Terminological “Communities”
A Conceptual Mapping of Scholarship Identified With Education’s “Global Turn”
Goren, Heela; Yemini, Miri; Maxwell, Claire; Blumenfeld-Lieberthal, Efrat

Published in:
Review of Research in Education

DOI:
10.3102/0091732X20909161

Publication date:
2020

Document version
Peer reviewed version

Citation for published version (APA):

TERMINOLOGICAL ‘COMMUNITIES’: A CONCEPTUAL MAPPING OF SCHOLARSHIP IDENTIFIED WITH EDUCATION’S ‘GLOBAL TURN’

Heela Goren, Institute of Education, University College London
Miri Yemini, Tel Aviv University
Claire Maxwell, University of Copenhagen
Efrat Blumenfeld-Lieberthal, Tel Aviv University
Abstract

This chapter presents an innovative, cross-disciplinary methodological approach to systematically reviewing and comparing large bodies of literature using big data, Natural Language Processing, network analysis, and supplementary qualitative analysis. The approach is demonstrated through an analysis of the literature surrounding four common concepts within the scholarship related to the global turn in education: 21st century skills, global citizenship, intercultural competencies, and cosmopolitan education. An analysis is made of each network representing the focal concepts. We also undertake a comparative analysis of topics appearing across the scholarship found on the different concepts. Through this analysis we highlight some benefits of the outlined methodology in identifying overarching themes across bodies of literature, locating differences in how topics are approached within the context of each concept, revealing blind-spots and caveats in specific areas of scholarship, and being able to outline distinctive characteristics of the literature related to each concept. Limitations and potential uses of the method are subsequently discussed. This review will be of use to researchers from any field, who are interested in novel methodological ways of unpacking and analyzing large bodies of knowledge, as well as scholars embarking on research related to the global turn in education, and finally, policy-makers looking to identify which concepts to utilize in their work in this area.
Introduction

Ongoing processes of globalization within education have significantly shaped the goals of schooling, leading to countries adopting a variety of internationalization strategies (Knight, 2004), as well its governance structures. This could be said to constitute the global turn in education, or what Mannion, Biesta, Priestly and Ross (2011) termed a ‘curricular global turn’. The global turn in education is more often associated with global governance and its effects on national policy (Meyer & Benavot, 2003), whereas the curricular aspects of it are most often associated with the introduction of new models of citizenship and an emphasis on skills that would prepare students to participate and succeed in a global society through schooling (Bamber, Bullivant, Clark, & Lundie, 2018; Mannion, Biesta, Priestly, & Ross, 2011; Van der Wende, 2007). Schooling now, more than ever, seeks to prepare students to take part in the ‘global competition’ for future education and employment destinations, participate in ‘global problem solving,’ and, broadly, be better equipped to face the challenges that globally connected contemporary societies must engage with (Dill, 2013; Reilly & Niens, 2014; Vidovich, 2004).

Both practitioners and the research literature refer to the multi-faceted manifestations of the global turn within schools as promoting ‘global citizenship education’ (GCE), teaching ‘21st-century skills,’ developing ‘intercultural competencies,’ and offering a ‘cosmopolitan education.’ These terms and some others (such as international mindedness, education for global competencies, education for world citizenship, education for world competencies and education for global consciousness) are all used synonymously in many cases (Caruana, 2014; Kerkhoff, 2017; Goren and Yemini, 2017). Policy-makers and scholars take into account different contextual factors when choosing which to employ, but rarely present or justify how this decision is made. Thus, the meanings associated with each term within the context being studied are often unclear and why a particular term has been chosen over another not articulated.

The terms that are adopted differ somewhat. There are those that relate to the curricular aspects of the global turn (e.g. global citizenship education, education for intercultural skills, education for global competence, cosmopolitan education and education for 21st century skills), while others are more prevalent in discussions of the global turn in education governance (e.g. global education governance, internationalization, policy borrowing). Meanwhile, in the literature we also find terms that are arguably too broad or too specific (e.g. multiculturalism, digital literacy). Such a situation means when reviewing the literature or analyzing policy produced there can be
challenges in having a consistent set of terms to compare across, or concepts appear to overlap with one another. To this end, we propose a method that will enable us to navigate these large bodies of knowledge in order to identifying trends in the field and understand how and when different terms are used.

Thus, this chapter has two objectives. First to outline a new approach for reviewing large bodies of literature using an innovative, inter-disciplinary methodology integrating the use of Big Data, artificial intelligence (AI) in the form of natural language processing (NLP), and network analysis, alongside qualitative data analysis. Second, we offer a comprehensive analysis of the literature related to the curricular aspects of the global turn in education, which scholars and policymakers can draw on to more carefully situate their work and link their contributions to previous research. We focus on the scholarship related to curricular aspects of the global turn in education rather than work on global governance structures in this chapter, because the similarities between the common terms that demonstrate curricular responses to global processes enable us to better demonstrate the advantages of the comparative aspects of our methodology. In our analysis we focus on the academic scholarship surrounding four concepts that are commonly used in the research on the curricular aspects of the global turn in education (Mannion, Biesta, Priestley & Ross, 2011): 21st century skills, GCE, education for intercultural competence, and cosmopolitan education. Our methodological approach enables us to identify the central foci of research within each of these four concepts and to, critically, demonstrate their inter-relationships. We do this by identifying the topics that are common in the academic scholarship surrounding each of the four concepts for which data were collected, and then qualitatively examining the relationship between the concepts themselves. Through this process we were able to identify some distinctive trends within, and characteristics of, the literature surrounding each of the concepts, as well as capture the overarching themes that are present in each of the networks and that are shared across all or some of them. We conclude by proposing how the methodology presented here could be employed by scholars embarking on research in complex fields, in order to identify core terms, caveats, and strands of research across large bodies of literature both individually, when looking at the literature surrounding a single concept and comparatively, when examining a broader field.
Methods

