



United Nations
Educational, Scientific and
Cultural Organization



Global
Education
Monitoring
Report

Background paper prepared for the 2017/8 Global Education Monitoring Report

Accountability in education: Meeting our commitments

Analysis of Determinants of a Measure of Sustainability Literacy

This paper was commissioned by the Global Education Monitoring Report as background information to assist in drafting the 2017/8 GEM Report, Accountability in education: Meeting our commitments. It has not been edited by the team. The views and opinions expressed in this paper are those of the author(s) and should not be attributed to the Global Education Monitoring Report or to UNESCO. The papers can be cited with the following reference: "Paper commissioned for the 2017/8 Global Education Monitoring Report, Accountability in education: Meeting our commitments". For further information, please contact gemreport@unesco.org.

1. Abstract

¹This paper highlights the contribution of the Sulitest to analyse the determinants of sustainability literacy in higher education. Sulitest is an open online training and assessment tool designed to assess and improve sustainability literacy. It is a multi-stakeholder initiative supported by several UN agencies and academic networks. Based on collaboration through the volunteer contribution of an international community, this tool aims to be internationally recognized and locally relevant by addressing global as well as local issues. With a growing community of more than 500 higher education institutions and other organizations from more than 50 countries, Sulitest begins to be recognized as a standard to assess and improve sustainability literacy. As the use of the tool is expanding, the data collected provides tangible indicators to map the current level of sustainability literacy and to monitor progress over time.

2. Introduction: the concept of sustainability literacy in the SDG target 4.7 context

By forming current and future decision makers, education has a crucial role to play in the pursuit of a sustainable future. UNESCO is one of the major institutions supporting this statement with its Global Action Program for ESD (Education for Sustainable Development) and its Global Education Monitoring Report, as its core mission is “to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information”². Since the international community has agreed on 17 SDGs (Sustainable Development Goals) adopted by the UN General Assembly as part of the 2030 Agenda for Sustainable Development (Sept. 2015), the role of education is particularly highlighted with the SDG 4 “Quality Education”. The target 4.7 specifically aims that “by 2030 [...] 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 non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development”.

The Sulitest³ (Sustainability Literacy Test) is a multi-stakeholder initiative developed to contribute to this objective’s achievement. This training and assessment tool is available for Higher Education Institutions (HEIs) and other organizations beyond academia to raise awareness on sustainability issues and improve sustainability literacy. Sustainability literacy is defined as the knowledge, skills, and mindsets that help compel an individual to become deeply committed to building a sustainable future and allow him or her to make informed and effective decisions to this end. Thus, sustainability literacy is perfectly aligned with target 4.7.

¹ Written by Aurélien Decamps, KEDGE Business School / SULITEST aurelien.decamps@kedgebs.com

² <http://www.unesco.org/new/en/unesco/about-us/who-we-are/introducing-unesco/>

³ <http://www.sulitest.org>

3. Sulitest: development, definition of sustainability literacy, and modules

The Sulitest has been developed as a tangible implementation of the UN Higher Education Sustainability Initiative (HESI): an important voluntary contribution launched during the Rio+20 Conference on Sustainable Development which gathers more than 300 HEIs who acknowledge the responsibility that they bear in the pursuit of a sustainable future, agree to share sustainable practices and highlight the need to assess and report on these initiatives. The Sulitest firstly aims to answer to this need by providing a tool so that HEIs can assess that they are producing sustainability literate graduates.

The Sulitest is based on a very simple idea: for a sustainable future, we need a world full of people with sustainability awareness and core literacy. Nowadays, a proof of a minimum level of English is required from candidates applying for admission to a university or for a job in international companies with a score on TOEFL, TOEIC or GMAT. Other higher education institutions verify applicants' standardized test scores in key skills areas for entering competitive MBA and Master's programs. With the growing importance of the sustainability agenda, more and more organizations will require that their students, staff and faculty possess a basic understanding of these global challenges and their responsibility in resolving them.

The Sulitest is an open online training and assessment tool available for HEIs, companies and other organizations to ensure that their graduates / employees are aware of and have core knowledge about fundamental sustainability issues.

Sulitest is built as a common good for the education community, available for any HEI in any field, and for students from all levels (Bachelors, Masters, MBAs, PhD). It is also now being made available for other stakeholders beyond academia. Sulitest is piloted by an independent non-profit organization (officially registered as a non-profit association under French law, "Association loi 1901" since December 2014) and is supported by more than forty institutions and international networks.

Functioning in a collaborative way, the tool is designed by and for its community with more than 300 volunteers from UN agencies, academic networks and universities from various countries. This community has actively contributed to the development and dissemination of the tool, and is beginning to make it a standard in raising awareness on sustainability issues and assessing sustainability literacy. As of February 2017, 553 universities and organizations from 57 countries have registered to use the Sulitest and 55 627 candidates have already taken the test. This makes it a powerful tool to engage individuals and organizations on the path to sustainability and provides an interesting database to map the current state of sustainability literacy and monitor progress over time.

The aim of the Sulitest is to provide HEIs, companies and other organizations around the world with an internationally recognized and locally relevant tool. To be easy to use and to adapt, the Sulitest format is an on-line MCQ (Multiple Choice Questionnaire) randomly selecting questions out of a question bank which is organized in several modules. Every Sulitest's session is at least composed by 30 questions selected from the *Core International Module* (common to every country) covering global issues and allowing organizations and candidates to benchmark at a worldwide level.

These 30 questions are usually combined with another set of 20 'local' questions coming from *Specialized Local Modules* addressing issues and challenges specific to local contexts (mainly country-specific or regional context). The local questions are produced by RNECs (Regional / National Expert Committees). The RNECs are mandated to lead the development of the Sulitest in their local

environment by coordinating diverse stakeholders to develop local questions, translate contents in their own language when needed and to engage local HEIs in using the test. As of February 2017, 23 countries / regions have already developed or are developing their own set of local questions: ARGENTINA, BRAZIL, DENMARK, CHINA, COSTA RICA, DENMARK, EGYPT, FAROE ISLANDS (DENMARK), FINLAND, FRANCE, HONG KONG (CHINA), INDIA, IRELAND, ITALY, JAPAN, NORWAY, PERU, QUEBEC (CANADA), SOUTH AFRICA, SPAIN, SWEDEN, UK and USA. BELGIUM, CANADA, KENYA and MEXICO are currently developing their own set of local questions.

Finally, an optional anonymous survey is proposed to the respondent at the end of each session to collect data for research purpose on the respondent's socio-demographic characteristics, interest and sensitivity to sustainability issues and experience of ESD.

Questions are based on verified and reputed sources that are subject to a broad consensus in the community of researchers and practitioners in the field (international texts and reports, UN conventions, specialized national agencies, etc.). A strict review process guarantees the quality and reliability of the assessment tool. A Senior Advisory Board (SAB) with representatives from international organizations and UN agencies validates the questions and the evolutions of the tool and gives a feedback to the general secretariat. The SAB composition comes from HESI founders (UN-DESA, UNESCO, UNEP, UNU, Global Compact's PRME and UN-Habitat) associated with several academic and professional networks such as GRLI, GUPES, CEEMAN, Copernicus Alliance, ARIUSA, MEDIES, HEASC, IDDRI, ULSF and WFCP (detailed composition of the SAB can be found on the Sulitest website [here](#)). The role of the SAB is to validate the consistency and coherence of the tool; to guarantee the independence, intent and spirit of the project; to support the development of the Sulitest mission; and to capitalize and leverage the strength of their diverse networks and expertise.

To reach its ambitious objectives, the Sulitest is designed with (1) a coherent, pedagogical and systemic framework (2) a list of tags and key words to build a database of questions ensuring balance among all the relevant subjects to cover a comprehensive scope of sustainability issues.

Firstly, the algorithm selecting the questions in the *Core* and *Specialized* modules relies on a specific matrix ensuring that all subjects are linked in a coherent framework by covering 4 dimensions from the broader perspective to the individual perspective:

- Sustainable humanity and ecosystems on planet Earth
- Global and local human-constructed systems to answer people's needs
- Transitions towards sustainability
- We each have roles to play to create and maintain individual & systemic changes

This Matrix also allows the test's extension to complementary dimensions such as *knowledge of skills* and *mindsets* which are currently on development (see the detailed matrix with the list of core subjects in Appendix A).

