

(Targets 1, 2, 3, and 5) aim to expand access to education from early childhood to technical, vocational, and tertiary education in an equitable and inclusive manner. Unlike EFA, which largely focused on basic (early childhood to lower

Targets of SDG4 that highlight the importance of skills and knowledge

Target 4: By 2030, substantially increase the number of youth and adults who have **relevant skills, including technical and vocational skills**, for employment, decent jobs, and entrepreneurship

Target 6: By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve **literacy and numeracy**

Target 7: By 2030, ensure that all learners acquire the **knowledge and skills** needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development

secondary) education, SDG4 enlarged the scope of coverage. Recognizing that those who could now go to primary school would aspire to secondary education, SDG4 broadened the areas to be considered human rights and hence society's responsibility to provide. Despite being more ambitious, this extension follows a linear progression from basic to higher or more diverse channels of formal schooling. In contrast, a fundamental change happened with three other targets. A common characteristic of Targets 4, 6, and 7 is that they shift attention from the provider of

educational services to the learner through a commitment to improving the knowledge and skills that learners acquire.

This shift in attention is significant in three ways. First, the quality of education, which used to be measured by the amount of inputs into the education system, such as facilities, textbooks, and teachers, is now measured by the amount and type of knowledge and skills that learners acquire. Second, the outcomes of learning are measured as improved capacity to adapt knowledge to daily contexts and solve problems, not simply the ability to recite the contents of the curriculum. The perspective of so-called outcome-based or competency-based education not only focuses on learners but also redefines the meaning of knowledge, requiring that it be relevant and adaptable to different contexts. A practical but significant implication of this shift in priorities, which was already a matter of heated discussion in the consultation process toward developing SDG4, is the difficulty of developing measurable and globally comparable indicators of such learning outcomes. Third, and closely related to the second point, the domains of learning outcomes under SDG4 are not restricted by the framework of curricular subjects, but are cross-cutting and broad in nature. As indicated in the box on the left side, Target 4 of SDG4 highlights the relevant skills for the workplace, Target 6 literacy and numeracy, and Target 7 the values and attitudes it takes to live in a sustainable world. In sum, the knowledge and skills under SDG4 overarch not only cognitive and vocational, but also noncognitive and behavioral skills.

Methods of Analysis

From late 2012 up to the World Education Forum in Incheon, South Korea, in June 2015, I have analyzed the discourse on the post-EFA agenda in the so-called education community. The actors involved in this discourse were diverse, such as representatives of UN member states, EFA convening agencies (UNESCO, UNICEF, the World Bank, the UN Development Programme, and the UN Population Fund), civil society organizations, and technical specialists. In addition to interviews with key informants from these groups, I conducted a qualitative and quantitative textual analysis. The textual data used were reports, minutes, and statements posted on the Internet, which totaled 1,720 files

(2 for the year 2011, 60 for 2012, 127 for 2013, 953 for 2014, and 578 for 2015).

The quantitative approach basically aimed to find patterns in the relationships among frequently used words, such as clusters of ideas and changing trends of discussion. The total number of words in the analyzed texts was 3,147,990. However, more than 60 percent were used only once or twice (66.04 percent). Partly to avoid burdening the computer and partly to focus on the aspects on which the attention of text authors converges, I have limited most of my analysis to words that appear more than 1,000 times across texts.

Findings: Constituent Elements of “Skills” in the Global Discourse

Figure 1 shows the general trends in the use of six groups of words identified using hierarchical cluster analysis. This method of clustering groups frequently used words by their similarity of usage in terms of co-occurrence and proximity to other words. The analysis yielded six clusters of words, which I named, according to the common characteristics of grouped words, as follows: (1) fundamental principles of education, (2) national consultation and governance, (3) global consultation and governance, (4) learning conditions, (5) skills, and (6) quality of education.