Our method (developed by Blumenfeld-Lieberthal, Serok, & Milner, 2017 and partially implemented in Yemini, Tibbitts, & Goren, 2019) is based on several stages; namely, data collection, NLP analysis, network creation, network visualization, and supplementary qualitative analysis (See Figure 1 for overview). The main novelty in the methodology described in this chapter is that it is used comparatively, to examine a several bodies of knowledge, in a way that can provide insights that would be difficult to obtain through other methods of systematic review. While other methods that involve NLP use the frequency of words, entities, and phrases, our method is based on identifying the topics each paper is engaged with based on a comparison of the papers to other, categorized texts. Additionally, it presents a hierarchy of these topics, based on the extent with which they appear within individual papers and within these large bodies of literature, thus providing ground for a more nuanced analysis.

Data Collection

We used one of the three largest databases for peer-reviewed education research, the Education Resources Information Center (ERIC), to screen academic peer-reviewed papers published in the last five years, concentrating on each of the four concepts included in our analysis: GCE (N=226), 21st century skills (N=168), intercultural competencies (N=191), and cosmopolitan education (N=159). The data-collection process followed Fink’s (2010) guidelines for systematic reviews, which emphasize rigor and reproducibility. First, we created a list of concepts associated with the global turn through our previous large scale reviews concerning GCE (Goren & Yemini, 2017; Yemini, Tibbitts, & Goren, 2019) and other books and reviews of scholarship related to global education and the global turn (i.e Chu, Reynolds, Tavares, Notari, & Lee, 2017; Meyer & Benavot, 2003). This list of concepts included (in addition to the final four that we address throughout the review) concepts such as internationalization, global governance, digital literacy, multiculturalism, education for world citizenship, education for world competencies and education for global consciousness. As the first three authors are experienced scholars in this field, we conversed until consensus was reached regarding eight concepts (which we later cut down to four) that we agreed had enough characteristics in common to be examined in a comparative manner: global citizenship education, cosmopolitan education, education for intercultural competencies, 21st century skills education, education for global competencies, education for world citizenship, education for world
competencies and education for global consciousness. To avoid making conjectures based on small cohorts of articles, we decided to include only search terms (concepts) that yielded at least 100 results, thus resulting in the four selected terms (GCE, 21st century skills, intercultural competencies, and cosmopolitan education). Underlying our strategy is the assumption that terms that yielded more results are more commonly agreed upon as encapsulating the ideas being worked on within the scholarly community.

The searches were all performed as follows: the concept (with an asterisk for those with different forms such as cosmopolit* to include cosmopolitan and cosmopolitanism) + education; and limited to results published in peer-reviewed journals between 2014 and 2018 (the last five years). We created a separate database for each key term and downloaded all papers with an available full text. For papers that did not have an available full text file in ERIC, we searched google scholar and the UCL Explore databases to exhaust all options.

All authors then read the abstracts of the papers to review their relevance for the key term with which they were associated. We excluded papers that we agreed did not actually concentrate on the related key term; two examples of such exclusions are a paper that appeared in the search results for global citizenship education titled: “Improving Critical Thinking with Mobile Tools and Apps” (Lin, Widdall, & Ward, 2014), and one that appeared in the 21st century skills search results titled: “Playing in the Virtual Sandbox: Students’ Collaborative Practices in Minecraft” (Davis, Boss, & Meas, 2018). Neither of these papers included any meaningful discussion or conceptualizations related to their respective concepts (i.e definitions, references to relevant scholarship, elaboration on the contribution to the field of research surrounding the concept), so both were removed from the cohort. Following this inclusion/exclusion protocol, the cohort sizes were as follows: GCE, N=222; 21st century skills, N=145; intercultural competencies, N=188; and cosmopolitan education, N=159.

Key Terms

Due to the complexity of the methodology, in this section we identify and explain the key terms related to the approach to ensure clarity. First, the concepts we discuss in this paper are Intercultural competence, GCE, 21st century skills, and cosmopolitan education. The Network for each of these concepts is comprised of nodes, each of which represents a term that was identified and derived through the NLP analysis. The topics in the networks are connected by edges (which
we mostly refer to as *connections*), and the size of each term (node) is determined by its *weighted degree*—the sum of the weight of the edges connected to that node. In each network, there are different *communities*; these identify topics that are densely connected (i.e. frequently appeared in the same paper). The communities therefore represent strands of literature. In the network visualizations, nodes belonging to different communities appear in different colors. Finally, we refer to the *K-core* of each network, which represents the maximal sub-group of the network, in which all nodes are connected to at least k other nodes within this sub-group. In other words, this sub-network contains the topics that are mostly connected to one another, thus, illustrating the key, most central terms used by scholars to explore a specific concept.

**NLP Analysis and Network Creation**

Once we had assembled the database of all searchable articles, we followed the methodology developed by Blumenfeld-Lieberthal, Serok, & Milner (2017) to continue the analysis. First, we used the Open Calais software developed by Thomson Reuters, which utilizes machine learning and NLP-driven algorithms to derive topics (‘social tags’) from each of the individual articles in the cohort.

The full text of each paper in each cohort was run through the Open Calais program to extract the metadata of topics or ‘social tags’ representing the subjects comprising its content. The resulting list of topics for each paper (an average of 11 tags per paper) included words that represent the topics the paper addresses and were substantial enough for the software to identify.

While most NLP approaches use the frequency of the words in the text to identify the topics it deals with, Open Calais uses a different algorithm that compares the input text to other, categorized texts, and based on their similarity it determines the main topics of the text. In other words, the topic is identified through its resemblance to other texts that have been classified as engaged with the same topic rather than by the frequency of words that appear within it, or relying on keywords the authors selected for their paper.