The role of the matrix is to make sure that each Sulitest's session covers a comprehensive scope of sustainability challenges while providing a coherent and systemic vision of the relationship between these various challenges. Using a matrix that links topics together rather than simply relying on a list of topics is consistent with the statement that ESD should support and develop system thinking (Svanström et al., 2008).

Secondly, each question is attached to one or up to three tags to allow a thematic interpretation of the results and to provide a rich set of indicators (see Appendix B for the complete list of Tags). This improves the way the results are displayed to ease their interpretation.

4. Analysis of determinants of sustainability literacy using the Sulitest database

As the Sulitest is taken worldwide by diverse cohorts of learners, it can be mined for data to better understand behaviours and identify opportunities for change. A pilot phase has been conducted between 2014 and 2016 (see Carteron, Décamps, 2014). This pilot phase allowed to gather a community of 260 active universities in 35 countries with more than 40 000 students having taken the test between 2014 and 2016. Building on many feedbacks received during this pilot phase, a new version of the Sulitest with an improved online platform has been launched in September 2016. The dynamic continues to grow thanks to this new platform: more than 550 universities in 57 countries are now registered to use the Sulitest and more than 55 000 students have taken the test as of February 2017. This largely contributes to raise awareness on sustainability issues and provides an important database to map the current sustainability literacy in higher education worldwide.

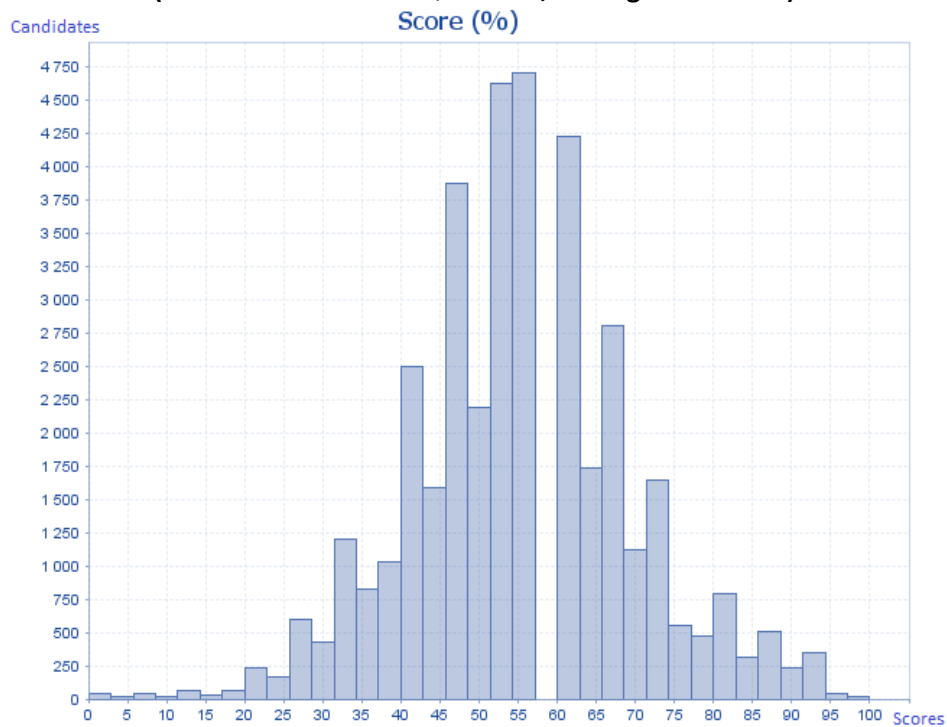
This section uses the Sulitest data to map a first snapshot of the current sustainability literacy worldwide. The results displayed in this section come from an extract of the Sulitest's database at the end of the pilot phase when the new version was launched in September 2016. The pilot phase was primarily focused on academic institutions (other types of organizations are only using the Sulitest since September 2016). These data represent the 'active universities' among the whole Sulitest community, meaning universities that have organized sessions for large cohorts of students during the pilot phase. Thus, this first snapshot of sustainability literacy in higher education is dated September 2016 with 260 active universities in 32 countries which have organized 1589 sessions allowing 42683 students to take the test. Of course this first snapshot will be added to over time with the growing use of the new platform.

Moreover, as the new Sulitest matrix (see Appendix A) has been partly built on the feedback received during the pilot phase, the Sulitest was not using the same list of core subjects during this pilot phase. The mapping displayed in this section thus relies on the list of core subjects previously used during the pilot phase (see Appendix C) with four core subjects on sustainability (founding principles + trends and key figures on environment, economy and social) and the seven central questions of the ISO 26000.

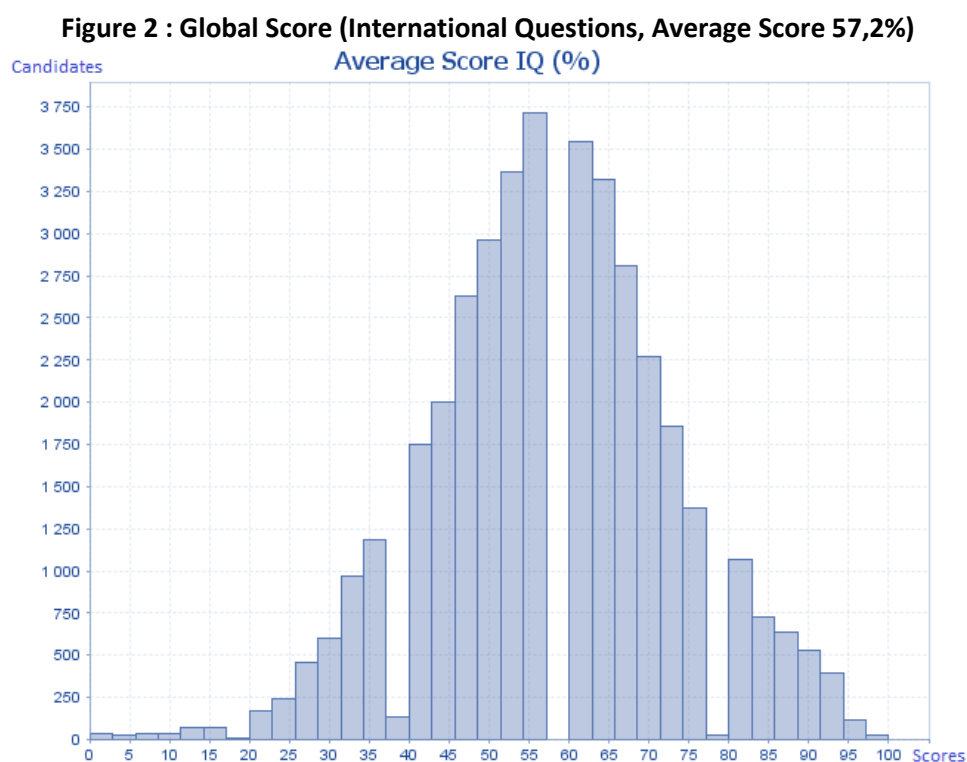
The Sulitest results

As a first landmark, the average global score of the Sustainability Literacy Test is 55% of correct answers worldwide with a balanced distribution around this average score showing the global level of sustainability literacy in a large sample from higher education. Figure 1 displays the number of candidates related to the different score obtained (from 0 to 100% of correct answers, with a classification of Yule). The results demonstrate a balanced distribution of scores with a peak around the average score (55%) and two "secondary" peaks between 40 and 50% and between 60 and 70%.

