concerned without causing harm and without wasting valuable resources. Determining whether the relatings and social-political arrangements are "just

and inclusive" is about ensuring that power relationships are managed to ensure oppression is not occurring and that solidarity is being fostered.

What is required to move away from the current understanding of the concept of financial literacy being about transmitting knowledge to an understanding that encourages motivating individuals to seek financial information and engage with it is critical (Sawatzki and Zmood 2018). Moving toward reasonable, just, and sustainable financial literacy education practices may require a shift from a curriculum steeped in White middle-class values that have the potential to marginalize already vulnerable individuals (Blue and Pinto 2017) and an acknowledgment that although education may shape values, only a reasonable income can influence an individual's ability to save (Anderson and Nevitte 2006).

## Implications for Reasonable, Just, and Sustainable Financial Literacy Education Practices

More socially just ways of teaching financial literacy will involve determining whether the sayings and cultural-discursive arrangements are "rationale and reasonable." Concepts of financial literacy that align with the acquisition of financial skills and knowledge to achieve financial well-being fail the "rationale and reasonable" test because financial well-being is only achieved by a small group of individuals and learning about finances does not equate to acquiring money. Whether financial literacy education practices are productive and sustainable requires that participants benefit from the teachings without causing harm (e.g., blaming oneself for their financial circumstances) and are able to operate in sustainable ways, such as with resources developed in a specific site, for and with individuals from that site. Just and inclusive financial literacy education practices will ensure that good financial outcomes are achieved not only by White middle-class participants but also those from disadvantaged backgrounds. Thus, compassionate approaches to education (see Lucey et al. 2015) are advocated to move toward more reasonable, just, and sustainable financial literacy education practices where educators enact praxis.

Generic and conventional approaches to financial literacy education seem particularly problematic in sites of poverty and disadvantage, particularly where it is not easy to change your circumstances (e.g., take on a higher-paying job). Importantly, recognizing that financial literacy education is not the solution to poverty informs the practice of financial literacy education by shifting the focus of curriculum to achievable aims and outcomes. Understanding what financial literacy education can and cannot achieve is the moral and ethical aspect of teaching and learning financial literacy education. Indeed, enacting praxis in financial literacy education acknowledges the structural and systemic inequities that are present in society and having conversations about social problems and hidden injustices, accepting that conventional definitions of financial literacy are lacking and that financial literacy education needs to be developed with community rather than for community.

Financial literacy education that is reasonable, just, and sustainable involves acknowledging the structural and systemic inequities that exist in society. It also involves understanding who benefits from a capitalist economic system and who suffers, that is, that some individuals will obtain great wealth and others will face poverty – such a system guarantees these two extremes (Arthur 2012). Thus, exposing the financial realities – particularly those, for example, that Indigenous people face when seeking equity from their homes on the reservation – begins to unmask the different playing field and the financial struggles that many Indigenous people continue to face. The importance of site-based education (Kemmis et al. 2014a) with participants is viewed as a more sustainable approach rather than the current fly-in and fly-out model.

Many researchers have also argued that there is no "one-size-fits-all" approach to education, and each site has specific circumstances and conditions (Kemmis et al. 2014a). Therefore, the move to more sustainable financial literacy

education practices involves responding to the specific demands of the site – what Kemmis et al. (2014a) refer to as "site-based education development". This is "when educators think together about how best to do this, in a particular school, for particular students and a particular community, they are engaging in site based education development" (p. 212). This is an important aspect to emphasize, particularly because the generalized "best practice" notions of financial literacy education have been ineffective and even damaging in the past.

One way forward for financial literacy education for adults begins by understanding the nature of the site and their needs. This type of familiarity with the site and needs of the individuals is not something that can be gained with a one-size-fits-all approach as used in current externally designed generic approaches. Realizing the harsh realities that many Indigenous people continue to face, such as lower life expectancies, means that a focus on saving for retirement, when many family members do not live long enough to reach retirement, seems pointless. The cycle of lower education levels for children often results in lower salaries when they reach adulthood and start their own families. With limited opportunities for employment for some individuals, including Indigenous people living in remote communities where a high reliance on social assistance may be experienced, the difficulties in changing their financial circumstances without leaving their community must be understood. Therefore, going forward, the need to enact praxis in financial literacy education may require aligning financial content based on the participants' needs and the financial dilemmas they are facing. The importance of using mathematical knowledge to assist with computing financial outcomes to the financial dilemmas individuals are facing may also be a useful aspect of tailored financial literacy education. Enacting praxis in financial literacy education must acknowledge the social and structural inequities that exist in society or praxis will not be enacted. Failing to enact praxis means that financial literacy education will continue to be of little relevance to those who need it most.