Based on the above metadata, we used a co-word methodology (Chavalarias & Cointet, 2008) (i.e., linking papers through the co-occurrences of topics to create networks). This process

---

2 We do not address the NLP algorithm as it is beyond the scope of this work. However, we conducted a pilot study to verify the resulted topics match qualitative analysis.
resulted in a categorization scheme with nodes representing the topics, and links denoting co-appearances of two different topics in the same article. The weight of the links represents the number of times two different nodes (topics) appeared in the same article; in other words, the number of articles that were engaged with these two topics.

**Network Analysis**

Finally, we used the network visualization and exploration software Gephi\(^3\) to perform our analysis and visualize its results. To detect better-connected nodes that form communities within our networks (and depict topics that are more closely related to one another within the entire examined corpus), we used the Gephi embedded algorithm based on the Louvain Method (Blondel, Guillaume, Lambiotte, & Lefebvre, 2008) for community detection. The creation of a cluster or ‘community’ (as they are called throughout this chapter) indicates that the nodes in the same community (represented by the same color in the visualization), are densely linked to the other nodes in the community, and constitute a separate strand of literature. The size of each individual node in the visualization is a function of the number of links the term has and the number of times it appears in the dataset (when counted once per article). Thus, larger nodes indicate topics that appear in multiple articles with many other topics.

We omitted from the networks all nodes with a frequency smaller than 2 (i.e., nodes that appeared in only one paper), ensuring that we concentrated on the essential components and relationships in the network (Kumar, Novak, & Tomkins, 2010). This exclusion criterion led to the removal of some names of specific academic institutions and topics only related to a very unique aspect of a particular paper. For example, one paper in the cosmopolitan education network titled “Intersecting Scapes and New Millennium Identities in Language Learning” (Higgins, 2015) used a framework of cosmopolitanism to explore students’ engagement in ‘anime’ and ‘manga’ in an introductory university-level Japanese language classroom in Hawaii. Although the paper engages with the topics ‘anime’ and ‘manga’ enough for them to appear as tags, they are unique to its particular focus, and therefore were excluded from the analysis.

Nodes were also omitted if they included the search terms that the network was based on, to prevent them from overtaking the network by dictating the communities due to their high

---

\(^3\) https://gephi.org/users/tutorial-visualization/
frequencies. For example, the node Education was removed from all of the networks, in addition to its respective unique search terms (i.e. cosmopolitan*, global citizen*, intercultural skill*, 21st century skill*). In the next stage of the exclusion process, nodes that depicted topics that are very broad and had very high frequencies compared to the rest of the topics in each network were also removed; this includes topics such as Curricula, Curriculum, Teacher, Student, Culture, and Policy. These topics were removed across the networks because they are very broad and hence have co-appearances with many other topics hence rendering their appearance meaningless in a list of tags. For example, a word like culture could appear as a topic derived from over 90 percent of the articles in a cohort, thus making it appear very large in the visualization, but it’s appearance does not contribute to the analysis because it is so broad. Next, we removed all the nodes that were not part of the 'giant component' (i.e. the largest group of nodes connected to each other directly, or indirectly, that did not have edges connecting them to the rest of the network (meaning they were mentioned exclusively with each other).

After removing the excluded topics we calculated the network density for each of the networks (see Table 1). The network density represents the ratio between the existing and the possible links; i.e., the percentage of actual links out of all possible ones.

After analyzing the networks, we applied two different filters in Gephi, to reveal: (a) the ten topics with the highest closeness centrality in each network (meaning the nodes that are nearest, on average, to the largest number of other nodes); and (b) the K-core of each network, which includes only topics that were connected to the maximal number k of other nodes in this core. We accomplished the latter by means of the K-shell decomposition\(^4\) using the K-core filter in Gephi. The nodes that comprise the core are those that are most often mentioned together, indicating that they are at the center of discussions within the literature. Because an average of 11 topics appeared in each paper, a K-core of 11 or less in a network indicates that it does not have a strong core and the scholarship is scattered rather than centered on certain central topics.

**Supplementary Qualitative Analysis**

Due to the descriptive nature of the network analysis and visualizations, we supplemented the analysis using a deductive qualitative approach (Morse & Niehaus, 2009). This allowed us to

---

provide in-depth examples of the analysis for each of the communities in the networks, and, critically, to highlight the distinctive manifestations of the themes we found across all of the networks.

The qualitative analysis was performed as follows: Once we had established the networks, we used the databases created in the second stage (after the use of Open Calais), which included the key topics derived by the program for each article, so as to locate papers that had co-occurrences of topics that were linked in the network. We then read each of those papers fully to get a more nuanced sense of how the topics we were interested in were actually connected within the scholarship. Once we identified the themes that appeared across all of the networks, we once again searched the our databases to locate specific articles that were found by Open Calais to include two or more of the topics associated with each (qualitatively identified) theme. The analysis of these articles is used in this chapter to show the similarities and differences in the appearances of these themes in the context of the literature surrounding each concept, as we demonstrate later in this chapter,

**Limitations and Advantages of This Mixed-Methods Approach**

The approach we have outlined in this chapter (developed by Blumenfeld-Lieberthal, Serok, & Milner, 2017 and partly implemented in Yemini, Tibbitts, & Goren, 2019) provides an innovative way of creating an overview of academic fields and concepts, reveal research trajectories and strands, and, specifically through the developments presented in this chapter, comparatively examine the composition of large bodies of literature. Nonetheless, the approach has several limitations that must be taken into account both while reading this chapter and when undertaking similar research endeavors.