Figure 1 : Global Score (International + Local Questions, Average Score 55%)

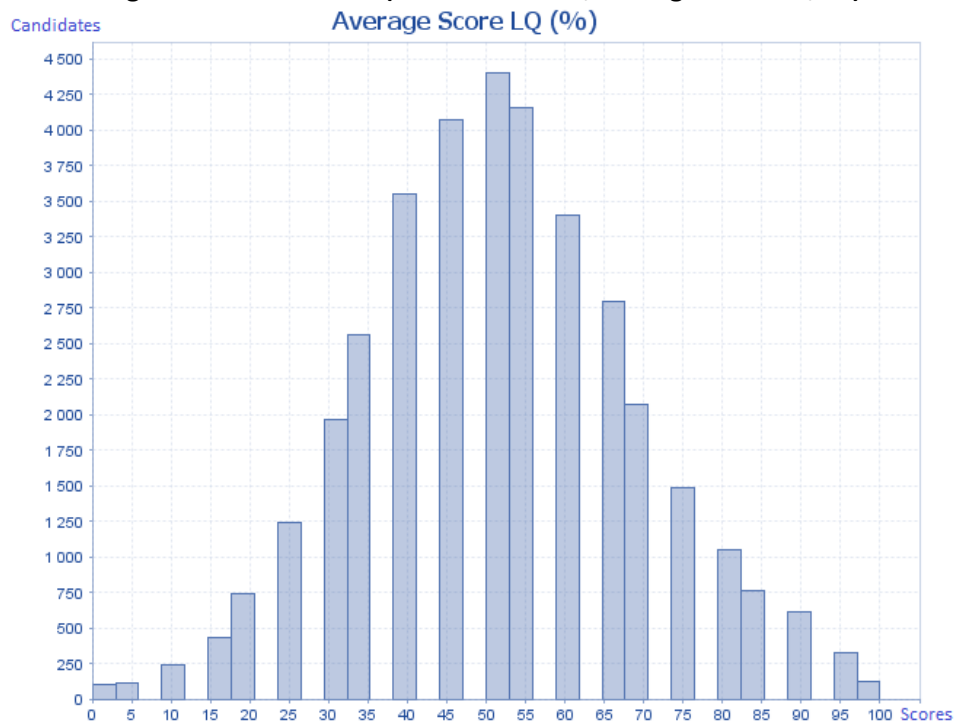


However, this global result must be interpreted with caution for several reasons. Firstly, some countries have already a customized version of the test (international + local questions) whereas others are using international questions only. This is why a focus is made on international questions below as they come from the same module in the question bank (*Core International Module* common for every country). Secondly, the score obtained might not be interpreted the same way depending on the context. As a result, different universities and/or different countries might not expect the same thresholds for the results of their students. For example, what is considered as a "high score" might be different depending on the university culture. As universities are free to use the Sustainability Literacy Test in their own way, the interpretation of the scores belongs to them. Figures presented here only provide a benchmark that may help with the interpretation of the scores. Figure 2 below gives the general trend on International questions (comparable between the different contexts) with an average score of 57,2% of expected answers.



These international questions are often completed by local questions addressing issues and challenges specific to the local context. The local questions have been developed by each RNECs. Even if they are all based on the same matrix of topics, the formulation of the questions, the level of difficulty and even the balance between topics covered may be heterogeneous from one country to another. With that caution in mind, Figure 3 displays the global results on local questions with an average score of 51,6%.

Figure 3 : Global Score (Local Questions, Average Score 51,6%)



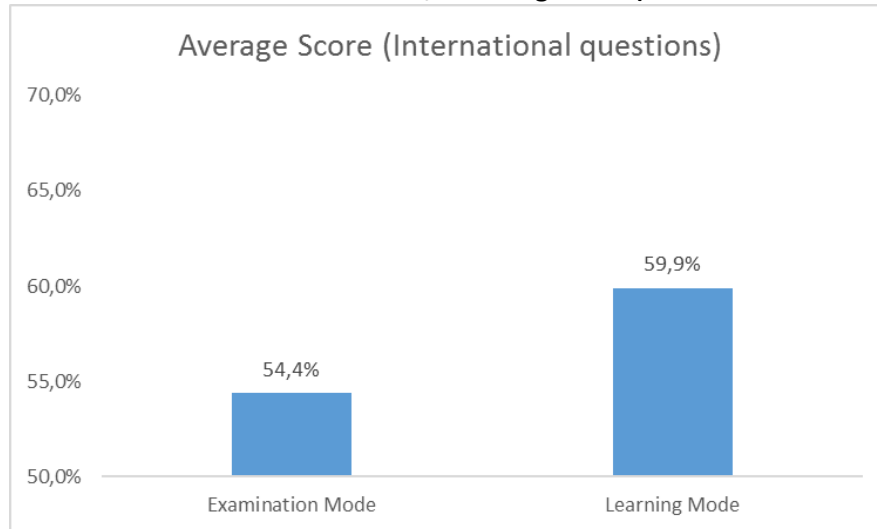
As previously mentioned, the Sustainability Literacy Test is an open tool so universities are free to use it in different ways. In this pilot phase, Universities could choose to organize sessions in an examination mode or in a learning mode. The conditions under which the test is conducted are different between these two types of sessions.

- Examination mode: Students take the test under standard exam conditions, in a fixed, limited time without access to reading material or other external resources.
- Learning mode: The sessions duration may be longer (up to 2 weeks in the pilot version, longer in the new version) and students may take the test at home, either alone or in a group.

Consequently, the results of these two types of sessions are presented separately, still focused on international questions which allow comparison. 53% of sessions have been taken in learning mode during the pilot phase, whereas 47% have been taken in examination mode. As it might be expected the sessions taken in learning mode have a slightly higher average result than examination mode, even if the difference is short (see Figure 4).

Note: the actual condition under which sessions were organized is the responsibility of each university. The choice between the two session modes is declarative by universities.

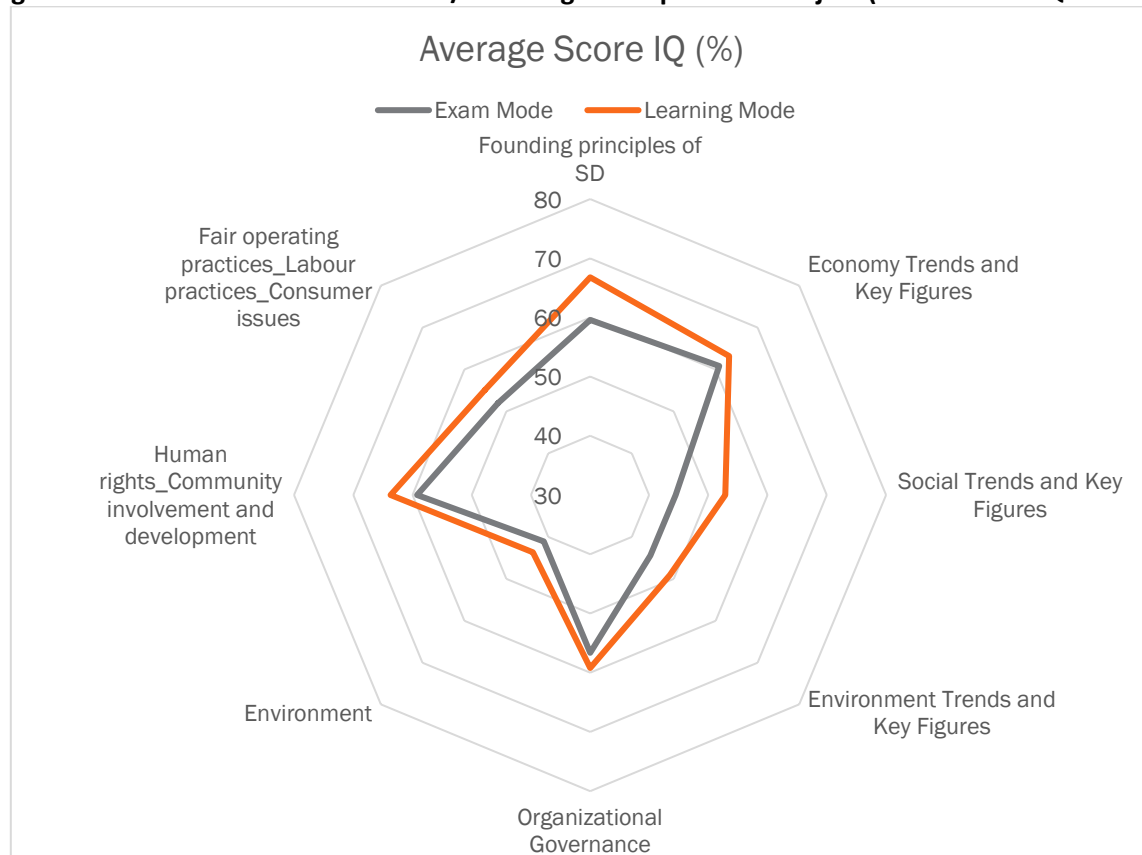
Figure 4 : Global Score in Examination / Learning Mode (International Questions)



Using the list of core subjects of the pilot version (see Appendix C), a more detailed picture of sustainability literacy can be drawn in Figure 5 (still using international questions allowing for comparison). The results confirm the general trend of scoring a little higher in learning mode than in exam mode, but significant differences appear between core subjects.