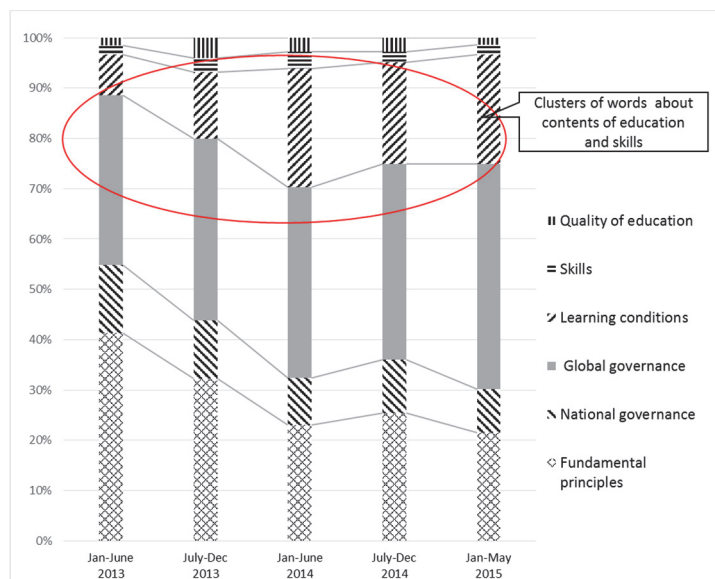


Figure 1: Shares of six clusters of words by period of publication

During the period between late 2012 and June 2015, a large part of the discussion converged on the issues related to the process of consultation, agenda setting, and implementation, while references to the contents of education occurred in fewer than one-third of the texts analyzed for this study. Regardless, significant trends in ideas on education took shape in the discourse on the post-EFA agenda. Three of the six identified clusters concern educational ideas. One is the cluster on learning conditions, which is composed of words such as teachers, students, health, and households. The second cluster is related to the quality of education, particularly concerns about examining the effects of teaching and learning. This cluster is composed of words such as learning outcomes, assessment, and curriculum. The last cluster is related to the contents of learning, with words including skills, knowledge, literacy, and numeracy.

To see how ideas about skills and knowledge peculiar to the SDG paradigm were shaped in the years approaching 2015, further analysis focused on these three clusters regarding the contents of education and their assessment.

Figure 2 shows the correspondence between key educational issues highlighted in the discourse and the dates of documents that referred to these issues. Words related to skills and knowledge, together with those related to assessment of such skills and knowledge, became more frequently used approaching the year 2015, when the SDG goals were adopted. Meanwhile, words related to learning outcomes were used more frequently in 2014 than in 2015. These observations suggest that the discussion about ensuring student learning outcomes started somewhat early in the process but became more specific and technical as participants sought to define the desired contents of skills and knowledge and to develop modules for assessing them.

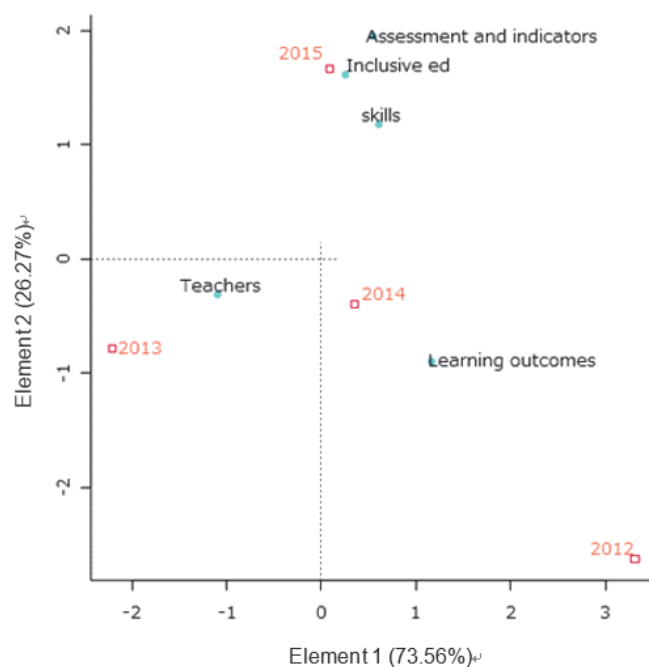


Figure 2: Correspondence between the educational issues on which discussion focused and the years in which the issues appeared in documents