First, the use of NLP relies on AI that requires manual adjustments, thus introducing subjectivity to this mostly quantitative approach. One example of such subjectivity is the need to remove some broad topics that would overshadow and shape the network, as explained above; another example lies in the need to remove the search terms, leading to the keyword ‘citizenship’ being eliminated from the GCE network. These decisions shape the data in a way that should not be ignored, but they can be taken into account and therefore we argue the network still provides an accurate portrayal of the discussions found within it. For example, in the 21st century skills network, we removed the word ‘skills’ from the list of topics in the network- but this did not
preclude us from observing the specific types of skills that still appear in the network such as critical thinking and digital literacy.

Another limitation of the methodology is that the interpretations of links that appear in the networks is undertaken post-hoc, through focused searches for co-appearances of key-words in individual articles; this process includes sampling only some of the relevant articles and inferring some generalizations. For this reason, our interpretations of the network are carefully worded to point to possible explanations and trends rather than empirical claims. In addition, the NLP algorithm employed by Open Calais does not identify sentiment within the text, and as a result the network analysis is not sensitive to whether or not a concept is presented from a critical or non-critical standpoint.

Nevertheless, the combination we employed of the inductive and quantitative method of NLP and network analysis, supplemented by a deductive and qualitative search for explanations of connections, similarities, and differences that were too intricate to observe through the network analysis, provides a rounded and comprehensive picture that cannot be captured without such a mixed-method approach we argue.

Readers should take into account that the methodology we present here was tailored to fit the goals of our research, and as a result some potential uses of the methodology are not demonstrated here. For example, we did not create our database based on the journal in which each article was published, although this can be done and could provide valuable insights into the terminology and concepts employed by the different publication venues. We also did not divide the cohorts of articles into years, which we have previously done using this method (Yemini, Tibbitts, & Goren, 2019); doing this would have enabled a review of the scholarship’s evolution over time within each concept, but was determined to be beyond the scope of this chapter.

Findings

The analysis described above produced four networks (one for each concept), each of which is comprised of four communities that represent different strands of literature. In this section, we discuss the composition of the individual networks and their communities, offer some examples, and make interpretations of co-appearances of topics that we show to be connected in the networks. We then present some broad findings from our analysis of the full dataset and discuss themes that appeared across the networks. We highlight the distinct manifestations of the themes in each
network using examples from the relevant literature, and provide yet further insights about them by drawing on the analysis of the entire network.

Quantitative metrics and network cores

The number of nodes or topics that appeared in more than one article in each network was as follows: 21st century skills, 111; GCE, 140; cosmopolitan education, 110; intercultural competence, 66. The network density calculation also reflects this variance in that the intercultural competence network is the densest (0.137), indicating it has the highest ratio of potential to actual connections between topics. This distribution also suggests that the discussions in the literature surrounding this concept is slightly more consistent than the others with regard to the topics associated with it or used to describe it. Conversely, the GCE network density is the smallest (0.088), possibly indicating an opposite trend, whereby the GCE body of literature is more complex, with different papers often concentrating on discrete aspects or interpretations of the term.

The K-core values of the networks and the number of topics in each K-core provide some information about the networks’ composition (See Figure 2). As explained in the methodology section, the ‘coreness’ of the network is determined by the maximal number of connections in a sub-network where each node is connected to at least k other nodes. In other words, the K-core includes only the nodes that are mentioned together with all the other nodes in the core most often. By revealing the topics most often mentioned together across the network, the value of K also reveals the extent to which the scholarship is either focused or scattered; a K value that is lower than the average number of topics extracted from each article (11) points to a scattered discussion with relatively small number of connections between topics that appear in different papers. The value of n, further illuminates the nature of the discussion, as low values indicate the discussion is more focused around few topics that keep appearing together in different studies. The core of the network of the 21st century skills has the highest K-core value, (K=14, n=15 followed by GCE (K=11, n=26), cosmopolitan education (K=9, n=39), and intercultural competencies (K=7, n=30). This means that the scholarship surrounding 21st century skills is the most consistent and focused, whereas the discussion in the GCE scholarship, and even more-so that within cosmopolitan education and intercultural competence scholarship are more diverse and a larger number of disparate focal points can be identified within each of them. Accordingly, the values of n for these
last two concepts are the highest (which corresponds to their low K values, and reflects that many studies in these areas focus on topics that are markedly different).

We now turn to describe the results of the analysis for each of the bodies of literature we examined, highlighting the communities that emerged in each network and set out the core of each network. This demonstrates a central benefit of our methodological approach - the ability to identify strands of literature and key topics within large bodies of knowledge.

**21st century skills.**

The 21st century skills network shows four distinct communities that can be identified as follows: (1) problem solving and creativity; (2) teaching method and information technology; (3) active learning and project based learning (4) technology integration and science education.

The clearest observation that can be derived from this network relates to the pervasiveness of topics related to technology, ICTs, and digital literacy that are scattered throughout the communities in this network. These concepts are ubiquitous in the 21st century skills scholarship, with the literature evaluating and researching information literacy and new developments in E-learning options and technologies that now appear at the heart of many institutional attempts to promote this sort of learning and education.

Another distinctive characteristic of this network is the appearance of topics related to the OECD and digital literacy. The community which includes these topics demonstrates that the OECD and PISA, which have begun assessing 21st century skills and has taken a wide interest in their dissemination, are most commonly mentioned in tandem with topics related to technology and digital skills – even more often than they are mentioned alongside topics like assessment or any non-technological skills. This may indicate a certain inclination of these organizations to promote a particular type of 21st century student (Lucas, 2016; O’Leary, Scully, Karakolidis, & Pitsia, 2018). This tendency raises some questions about inequality between nations and within them in terms of the digital divide, a research concern which also appears in this community, and highlights the essential role that access to information plays in promoting 21st century skills (Scalise, 2016; Storksdieck, 2016; Terrazas-Arellanes, Strycker, Walden, & Gallard, 2017).