- Firstly, concerning the comparison between subjects:
 - Some **subjects** are characterized by significantly **higher average scores** such as **founding principles of sustainable development (basic definitions), trends and key figures on economy, organizational governance and human rights, community involvement and development.**
 - Whereas, **fair operating practices, labour practices and consumer issues, social trends and key figures** and (perhaps more surprisingly) **environment** are characterized by **lower average scores**. The low scores on the specific topic of Environment (as addressed by organizations in the ISO 26000) can be explained by a higher level of difficulty for these questions (with a very specific scope) that have been identified and corrected since then. But this is not the case for trends and key figures on environment.
- Secondly, the **subjects** that might be considered as **more difficult** as they are characterized by lower scores are also **characterized by a more important gap between learning mode and exam mode** (except for founding principles). The lower scores on these subjects can thus be interpreted as a difficulty to quantify precisely these issues, even when they benefit from a higher exposure such as trends and key figures on environment. The fact that learning mode allows to have more time to look for the information could explain these differences.

Figure 5: Global Score in Examination / Learning Mode per Core Subject (International Questions)



The examiners inside each university may choose to conduct the Sulitest on different populations of candidates. Some universities have also chosen to propose the Sulitest to their faculty members and staff. These data give a more detailed picture of the global trend of sustainability literacy drawn by the Sulitest.

To be consistent with the interpretation of the previous statistics, only international questions (same in every country) allowing comparative analysis in different contexts have been used below. The global score gives a general trend per type of candidates in Figure 5 and Figure 6 provides a more detailed picture of sustainability literacy for each core subject covered in the pilot version and each type of candidates.

Figure 6: Global Score per type of candidates (International Questions)

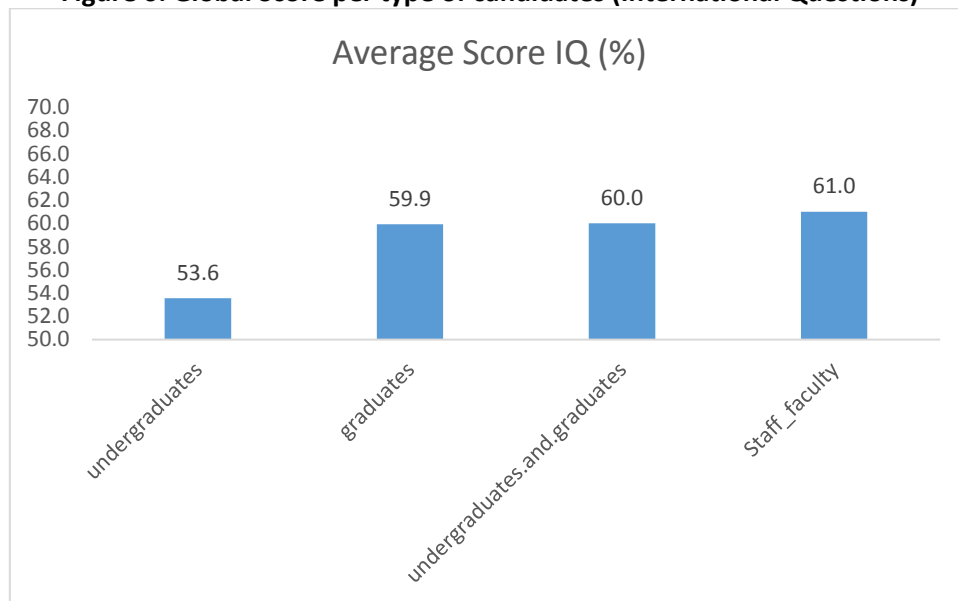
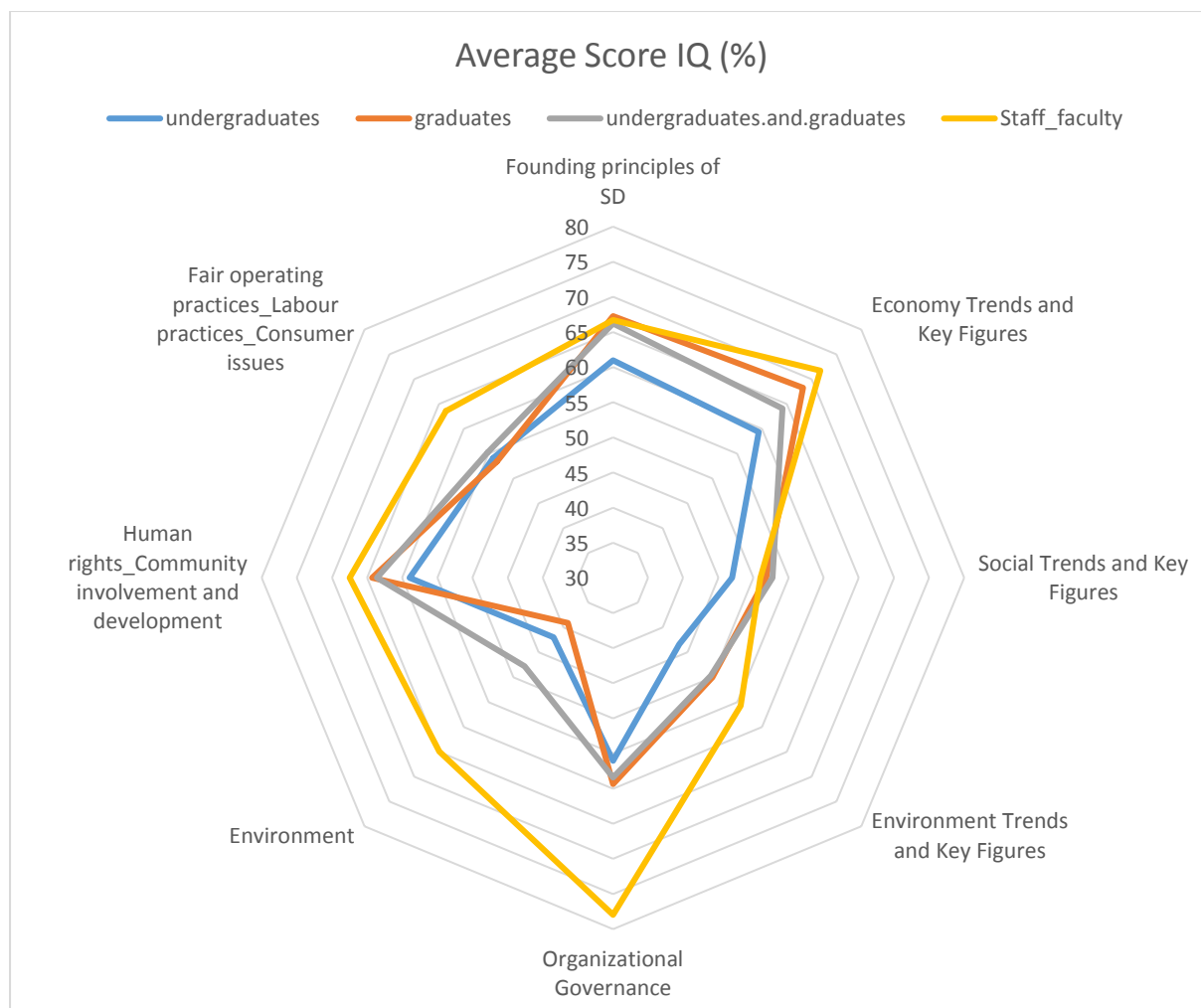


Figure 7: Global Score per Core Subject and per type of candidates (International Questions)



As expected, we can observe that graduate students and staff and faculty members have slightly higher scores than other candidates. However, the difference is not very important and is not similar for one core subject to another.