## References


Anderson CL, Nevitte N (2006) Teach your children well: values of thift and savings. J Econ Psychol 27:247–261

Anderssen E (1988) Canada's squalid secret: life on native reserves. The Globe and Mail, October 12

Arthur C (2012) Financial literacy education for citizens: what kind of responsibility, equality and engagement? Citizenship Soc Econ Educ 11(3): 163–176

Australian Curriculum (2017) Mathematics curriculum: money and financial mathematics. Available at http://www.australiancurriculum.edu.au/mathematics/curriculum/f-10?layout=1#level9

Australian Securities and Investments Commission (ASIC) (2011) National financial literacy strategy. Report 229. Australian Securities and Investments Commission, Sydney

Blue LE (2016) Exploring the financial literacy education practices in a Canadian Aboriginal community: a case study. PhD dissertation, Griffith University

Blue LE, Pinto LE (2017) Other ways of being: challenging dominant financial literacy discourses in Aboriginal context. Aust Educ Res 44(1):55–70. https://doi.org/10.1007/s13384-017-0226-y

Blue LE, Grootenboer PJ, Brimble MA (2014) Financial literacy education curriculum: missing the mark or making the grade. Int J Econ Educ 16:51–62. https://doi.org/10.1016/j.iree.2014.07.005

Bowles P, Ajit D, Dempsey K et al (2011) Urban Aboriginal use of fringe financial institutions: survey evidence from Prince George, British Columbia. J Socio-Econ 40(6):895

Bradley D, Noonan P, Nugent H et al (2008) Review of Australian Higher Education final report. Available at https://www.mq.edu.au/__data/assets/pdf_file/0013/135310/bradley_review_of_australian_higher_education.pdf

Bynner J, Parsons S (2006) New light on literacy and numeracy. National Research and Development Centre for Adult Literacy and Numeracy, London

Collins D (2011) Aboriginal financial literacy in Canada. Issues and direction. Research paper prepared for the Taskforce on Financial Literacy, February 9

Council of Australian Governments (2008) National numeracy review report. Available at http://www.coag.gov.au/sites/default/files/national_numeracy_review.pdf. Accessed 13 January 2014

D'Ambrosio U (2007) Peace, social justice and ethnomathematics. In: Sriraman B (ed) with Moreno-Armella L, Mukhopadhyay S, Steinthrsdóttir OB (associate eds) The Montana mathematics enthusiast, international perspectives on social justice in mathematics education. Monograph 1, pp 25–34. https://www.researchgate.net/profile/Bharath_Sriraman/publication/239810004_Social_JuStice_and_MatheMaticS_education/links/59ca71600f7e9bbfdc36a625/Social-JuStice-and-MatheMaticS-education.pdf#page=33