Figure 3, the colorful network of bubbles used at the head of this paper shows the relationships among words that were frequently used in association with the words constituting the “skills” cluster. The size of a circle indicates the word’s frequency of appearance, and the lines connecting circles indicate the distance between words. The closer the distance, the higher the level of dependency between words and the more likely they are to co-occur.

The figure demonstrates how broad the concept of learning became. On the upper left side, one can see an area with words on vocational skills, such as employment, work, and labor market. There are also groups such as 21st-century

skills and global citizenship; critical thinking and problem solving; and knowledge, values, and attitudes. Transferable skills, literacy and numeracy, business, and technology were also discussed in relation to the contents of knowledge to be covered under SDG4.

Target 7 of SDG4 aims to develop values and attitudes for achieving sustainable development via global citizenship education, democracy education, peace education, and education for sustainable development. The perspective of linking skills and knowledge to subjective values and attitudes shares a foundation with ideas such as 21st-century skills and critical thinking for problem solving. The tendency to discuss skills as being inseparable from values and attitudes relates closely to the drive toward assessment of behavioral changes and adaptive skills. Such references to values and attitudes reflect the fact that it is another characteristic of the post-EFA discourse that literacy and

numeracy have been discussed along the continuum of not only cognitive but also noncognitive and socio-emotional skills.

As the analysis suggests, it is clear that the weight of attention put on learners and their adaptive competencies became heavier throughout the discourse toward SDG4. Although more than half of the seven targets still relate to provision of services, the shift of gravity is noticeable if one compares EFA with SDG4.

The broad and adaptive conception of knowledge and skills, which initially occupied a small part of the discourse, has become more popular through the interactions and cross-references among actors involved. Together with the changes in structure and actors pointed out elsewhere (Yamada 2016), SDG4 would symbolically indicate a major shift in this field.

Policy Implications

Since it will be the global trend to highlight learners' problem-solving skills as the outcomes of education, it is likely that donors' financial support and governments' policies of education and human resource development will converge their priorities on these skills. This phenomenon suggests an urgent need for governments and educational providers to attend to the following:

- **Pillar 1:** Changes in the mind-set of teachers and administrators
- **Pillar 2:** Clear definitions of the "skills" that the formal education system is to develop in response to the demands of work and life outside of school
- **Pillar 3:** Establishment of systems and tools for assessing the above-defined skills

Pillar 1. Teachers and administrators are used to curriculum-based teaching and testing. To introduce new ideas about skills and knowledge, accompanied by new methods of assessment, changing the mind-set of those people who operate the system and teach students is indispensable. This change will require in-service training of teachers and administrators to familiarize them with new concepts.

Pillar 2. There is no established definition of "problem-solving skills." Therefore a definition should be developed in the respective national and industrial contexts, involving consultations with a wide array of stakeholders, including

employers of school graduates and communities surrounding schools.

Pillar 3. There is an urgent need to develop methods to assess newly defined skills and knowledge. Conventional assessment of educational outcomes captures only the cognitive capacity to reproduce the contents presented in curricula and textbooks. However, the recent trend is to capture problem-solving skills comprehensively, including not only cognitive but also behavioral (noncognitive) and vocational/practical skills. The providers of education face a challenge in assessing learners' skills comprehensively in the absence of an established model.

Reference

Yamada, Shoko (Ed). 2016. *Post-Education-For-All and Sustainable Development Paradigm: Structural Changes with Diversifying Actors and Norms*. London: Emerald Publishing.