Figure 6 shows that some topics such as **founding principles, social trends and key figures and organizational governance** (except for staff and faculty members) are characterised by quite **similar level of sustainability literacy** between the different types of candidates; whereas other topics such as **economic trends and key figures, environment, human rights / labour practices and consumer issues** are characterized by **important gaps between the respondents**.

This allows to identify topics for which higher education seems to play a pedagogical role because going from undergraduate to graduate and staff / faculty member seems to improve the average score. For topics characterized by very similar scores for the entire population of the sample, a special attention should perhaps be paid when defining or reinforcing pedagogical programs and curricula. For example, **trends & key figures on the social pillar of sustainability** are characterised by **lower scores for every type of candidates**, as well as **fair operating practices, labour practices and consumer issues** (except for Staff and Faculty members).

More surprisingly, **trends & key figures on the environmental pillar and environment** as it is addressed by organizations in the ISO 26 000 are also characterized by **lower scores**, even if there is a **progressivity from undergraduates to graduates and staff/faculty**. As previously mentioned, this may

be interpreted thanks to the level of difficulty for these questions in the Sulitest question bank and as a difficulty to precisely quantify these issues for the general population of candidates.

The fact that **staff and faculty members** scored “not so much higher” than graduate students for several topics might suggest the need for faculty development in order to achieve a more transversal and systemic vision of sustainability. As faculty members in the sample are not necessarily “sustainability specialists”, we could think that they are more focused on their core discipline and that they link the specific issues covered by their own discipline to the scope of sustainability. This could explain why this specific population **scores higher for specific topics but not for all topics**, and would **call for a more systemic approach of sustainability requiring multi-disciplinarity and transversality** for faculty members and educators in general.

Of course these statistics must be interpreted with caution because they are global trends on average scores and the results may be different from one university to another. This is why using the Sulitest data also makes sense at the university level because they provide a precise view of the core literacy of this university’s students and staff and thus they can be used to improve the pedagogy overtime. This is why every university registered to use the Sulitest has access to its own data so that they can conduct this kind of analysis and reporting for themselves to support the integration of sustainability in their own practices over time.

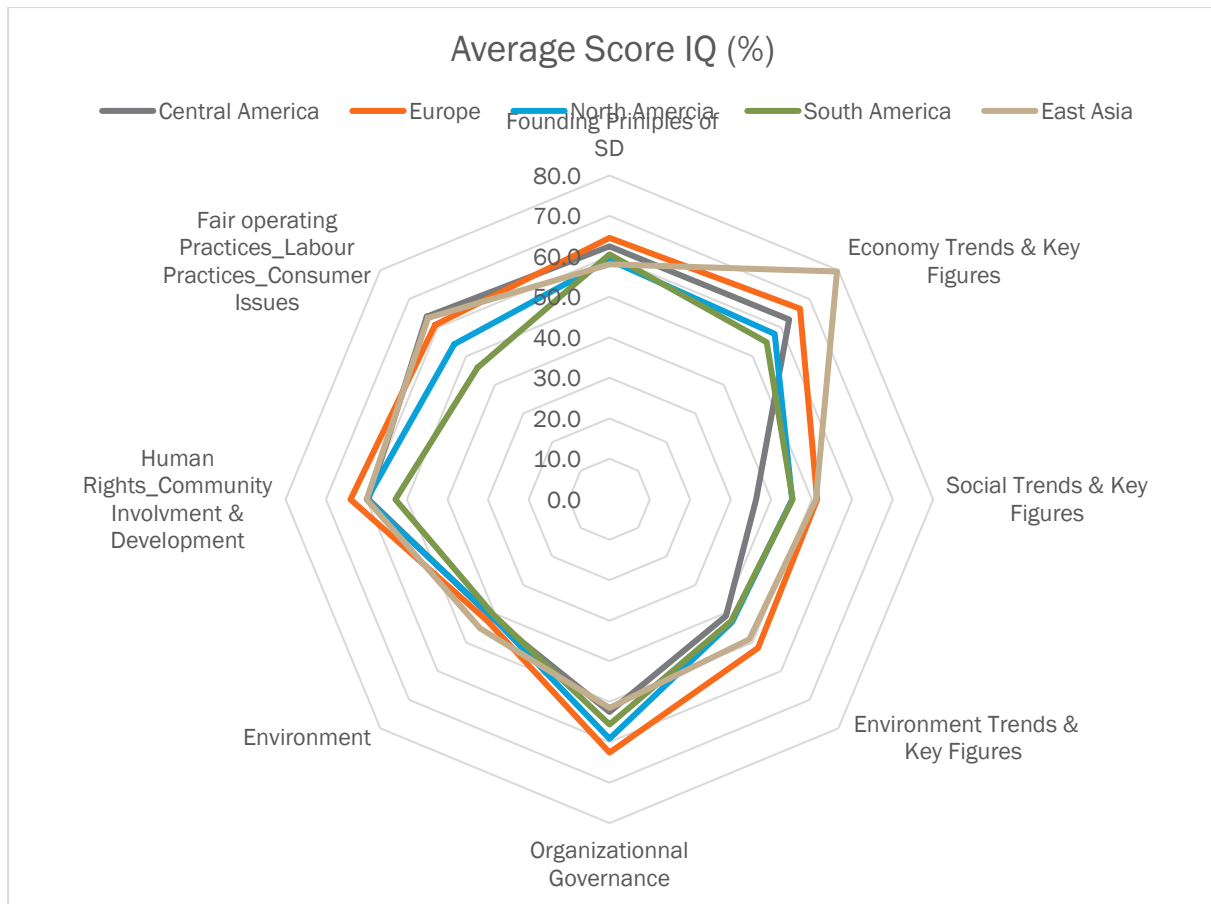
In addition to the university level, differentiation in sustainability literacy may also rely on the geographical context. The Sulitest database allows to map sustainability literacy in the different topics in relation to the geographical context, as it this first snapshot comes from the Sulitest’s results in 32 countries. However, the use of the Sulitest differs a lot between these countries. In order to provide consistent statistics and trends, we focus on countries where at least two different universities have used the Sulitest for at least more than 10 students which results in 19 countries. Among these countries, most of them can be grouped in coherent regional areas:

- Europe (Finland, France, Italy, Netherlands, Spain, Sweden, UK)
- North America (Canada, USA)
- Central America (Costa Rica, Mexico)
- South America (Brazil, Peru)
- East Asia (Hong-Kong, Japan, Philippines)

In addition to this regional groups displayed in Figure 8, three “big” countries are more isolated and thus presented in a separate figure (Figure 9): Australia, India and South Africa.

Figures 8 and 9 map the differences in sustainability literacy in relation to the geographical context, still focusing on international questions which are comparable because they come from the same question bank worldwide.

Figure 8: Global Score per core subject in the regional context (International Questions)



It is interesting to notice some differentiations in sustainability literacy depending on the geographical context. Of course these statistics must be interpreted with caution because all universities in all countries are not included in the sample, neither are all countries from each region, but they give general trends on potential differences on sustainability literacy between regions.

Three core subjects are characterized by **close average scores**:

- **Founding principles of SD**, with Europe and Central America having slightly higher scores;
- **Organizational Governance** with Europe, North America and South America having slightly higher scores;
- **Environment** (addressed by organizations in ISO 26 000) where all regions obtained lower scores which can be explained by the difficulty of specific questions as previously mentioned.

Stronger differences are observed on the other core subjects between regions:

- **Economic trends and key figures** are clearly characterized by higher average scores in **East Asia**;
- **Social and Environment trends and key figures** in **East Asia** and **Europe**;
- **Human Rights – Community involvement & development** with **Europe** having a slightly higher score, followed by East Asia, Central and North America obtaining comparable scores;
- **Fair operating Practices, Labour Practices and Consumer Issues** with Central America, East Asia and Europe obtaining higher average scores.