The 21st century skills network has a k-core value of 14 and contains 15 nodes. The core of this network boils down to two components: information literacy and technology, and forms of learning associated with 21st century skills. This finding suggests that the main skill associated
with 21st century skills in the scholarship is information literacy, which can be promoted through technology integration (also in this core). The appearance of the digital divide at the core of this network could indicate awareness in the scholarship of the inequality that could be amplified through some initiatives aimed at promoting 21st century skills; or, alternatively, a view of 21st century skills education as a way of mitigating the digital divide. The characteristics of this core suggests a focused core, in that most of the topics appear together in different studies.

Broadly, this network is characterized by its concrete nature; all of the communities are closely related to the skills, pedagogies and motives related to education for 21st century skills. These is also a noticeable presence of topics related to assessment scattered across the different communities, indicating that it plays a significant role in shaping and dictating the foci of the scholarship- perhaps limiting it in a sense to those aspects which could be said to be measured.

**cosmopolitan education.**

The analysis of the cosmopolitan education network reveals that it is multifaceted and complex, encompassing a broad variety of conceptions and associations for this term. The network reveals five communities: (1) cross-cultural studies and linguistics; (2) social philosophy and discrimination (3) critical theory and post-structuralism (4) politics and world government (5) student exchange and racism. The discussions pervasive in this network are the least focused of all the concept networks we present here, as demonstrated by the characteristics of its core and the variety of concepts within its communities.

The cosmopolitan education network analysis shows that the literature surrounding this concept is more likely to discuss and engage with issues of race, social place, social justice and inequality than the scholarship related to the other concepts we examined. This network ties the concept of cosmopolitanism to concepts such as intersectionality, cultural/social capital, neoliberalism, employment, and social inequality, pointing to a more critical approach that some scholars have taken (e.g., Hull & Stornaiuolo, 2014; Groves & O’Connor, 2016).

The cosmopolitan education network also included a variety of topics related to global citizenship, globalization, and governance. Cosmopolitanism and global citizenship are often mentioned synonymously, or in tandem, with GCE portrayed as a way to promote cosmopolitanism among students, and global citizenship portrayed as the outcome of cosmopolitan education (Coryell, Spencer, & Sehin, 2014). Internationalization of higher education also appears
in this network, indicating that the scholarship surrounding cosmopolitan education in relation to higher education commonly uses GCE as a term that expresses concrete strategies related to internationalization and skill development rather than abstract notions of closeness or empathy (Caruana, 2014; Moskal & Schweisfurth, 2018).

Narrowing the cosmopolitan education network to its core reveals that the discussion is scattered, as the k-core is 9 and it includes 39 nodes. The nodes that comprise the core belong to different communities and include student exchange and higher education from one community, over ten topics related to world government and global citizenship, two topics related to philosophy (social philosophy and Martha Nussbaum, a key scholar in the field), over ten topics connected to linguistics and language education, and finally five topics related to intercultural competence. As explained in the methodology, a k-core value under 11 (the average number of topics derived from each paper) points to the lack of a unified core or key topics that can be identified as essential throughout the scholarship.

This network reveals an interesting paradox about cosmopolitan education scholarship – that it can simultaneously be described as philosophical and broad, while at the same time attentive to contextual issues such as positionality and inequality. The core illuminates this finding by showing that the discussion is scattered rather than focused, suggesting these topics would be discussed across distinct strands of the literature.

**global citizenship education.**

Across the full cohort of GCE literature, the network analysis reveals four dominant communities in the research concerning GCE: (1) political philosophy and globalization; (2) critical pedagogy and alternative education; (3) environmental education and education for sustainable development; (4) literacy and critical literacy. These communities differ in their interconnectedness as well as their relationships with each other, as demonstrated by the density of topics within each community and the thickness of the connecting lines.

The first community centers around globalization and internationalization, but also includes cosmopolitanism – a disposition that is seen as synonymous with global citizenship or a desired outcome of GCE in many settings. This community also includes the term nationalism, often portrayed as a barrier to GCE or perceived as being at the opposite end of the spectrum (Fernekes, 2016; Rapoport, 2010). Global citizenship education appears to be a much more
politically charged concept than the other concepts we examined, encompassing topics like politics, world and global governance, neoliberalism, and social inequality. This community also includes topics related to intercultural competence and English as a second language. We infer several observations from the appearance of these topics in the same community. First, language (and specifically English) is often portrayed in the scholarship as a prerequisite for GCE, mirroring neoliberal trends (Aktas, Pitts, Richards, & Silova, 2017; Cho & Mosselson, 2018; Myers, 2016; Wang & Hoffman, 2016). Mastery of the English language is not a sub-set of skills, but rather a separate prerequisite for participation in the western-dominated global society. Furthermore, the inclusion of intercultural learning in this community rather than the community pertaining to pedagogies also indicates its distinctiveness as a different form or category of GCE, often driven by a rationale that concentrates on social cohesion in light of migration, for example, rather than the cultivation of forms of thinking and concrete skills associated with economically driven forms of global citizenship education. This type of rationale for GCE is well demonstrated by Engel’s (2014) analysis of the citizenship education reform in Spain, largely catalyzed by incoming migration. The appearance of human rights, global justice, right to asylum, and forced migration in this community indicate that these issues may appear as broad justifications for GCE, and conceptualized as byproducts of globalization. Articles that discuss human rights as key a concept within this body of literature are often somewhat critical or skeptical of GCE’s commitment to human rights education (HRE), discussing the complexity of the concept and how this might push ideas related to human rights aside (Fernekes, 2016; Monaghan & Spreen, 2016).