Geiger V, Forgasz H, Goos M (2015) A critical orientation to numeracy across the curriculum. ZDM 47:611–624. https://doi.org/10.1007/s11858-014-0648-1
Gerrans P, Clark-Murphy M, Truscott K (2009) Financial literacy and superannuation awareness of indigenous Australians: pilot study results. Aust J Soc Issues 44 (4):417–439
Goos M, Dole S, Geiger V (2011) Improving numeracy education in rural schools: a professional development approach. Math Educ Res J 23(2):129–148
Grohmann A, Kouwenberg R, Menkhoff L (2015) Childhood roots of financial literacy. J Econ Psychol 51:114–133
Grootenboer P (2013) Praxis and mathematics education. Pedagog Cult Soc 21(2):321–342
Grootenboer P, Edwards-Groves C (2013) Mathematics education as a practice: a theoretical position. Mathematics Education Research Group of Australasia
Grootenboer P, Edwards-Groves C (2014) Mathematics teaching as praxis. In: Anderson J, Cavanagh M, Prescott A (eds) Curriculum in focus: research guided practice. Proceedings of the 37th annual conference of the Mathematics Education Research Group of Australasia. MERGA, Sydney, pp 271–278
Haiven M (2017) The uses of financial literacy. Financialization, the racial imagination, and the unpayable debts of settler colonialism. Cult Polit 13(3):348–369
Huston SJ (2010) Measuring financial literacy. J Consum Aff 44(2):296–316. https://doi.org/10.1111/j.1745-6606.2010.01170.x
Ivanova I, Klein S (2014) Working for a living wage. Retrieved from https://www.policyalternatives.ca/sites/default/files/uploads/publications/BC%20Office/2014/04/CCPA-BC_Living_Wage_update_2014_revMay16.pdf
Jablonka E, Gellert U (2012) Potentials, pitfalls, and discriminations. In: Skovsmose O, Greer B (eds) Opening the cage. Critique and politics of mathematics education. Sense Publishers, Rotterdam, pp 287–307. https://doi.org/10.1007/978-94-6091-808-7_15
Kemmis S (2008) Praxis and practice architectures in mathematics education. In: Goos M, Brown R, Makar K (eds) Navigating currents and charting directions. Proceedings of the 31st annual conference of the mathematics education research Group of Australasia. MERGA, Brisbane, pp 17–28
Kemmis S, Grootenboer P (2008) Situating praxis in practice: practice architectures and the cultural, social and material conditions for practice. Sense Publishers, Amsterdam
Kemmis S, Wilkinson J, Edwards-Groves C et al (2014a) Changing practices, changing education. Springer, Singapore
Kemmis S, McTaggart R, Nixon R (2014b) The action research planner. Doing critical participatory action research. Springer, Singapore
Lucey TA, Agnello MF, Laney JD (2015) A critically compassionate approach to financial literacy. Sense Publishing, Amsterdam
Lyons AC, Chang Y, Scherpf EM (2006) Translating financial education into behavior change for low-income populations. J Financ Couns Plan 17(2):27
Moreton-Robinson A (2015) The white possessive. In: Property, power and indigenous sovereignty. Minneapolis: The University of Minnesota Press
Munro M (1988) Housing wealth and inheritance. J Soc Policy 17(4):417–436
Organisation for Economic and Cooperative Development (OECD) (2012) PISA 2012 finanical literacy assessment framework. OECD Publishing, Paris
Organisation for Economic and Cooperative Development (OECD) (2013) Financial literacy framework in PISA 2012 assessment and analytical framework: mathematics, reading, science, problem solving and financial literacy. OECD Publishing, Paris. https://doi.org/10.1787/9789264190511-7-en
Organisation for Economic Cooperation and Development (OECD) (2015) PISA 2015 results (volume IV): students' financial literacy. OECD Publishing, Paris. https://doi.org/10.1787/9789264270282-en
Pasternak S (2015) How capitalism will save colonialism: the privatization of reserve lands in Canada. Antipode 47(1):179–196
Pinto LE (2009) Is financial literacy education the solution to credit crises? Our schools. Our Selves 18(4):123–133
Raffo C (2011) Barker's ecology of disadvantage and educational equity: issues of redistribution and recognition. J Educ Adm Hist 43(4):325–343
Sawatzki C (2013) Connecting social and mathematical thinking: the use of "real life" contexts. In: Proceedings of the 37th annual conference of the Mathematics Education Research Group of Australasia, Brisbane, vol 1. MERGA, Sydney, pp 557–564
Sawatzki C, Zmood S (2018) The case for teaching and learning about taxation and superannuation at school. A research review for the Australian Tax Office. Available via Australian Tax Office. https://www.ato.gov.au/uploadedFiles/Content/CR/downloads/university_canberra_research_review_final_report_23072018.pdf
Schatzki TR (2002) The site of the social: a philosophical exploration of the constitution of social life and change. The Pennsylvania State University, University Park
Steen LA (2001) Mathematics and numeracy: Two literacies, one language. The mathematics educator, 6(1), 10–16
United Nations (n.d.) Economic and social development. Available at https://www.un.org/development/desa/indigenouspeoples/mandated-areas1/economic-and-social-development.html
Urbis Keys Young (2006) Final report: confidential for National Indigenous Money Management Agenda (NIMMA) Indigenous Banking Reference Group. Prepared for Reconciliation Australia
Vowel C (2016) Indigenous writes: a guide to first nations, Metis and Inuit issues in Canada. Portage and Main, Winnipeg
Willis LE (2008) Against financial-literacy education. Iowa Law Rev 94(1):197–285
Zevenbergen R (2004) Technologizing numeracy: intergenerational differences in working mathematically in new times. Educ Stud Math 56(1):97–117

# Encyclopedia of the UN Sustainable Development Goals

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Walter Leal Filho

The problems related to the process of industrialization such as biodiversity depletion, climate change, and a worsening of health and living conditions, especially but not only in developing countries, intensify. Therefore, there is also an increasing need to search for integrated solutions to make development more sustainable. The current model of economic growth used by many countries is heavily based on the exploitation of natural resources, which is not viable. Evidence shows that a more careful, that is, a more sustainable, approach to the use of our limited resources is needed.

The United Nations has acknowledged the problem, and among other measures, it produced a set of documents at the UN Conference on Sustainable Development (Rio+20), held in Rio de Janeiro, Brazil, in 2012. In 2015, the UN General Assembly approved the "2030 Agenda for Sustainable Development." On January 1, 2016, the 17 Sustainable Development Goals (SDGs) of the Agenda officially came into force. These goals cover the three dimensions of sustainable development: economic growth, social inclusion, and environmental protection.