Figure 9: Global Score per core subject in Australia, India and South-Africa (International Questions)

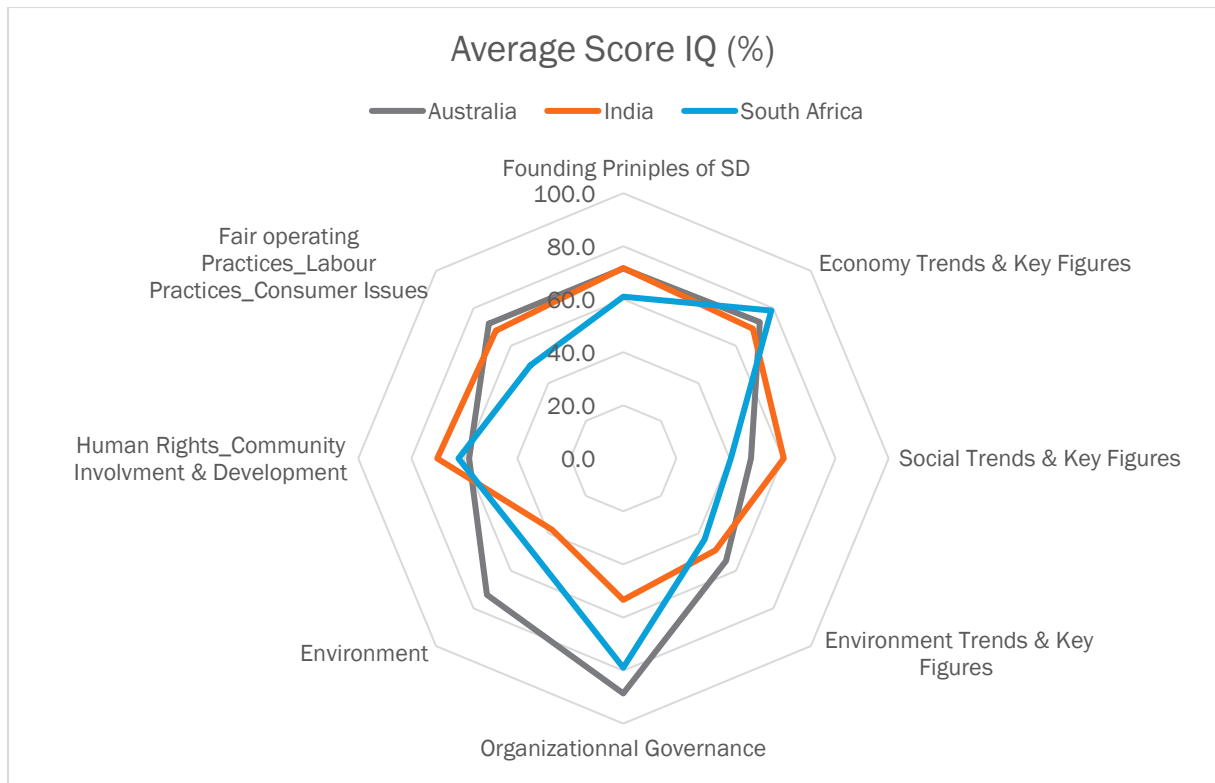


Figure 9 displays the main differences in sustainability literacy for three “big” countries: Australia, India and South Africa.

Firstly, it is interesting to highlight that there are stronger differences between these countries’ average scores and that, for some of the core subjects, these countries obtained higher average scores than the others.

The pattern of sustainability literacy for **Australia** is characterized by higher average score in **Environment** (trends & key figures and addressed by ISO 26 000), **Organizational Governance**, **Founding Principles** and **Fair Operating Practices, Labour Practices and Consumer Issues**.

India obtained higher average scores for **Social** trends & key figures, **Human Rights and Community Involvement and Development**, as well as **Founding Principles** and **Fair Operating Practices, Labour Practices and Consumer Issues**.

Finally, **South Africa** obtained higher average scores for **Economy** trends & key figures, **Organizational Governance** and **Human Rights and Community Involvement and Development**.

The Sulitest Survey

A short anonymous survey is proposed at the end of each session of the Sulitest to collect data for research purpose. The survey collects socio-demographic control variables and asks a few questions about the candidates’ interest in sustainability issues and how sustainability is integrated in his/her higher education institution. This survey is not mandatory so candidates may choose not to answer it, but 25795 candidates have chosen to answer at least to some of the survey questions.

The data collected in the survey firstly allow to investigate if individual socio-demographic characteristics are influencing sustainability literacy. On this question, the answer is clear: socio-

demographics have almost no influence on the Sulitest results. Figure 10, 11 and 12 clearly shows that gender and economic background (family's income level) or parent's occupation (from ILO's International Standard Classification of Occupations) have very few impact on the Sulitest average score and on the pattern of sustainability literacy between the different core subjects.

Figure 10: Global Score per core subject per Gender (International Questions)

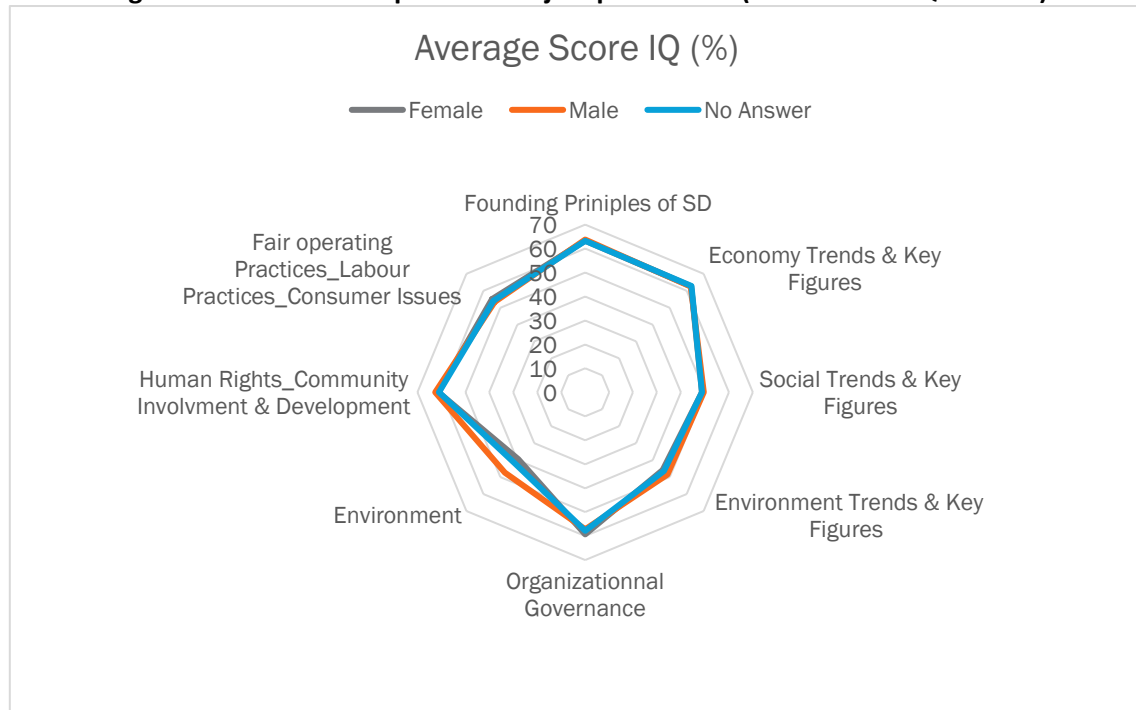


Figure 11: Global Score per core subject per Economic Background (International Questions)