The third community in the GCE network points to a very distinct strand in the GCE scholarship devoted to the definitions and conceptions promoted by UNESCO, which until recently centered heavily on environmental education and education for sustainable development, but now also encompass peace education under the umbrella of GCE (Bamber, Bullivant, Glover, King, & McCann 2016; Bamber, Lewin & White, 2018; Mochizuki, 2016). The uniqueness of this community shows that these topics are often presented in a way that does not necessarily engage with other forms of GCE in any meaningful manner and is somewhat disconnected from the concrete skills, dispositions, and structures found in the other communities (Mochizuki, 2016). UNESCO’s recent integration of GCE into its 2030 SDGs bound the concepts of sustainable development and GCE together in a more meaningful way. However, these notions, our analysis shows, have already been referred to in tandem in the literature long before this (see Bamber et al.,
The centrality of these topics in the network is not surprising, as UNESCO’s SDGs have now become a driving force and central rationale in much of the GCE scholarship. Indeed, the distinctiveness of this community suggests that these topics are not dispersed throughout the literature and are more likely to appear together. The inter-relationships between the topics in this community shows the power that international and supra-national organizations like UNESCO can hold over academic scholarship, commandeering topics and shaping their meaning in a way that eventually makes them synonymous with the organizations themselves. This raises questions about the balance of power between these bodies and academia, challenging the extent to which NGOs and supra-national bodies engage with other academic conceptions when forming their agendas and the nexus of scholarship and practice (as discussed by VanderDussen Toukan, 2018).

The final community in this network connects GCE to literacy and critical literacy, which is also central to the discussions revealed in the 21st century skills network. This community includes scientific and digital literacy and the digital divide. This community points to a connection between the GCE scholarship and that of 21st century, which is more closely associated with the OECD than with UNESCO. The inclusion of the digital divide in this community points to a potential acknowledgement of the inequality of access, digital or otherwise, related to GCE in the scholarship (e.g., Goren & Yemini, 2017; Mikander, 2016).

The core of the GCE network consists of 26 nodes that come from only two communities and can be centered around two themes- pedagogy and globalization. The nodes related to pedagogy include transformative learning, critical pedagogy, service-learning and more; whereas the globalization related nodes consist of topics related to interculturalism (intercultural learning, education, competence, etc.), international education, and student exchange.

Overall, the GCE network reflects the breadth of definitions, antecedents, and outcomes associated with this concept (for a review see Oxley and Morris, 2013), and shows the relationships between these. The analysis also highlights the success of supranational organizations in shaping the scholarship surrounding this topic- suggesting that in the near future this network could undergo significant changes, as the work on such international organizations gathers pace.

intercultural competence.

The final concept we collected data for is intercultural competence. The network for this term posed some challenges, as many of the topics were directly related to the search terms, such as
competence, intercultural learning, intercultural communication and more. These topics were removed, leaving a network that is slightly less dense than the previous ones presented here, but that we still consider important and to accurately represent the main strands of literature in this field. The analysis reveals four strands: (1) critical pedagogy and experiential learning (2) international education and study abroad (3) language education and English as a second or foreign language (4) distance education and virtual exchange.

The analysis of this network points to a close relationship in the literature between language education and cross-cultural skills and understanding. More broadly, the community demonstrates an assumed connection between the ability to communicate with others as a prerequisite for such understanding (Lau, 2015; Toyoda, 2016).

This network also includes topics related to internationalization and cultural exchange pointing to a strand of the literature on intercultural competence which presents international students and student exchanges as providing opportunities for multicultural experiences at home and abroad (Morales, 2017; Schartner, 2016), while critical works challenge the efficacy of these types of interventions (Almeida, Fantini, Simões, & Costa, 2016; Nguyen, 2017).

The core of the intercultural skills network has k=7 and includes 30 nodes (that represent 36% of the entire network). This suggests a highly dispersed set of discussions within this concept across the research. There are two main communities that constitute the core, with topics related to critical pedagogy and leaning, and language education. It also includes four topics from other communities: student exchange (from the international education and study abroad community), and three items from the virtual exchange community (virtual exchange, videotelephony, and computer mediated communication). This suggests that the scholarship surrounding education for intercultural competence is highly oriented towards the assumption that linguistics and speaking the same language as others (or a variety of languages) lie at the heart of this type of education. It also seems to emphasize different forms of pedagogy and learning as ways to accomplish or promote intercultural skills. Additionally, technology, which also appears at the core of the 21st century skills network, is presented in the literature as an important aspect of enabling or facilitating education for intercultural competence, but the technology related topics at the core of this network show that scholarly portrayals of technology within this field are limited to ways of facilitating communication, unlike in the 21st century skills network and scholarship, where mastering the use of technology is portrayed an essential skill students need to acquire in order to
compete in the global work force, and the literature most often reflects this through terms such as digital and information literacy (alongside employability, a term unique to the 21st century skills network).

This network is unique in that it suggests that the literature almost exclusively engages with intercultural competencies as an outcome rather than a means for promoting goals such as tolerance, peace, or social cohesion. This is demonstrated by the fact that each of the communities centers around ways to facilitate the acquisition or development of these competencies (through technology, through language education, through international exchange programs, and through different forms of learning and pedagogy). Although the 21st century skills network could also be said to reflect a similar pattern, the latter consists of more topics related to outcomes such as employability and digital literacy.

The Scholarly Landscape of the Curricular Global Turn- Examining Thematic Overlap

After collecting the data for each of the networks, we combined the data (without removing the original search terms) into one network, that reveals the relationships between the different concepts and their relative importance in the scholarship surrounding education’s global turn (see Figure 3). When dividing the entire database into four communities (using the relevant resolution in the Louvain algorithm), we expected to find four communities that correspond to our four concepts- but this was not the case. The analysis of the full database reveals that the GCE and cosmopolitanism scholarships are quite similar in their foci and share enough connections to be integrated into a single community. It also reveals the opposite about interculturalism (and intercultural competence by association) and 21st century skills, each of which constitute a distinctive body of knowledge as suggested by their separate communities. Finally, a fourth community in this network is composed only of topics related to linguistics.