There are to date no comprehensive publications addressing the SDGs in an integrated way. Therefore, the Encyclopedia of the UN Sustainable Development Goals is being published. It encompasses 17 volumes, each devoted to one of the 17 SDGs.

More information about this series at https://www.springer.com/series/15893

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# Quality Education

With 76 Figures and 45 Tables

Springer

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# Series Preface

The United Nations General Assembly agreed and approved in September 2015 the document "2030 Agenda for Sustainable Development", which contains a set of measures aiming to balance economic progress and protection of the environment, while at the same time remain aware of the need to address the many disparities still seen between industrialised and developing countries.

The Agenda document consists of 17 Sustainable Development Goals (SDGs). These Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace, and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another. The 17 SDGs are:

SDG 1, placing an emphasis on ending all forms of extreme poverty.
SDG 2, which aims to end hunger and achieve food security with improved nutrition
SDG 3, focusing on ensuring healthy lives and promoting well-being for all
SDG 4, touches on one of the most important areas, namely inclusive and quality education
SDG 5, focusing on gender equality
SDG 6, which emphasises the need for clean water and sanitation
SDG 7, advocates the need for affordable and clean energy
SDG 8, sustaining inclusive and sustainable economic growth with productive and decent working conditions for all
SDG 9, which intends to foster industry, innovation, and infrastructure
SDG 10, being about reducing inequalities among countries
SDG 11, an attempt to ensure that human settlements and cities are inclusive, safe, resilient, and sustainable
SDG 12, with a focus on sustainable consumption and production patterns
SDG 13, with an emphasisis on the need for climate action
SDG 14, raises the need to preserve life below water, especially rivers and oceans
SDG 15, draws attention about the need for a greater care about life on land
SDG 16, which advocates peace, justice, and strong institutions

SDG 17, a cross-SDGs effort to foster the partnership for the goals and their delivery

The SDGs and their specific objectives are very complex. The mandate of the Encyclopedia of the UN Sustainable Development Goals is, therefore, to clarify and explain a wide range of terms associated with each SDG. It does so by gathering and presenting inputs provided by experts from across all areas of knowledge and from round the world, who explain each term and their implications, drawing also from the latest literature.

With 17 volumes and involving in excess of 1,500 authors and contributors, the Encyclopedia of the UN Sustainable Development Goals is the largest editorial project on sustainable development ever undertaken. We hope that this publication will be helpful in fostering a broader understanding of the SDGs, and that this process may inspire and support a wide range of initiatives aimed at their implementation, thus realising the "2030 Agenda for Sustainable Development".

Hamburg University of Applied Sciences Walter Leal Filho
Germany

# Volume Preface

The UN states that despite the considerable progress on education access and participation over the past years, around 262 million children and youth aged 6–17 are still out of school, and more than half of children and adolescents are not meeting minimum proficiency standards, especially in reading and mathematics.

Rapid technological changes present opportunities and challenges, but the learning environment, the capacities of teachers, and the quality of education have not fully kept pace. Refocused efforts are therefore needed, so as to improve learning outcomes for the full life cycle, especially for women, girls, and marginalized people in vulnerable settings, helping to address inequalities and helping to reduce poverty.

Progress in fostering quality education is characterized by many challenges, especially in developing countries due to high levels of poverty, the existence of armed conflicts, and other emergencies. In Western Asia and North Africa, for instance, ongoing armed conflicts, extreme events, and poor governance have resulted in an increase in the proportion of children out of school. This is a worrying trend.

Quality education and the promotion of lifelong learning opportunities can lead to improvements in socioeconomic conditions and quality of life. If duly implemented, they may help to reduce the current and future economic and social burdens posed by lack of education and help to reduce poverty.

As the UN argues, achieving inclusive and quality education for all reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. SDG4 intends to ensure that all girls and boys complete free primary and secondary schooling by 2030. It also aims to provide equal access to affordable vocational training and to eliminate gender and wealth disparities with the aim of achieving universal access to a quality higher education. Therefore, it is important that due emphasis is given to inclusive and equitable quality education.

The SDGs as a whole and SDG4 in particular provide a new opportunity and offer a new impulse to bring quality education and the promotion of lifelong learning opportunities more centrally to the international debate.

Consistent with this aim, this volume of the Encyclopedia of the UNSDGs focuses on quality education and the promotion of lifelong learning opportunities. The many contributions provided by the authors shed light into the many variables, which are part of the global discourse on quality education and

the role of lifelong learning, and clarify many terms and concepts associated with it.