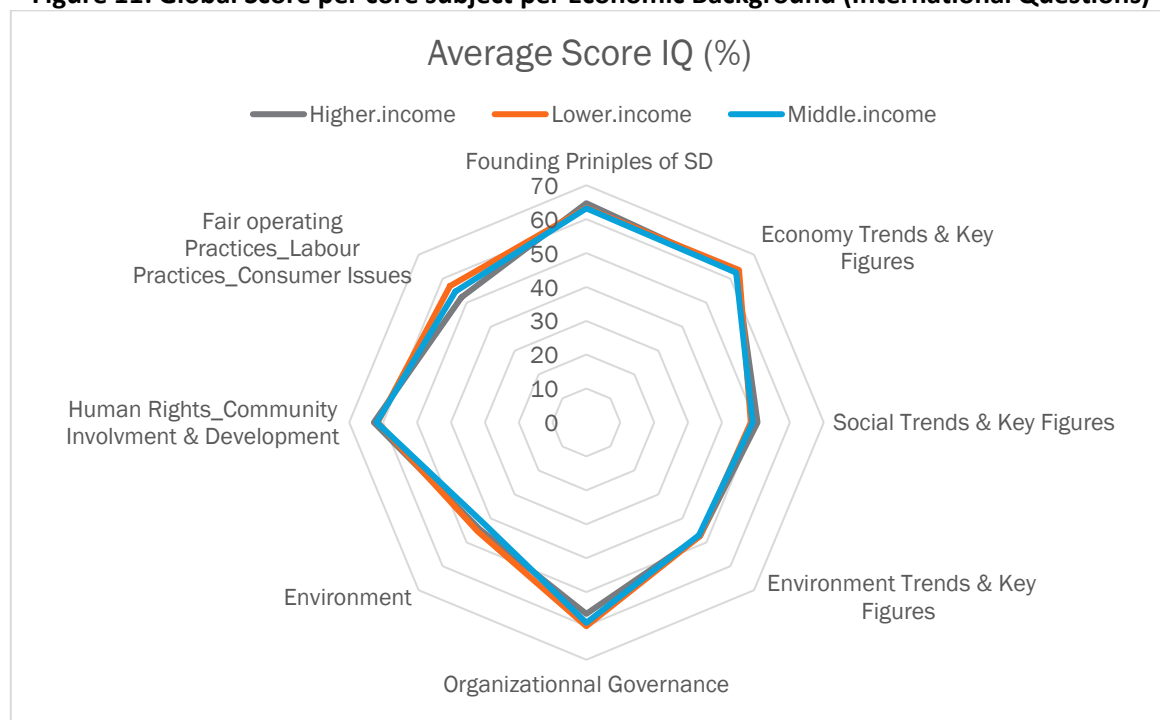
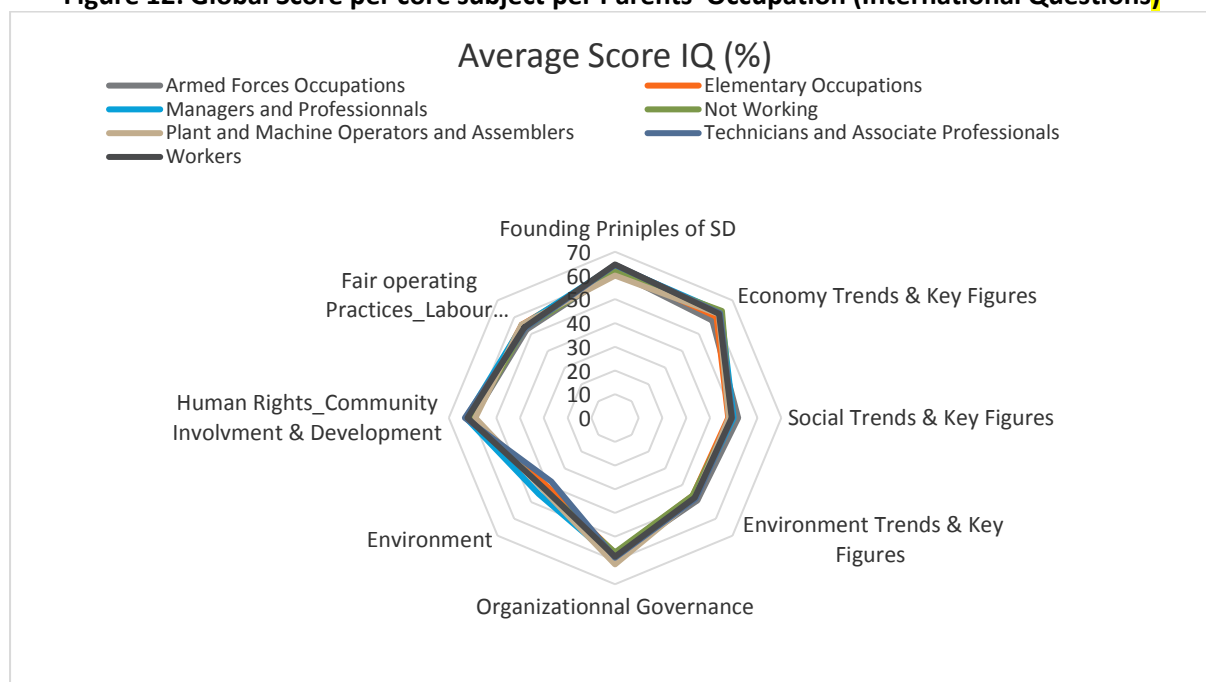


Figure 12: Global Score per core subject per Parents' Occupation (International Questions)



Secondly, Figures 13, 14 and 15 display the percentage of responses and the candidates' average score (international questions) for three questions concerning the expression of the candidates on their general interest about sustainability and how sustainability is included in their university:

- How interested are you in sustainability/sustainable development?
- Is sustainability / sustainable development included in your college's / university's curriculum?
- Is sustainability / sustainable development required for graduation at your college / university?

Figure 13: Are you interested in SD? Percentage of Responses and Average Scores on IQ

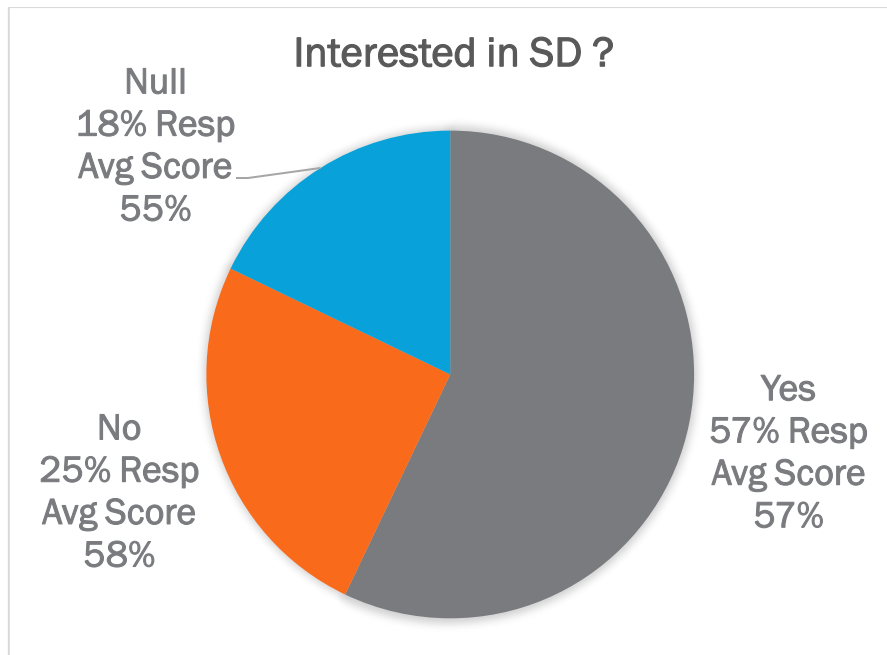


Figure 14: Is SD included in your University? Percentage of Responses and Average Scores on IQ