To elaborate, because data selection was performed using the same methodology for all the topics combined (rather than separated by concept), the topography of these communities cannot be attributed to the data selection process. As for the communities – the Louvain algorithm we applied through Gephi identifies nodes that are highly connected to one another. The resultant communities suggest that for GCE and cosmopolitanism – the papers that contained these topics had other topics in common as well. Thus, they were joined into a single community. For interculturalism and 21st century skills – the fact they were could not be united into one community
suggests that papers that address these topics address other similar topics as well. In other words, each of these topics had enough unique topics that did not appear in other communities and therefore, they formed separate communities. Of the 46 topics that form the core of the full network, 30 belong to the community of topics that encompasses GCE and cosmopolitan education, and 13 to the community of topics related to intercultural competence, while the other communities (21st century skills and language education) are nearly absent (three terms altogether). This could be indicative of the relative importance of these topics in the scholarship related to education’s global turn. The absence of 21st century skills from this core corresponds with the focused core of the 21st century skills network, which indicates that all the topics in the core are very likely to appear together in the same article. It is possible that these topics are unique to the 21st century skills scholarship, and not engaged with in relation to the other concepts we examined.

The analysis of the full network enables a large-scale overview which sheds light on many of the findings from the individual concept networks and introduces some further insights; it allows us to place topics and themes that appeared across the networks together and to reveal which of these are most closely connected to one another. This facilitates the unveiling of the topics that stand at the core of the scholarship within this broad area.

Across the individual concept networks, some communities appeared to be very similar, comprised of occasionally differing topics but that could be organized around the same theme. We choose to elaborate here on the four most prominent of these themes, in order to analyze how the conceptual context can shape the way that topics are utilized in different bodies of literature. The analysis of our full database (encompassing all the concepts) helps organize and catalogue the topics most likely to be associated with one another. The themes we will elaborate on are: language learning, inequality, and technology. These themes were derived qualitatively, by looking for topics that could be organized around the same concept in the individual networks, their highest rated topics (closeness centrality) and cores, and at the entire network.

**language learning.**

Language learning and a variety of related topics appeared in all of the networks we produced and analyzed. In the GCE network, ‘English as a second language’ and ‘language education’ appear as topics embedded within in a broad community pertaining to globalization and internationalization, although the term ‘English language learner’ is also present within the network core. This finding
suggests that language, and specifically the English language, is a key part of how GCE is portrayed in the scholarship. Ahn (2015), for example, discusses the immense pressures South Korean parents face in taking responsibility for their children’s English language learning as part of an assumption that it is crucial for participation in global society and global citizenship. The policy and teacher-training materials Ahn analyses widely support the claim that whereas other skills or dispositions are required for one to become a global citizen, knowledge of the English language is not a sub-set of skills but rather a separate prerequisite for participation in the western-dominated global society.

In the 21st century skills network, the appearance of language education and related topics implies that language acquisition is considered a 21st century skill in itself (much like it is a prerequisite for GCE); but more importantly, the key position of language education indicates that language classes and programs can be effective platforms for 21st century skill learning. This finding aligns with those of Ashraf, Ahmadi, and Hosseinia’s (2017) study on the effectiveness of 21st century skills integration within English classroom teaching in Iran.

A similar account of language classrooms as a platform arises from a close examination of the articles that comprise the intercultural competence network (e.g., Truong & Tran, 2014; Toyoda, 2017). The appearance of language acquisition at the core of this network described in the previous section indicates that the literature depicts the ability to communicate with others as the bedrock for the development of intercultural competencies. In a more critical piece, Kubota (2016) presents the social imagery of the study abroad experience and warns against the neoliberal assumptions embedded within it, arguing that language learning and cultural competence in these contexts are unidirectional and reinforce the idea that those coming from non-western countries are the ones who must make allowances and changes.

Finally, in the cosmopolitan education network, language education appears in a community with topics such as neocolonialism and critical theory, suggesting that these matters are discussed in the scholarship with regard to the implications of viewing English as the natural international language and a prerequisite for cosmopolitan participation (see Groves & O’Connor, 2016). The cosmopolitan education network also includes articles that refer to languages other than English as forms of cosmopolitan capital, not only in English speaking countries, and not necessarily from a critical standpoint. For example, Yemini (2014) showed in a qualitative study of Israeli parents that those whose children studied French as a foreign language in schools
explained this choice in terms of cosmopolitan capital, as opposed to parents of students who studied Arabic, who explained the choice in pragmatic and ideological terms.

The analysis of the full network shows that topics related to linguistics form a separate community, indicating that they are indeed scattered throughout the literature in a way that cannot be said to be more closely tied to one concept or another. When the full network is reduced to its core, only language education and English as a second or foreign language remain from this community, showing these topics are most central to the scholarship we examined (i.e the whole database).

inequality.

Social inequality is a theme that appeared in each of the networks except in the intercultural competence network. In the cosmopolitan education network, a full community of topics related to social inequality emerged, as well as topics related to social positionality, such as gender, intersectionality, and discrimination. This finding appears to point to some critical approaches to studying cosmopolitanism. This community reveals a connection between cosmopolitan education and cultural/social capital, neoliberalism, employment, and social inequality that are indicative of a critical strand of literature that emphasizes the inequalities embedded in understandings of and access to cosmopolitan education, which is often associated with privileged groups (Groves & O’Connor, 2016).