With this volume, we hope to be fostering the capacity to work towards more quality education and the further promotion of lifelong learning opportunities, in both rich and in developing countries as well as on small island developing states, with due considerations to women, young people, and marginalized population groups.

We also hope that the contributions in this volume will provide a timely support towards the implementation of SDG4 and will support the global efforts towards fostering quality education and the promotion of lifelong learning opportunities.

February 2020

Walter Leal Filho
Anabela Marisa Azul
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# List of Topics

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**Walter Leal Filho** (B.Sc., Ph.D., D.Sc., D.Phil., D.L., D.Litt., D.Ed.) is Professor and Director of the European School of Sustainability Science and Research, whose Headquarters are at the Hamburg University of Applied Sciences in Germany. He also holds the Chair of Environment and Technology at Manchester Metropolitan University, UK. He is founding editor of the *International Journal of Sustainability in Higher Education* and heads the Inter-University Sustainable Development Research Programme (IUSDRP), the world's largest network of universities engaged on sustainable development research. He is also Editor-in-Chief of the World Sustainable Development series with Springer. Prof. Walter Leal serves on the editorial board of various journals. He has in excess of 400 publications to his credit, among which are groundbreaking books such as *Universities as Living Labs for Sustainable Development: Supporting the Implementation of the Sustainable Development Goals*, *Social Responsibility and Sustainability*, and *Handbook of Sustainability Science and Research*. He has nearly 30 years of field experience in project management and has a particular interest in the connections between sustainability, climate change adaptation, and human behavior.

**Anabela Marisa Azul** is a Researcher at the Center for Neuroscience and Cell Biology (CNC) and Institute for Interdisciplinary Research of the University of Coimbra (III-UC, Portugal). She graduated in Biology at the UC, where she completed her Ph.D. degree in Biology, specialization in Ecology, with a collaboration of Ludwig-Maximilians-Universität München (LMU, München, Germany). She became an Associate Researchers (Ciência 2009) at the Centre for Functional Ecology (CFE-UC), where she remained until 2014. Here, she developed a holistic approach for advancing translational research that combined the sustainable development with innovation in food production and public scientific awareness (from early childhood). She currently is interested in functional attributes of fungi in the domain of metabolism, aging, and disease and approaches for knowledge coproduction in metabolism and sustainability research. She has coauthored over 40 scientific publications and book chapters, four books for children, two comics, and an animation.

**Luciana Brandli** Ph.D., is an Associate Professor at the University of Passo Fundo, Brazil, working in the Ph.D. Program in Civil and Environmental Engineering. Her current research interests include sustainability in higher education and green campus, management of urban infrastructure and sustainable cities, and the Agenda 2030 for Sustainable Development. She supervises a number of master's and doctoral students on engineering, environment, and sustainability issues and has in excess of 300 publications, including books, book chapters, and papers in refereed journals.

**Pinar Gökçin Özuyar** is a member of Faculty of Economics, Administrative and Social Sciences at Istinye University, Istanbul, Turkey. She received her B.S. degree in Environmental Engineering from Istanbul Technical University in 1992 and M.S. and Ph.D. degrees from Bogazici University Institute of Environmental Sciences, Istanbul, Turkey. Her Ph.D. thesis was based on the "Thermodynamic Analysis of Treatment Plants for Producing Energy from Solid Waste," which she conducted in Germany with a joint scholarship

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Defining herself as a pracademic, she has more than 25 years of experience not only in academia but also in private sector working on environment and sector-specific activities in Turkey and Dubai (UAE). She has extensive expertise specifically in environmental auditing according to World Bank standards, which is required for international financing especially during company M&As and greenfield projects. Working over the years in projects involving different stakeholder groups with different priorities, she has the proven capacity for establishing a dialogue between such stakeholder groups. Although coming from a technical background, her academic work focuses on involving sustainable development into the strategies of corporations including higher academic institutions. Currently, she teaches and leads funded research on sustainability/sustainable development especially focusing on industrial ecology and regional development.

**Tony Wall** is Founder and Head of the International Centre for Thriving, a global-scale collaboration between business, arts, health, and education to deliver sustainable transformation for the common good. He is passionate about *thriving* and has published 200+ works, including articles in quartile 1 journals such as *The International Journal of Human Resource Management* and *Vocations and Learning*, as well as global policy reports for the *European Mentoring & Coaching Council* in Brussels. Overall, his leadership and international impact in these areas have attracted numerous accolades including the prestigious Advance-HE National Teaching Fellowship and three Santander International Research Excellence Awards.

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