In the GCE network, social inequality appears in the community related to political philosophy and globalization, as do global justice, white privilege, and neoliberalism; the latter of which is often associated with the expansion of inequality in the context of GCE (Friedman, 2018). The digital divide also emerged as a term in this network, as did social capital, pointing to a critical strand of literature that highlights issues of access to, and provision of, GCE and problematizes its perception as a one-size-fits-all approach to accommodating or implementing internationalization related aspects of the global turn in education (Reynolds, 2015).

In the 21st century skills network, social inequality does not appear explicitly, although the appearance of segregation and the digital divide imply that the literature addresses this theme in other ways. Mathews and Landorf (2016) discuss the digital divide as one of the main criticisms of massive open online courses (MOOCs), which are presented in the literature as a key platform for learning and teaching 21st century skills.
Finally, inequality and related topics do not appear in the intercultural competence network at all, indicating certain neutrality or, we might suggest, blind-spot in the literature to issues of social justice that might be associated with disparities in access to intercultural competence education among members of different social groups.

In the analysis of the full network, topics related to inequality appear mostly in the community that comprises topics connected to global citizenship and cosmopolitanism, as our qualitative analysis also shows. One exception is the digital divide, which appears in the 21st century skills community alongside many other technology-related topics. No topics related to inequality appear at the core of the full network, indicating that inequality appears to be peripheral to the scholarship surrounding the curricular global turn in education.

**technology.**

Technology in general and information and communication technologies (ICTs) specifically, appeared in all of the networks apart from cosmopolitan education. The 21st century skills network involves more topics related to technology than the other networks, including computing, digital literacy, and others. Many articles in this cohort discuss technological proficiency and information literacy as key skills required of 21st century learners (e.g., Byker & Marquardt, 2016; Ruggiero & Mong, 2015; Scalise, 2016). Others discuss technology integration in the assessment of 21st century skills, comprising another strand of research that emerged from the network analysis (e.g., O’Leary, Scully, Karakolidis & Pitsia, 2018).

In the GCE and intercultural competencies networks, topics related to technology and ICTs appear alongside and among topics related to 21st century skills and to intercultural experiences. Technological ways of facilitating communication across cultures and exposure to the world in a variety of ways comprise the majority of instances of this topic’s appearance within these two conceptual bodies of literature (e.g., Gardner-McTaggart & Palmer, 2018; Krutka & Carano, 2016).

The absence of topics related to technology in the cosmopolitan education network could suggest that this body of literature is more theoretical than others, and that cosmopolitanism is presented in the literature as a disposition that is attained through actual (rather than virtual) international experiences. This approach is reflected, for example, in Groves and O’Connor’s (2016) study of western expatriates’ school choices in Hong Kong. As would be expected,
technology and related topics are located in the 21st century skills community in the full network analysis, but are not a part of the network’s core, suggesting that discussions of technology are currently still quite peripheral in the scholarship surrounding the skills related to the curricular global turn in education.

**Concluding Remarks**

The main contribution of this chapter lies in showing the benefits of the methodological approach we outline, which facilitates the examination of vast bodies of literature in an empirical manner to identify caveats, trends, and strands of literature within them. Additionally, through our analysis, we show how researchers in the field align themselves with particular concepts and how the focus of their research often affects the kinds of topics and issues they engage with. The networks produced through our analysis also provide several key insights for other scholars and for policymakers by illuminating the composition of the literature surrounding four concepts used to demonstrate the curricular global turn in education: 21st century skills, intercultural competencies, cosmopolitan education, and global citizenship education. This review is the first to comparatively examine the scholarship surrounding these concepts.

We have shown that while some themes and topics appear across the different bodies of literature, their manifestations in the literature can differ when they are related to certain concepts. This demonstrates the broad applicability and range of uses for the methodology presented in this chapter, as the overlap of topics and the plethora of meanings that can be associated with them characterize many areas of research within and beyond the field of education. By performing the network analysis comparatively and supplementing it with a qualitative analysis, we were able to discern the ways in which research is shaped by the prevalent language that is used to describe, define, and legitimize a particular concept and the audience to whom it is directed.

In showing the individual composition of each network, our review also reveals some aspects that are distinctive in the literature surrounding each of the concepts we chose, such as the extent to which they are shaped by supranational organizations. The abundance of mentions of topics related to the OECD, PISA, testing, and assessment in the 21st century skills network, for example, provides evidence of the successful dissemination of the OECD’s educational goals through academic literature. The variety of topics in the GCE network that are associated with UNESCO and its various development goals, as well as the grouping of these topics in the same
community as environmental education (a supposedly neutral field of knowledge), similarly points to a successful process of dissemination. Thus, this chapter contributes to a growing body of literature which calls attention to the political, economic, and supra-national bodies that can influence the language chosen, theoretical orientation taken, and thus the concepts employed in nationally based policy, practice, and research (e.g. Auld & Morris, 2019; Hamilton, 2017; Kraess, 2018; Lewis, 2019). The newly introduced measurement of global competencies in the Program for International Student Assessment (PISA), alongside the simultaneous inclusion of GCE in UNESCO’s Sustainable Development Goals (SDGs),⁵ means that ensuring we have a coherent evidence base, which understands how these terms are differentially engaged with, but linked is ever more critical.

Through this review, we aim to engage researchers from other disciplines with this novel methodology, shedding light on a new way to include big data, NLP and artificial intelligence in any field. We also hope to consolidate much of the scholarship related to the skills and dispositions associated with the curricular aspects of education’s global turn, by providing a blueprint for scholars embarking on related research, enabling them to reflect on the concepts and specific stands of literature to which their work relates and providing a clear account of the distinctive features and characteristics of each body of literature.

---

⁵ https://en.unesco.org/education2030-sdg4/targets
References