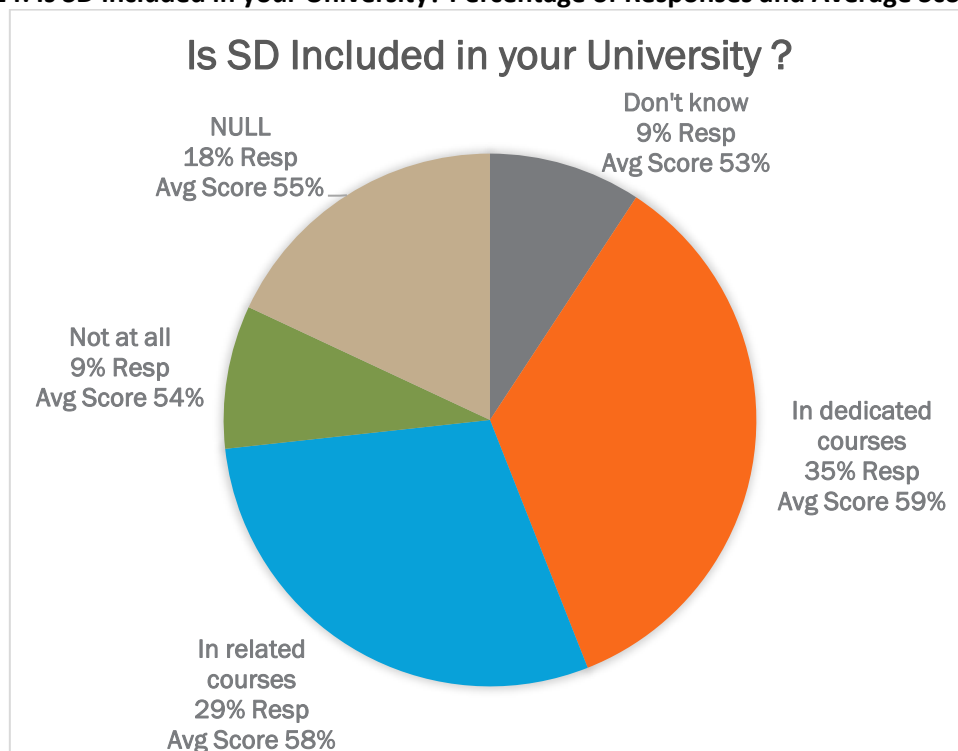
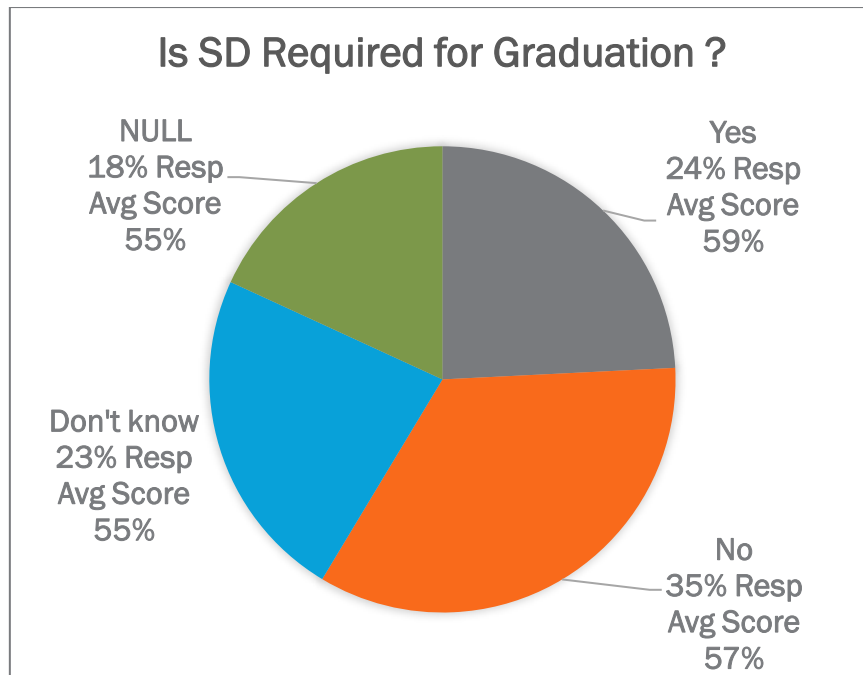


Figure 15: Is SD included in your University? Percentage of Responses and Average Scores on IQ



It is interesting to notice that claiming to be interested or not on sustainable development does not result in significantly different average scores. However, the differences appear when it comes to sustainability integration in the college / university. Figure 9 shows that having sustainability integrated in related and more on dedicated courses allows for higher average scores. Figure 10 shows the same result (with a smaller gap) with sustainability being a requirement for graduation. These results clearly call for sustainability integration in higher education to improve students' sustainability literacy.

Strengths and weaknesses of Sulitest as sustainability literacy assessment tool

To achieve the objective of measuring and improving sustainability literacy for all, Sulitest answers to key criteria:

- Questions must assess an individual's current knowledge of Sustainable Development but they should also teach and inform; motivate to learn more and act!
- The overall experience of taking the test should help learners, 'understand the big picture', as well as, 'be touched and inspired by specific stories or facts'; while simultaneously avoiding the trap of reproducing or memorizing lists of facts, figures, issues and challenges without making connections between them.
- Create a test that does not overwhelm with the number of questions (30 to 50). The focus is on various perspectives and topics, keeping the balance between alarming news and inspiring actions.

The architecture used to select questions and to display the results makes sure that the tool is meeting these criteria with a coherent and systemic framework (see Appendix A) organizing the subjects from the broader perspective to the individual perspective, with a balance between problems and solutions. This is overcoming the potential limitation of having only a list of core subjects without linking them as had the pilot version of the Sulitest (see Appendix C). This may also allow for a more comprehensive approach of sustainability, as well as for an improvement of the learning experiment of taking the test with more coherent and systemic relationships between topics.

The richness of the tool also relies on its flexibility allowing for a wide range of possible uses. Designed as a common good available for any organization willing to promote sustainability literacy, these organizations can choose between several options.

The examiners mandated among the staff of each registered organization can firstly customize the sessions by choosing between the Sulitest's *Core* and *Specialized* Modules and by defining the duration and language (among the 8 languages available) of the sessions. This allows a flexible integration of the Sulitest into the organization educational experience and curricula.

The test is primarily designed to assess students' knowledge before graduation and has a summative function when evaluating students' learning. The structure allows candidates to see their performance in each topic area and to benchmark themselves against other average scores in their own program, university, country or even worldwide. It also allows examiners and institutions to have a global overview on the sustainability literacy of their student population or staff by topic areas. Institutions can choose to use the test as a requirement for awarding degrees or as part of a grade in a course or program. In this case, the test's session will be defined with limited duration as an exam.

The test can also be used as a diagnostic evaluation at different stages in the curriculum or as an entry/exit exam to monitor progress or successful learning. This can help schools and universities to make changes and improvements in their pedagogy and curricula design based on the strengths and weaknesses of their students' sustainability literacy.

The test has also a formative function. Universities and organizations can choose to organize sessions with longer duration in a "learning mode" where users are given the correct answers with sources and links to take their learning further. Thanks to the comments, sources and references given in the questions, the test can be an excellent tool to raise the sustainability awareness and knowledge of the students and staff.

Finally, organizations using the Sulitest can add their own customized modules (with a premium access) to address topics and challenges specific to their organization / activity sector or to conduct complementary surveys inside their organization. The customization is an innovative option of the new platform launched in September 2016. The first feedbacks received from pioneer organizations which have started to develop their own Sulitest customized modules (in addition to the *Core* and *Specialized* modules) such as KEDGE Business School in France indicate that this is a powerful leverage to engage its staff and/or faculty members in integrating sustainability in their practices. This helps faculty members who are not "sustainability specialists" to connect their own expertise to the scope of sustainability and to identify how the way they teach their discipline may contribute to the global sustainability agenda. It also allows to introduce progressivity in the students' learning process: for example, they can first learn about the global issues of sustainability with the *Core Module*, about the country-specific issues with a *Specialized Local Module* and then add several customised modules covering specific disciplines in their learning portfolio. To illustrate this progressivity in the learning experiment of its students, KEDGE Business School uses the *Core* and *Specialized Local French* modules for all students at the beginning and at the end of the curriculum to identify where are the progress and where to improve the pedagogy; and then, depending on their orientation choices, students can add customized modules on SRI (Socially Responsible Investment), Sustainable Supply Chain, Responsible Entrepreneurship... Finally, the customization also allows to develop complementary surveys specific to the organization. KEDGE's Sustainability Department has developed a survey to investigate the student's interest, motives and expectations about sustainability and the way it is integrated in the school.

The various potential uses of the Sulitest combined with the richness of the indicators derived from the Sulitest's results make it a powerful tool to improve and assess sustainability literacy.

However, it is also fully acknowledged that this is only one tool in the ESD toolbox and that there are some limitations. The first important limitation is that, for now, the Sulitest is focused on the knowledge dimension of sustainability literacy. The ambition of the new matrix detailed in Appendix A is to address *Knowledge of Skills* and *Mindsets* but the questions covering these dimensions are still being developed and are not yet available for the *Core International* module. Some RNECs have already chosen to integrate questions covering these dimensions in their set of local questions and a group of specialists willing to work on this topic has been identified in the Sulitest community to produce international questions for the Core module. This is crucial for the development of the Sulitest, as it relies on the agreed definition of sustainability literacy previously mentioned that includes knowledge, skills and mindsets to help individuals being committed to build a sustainable future and allow them to make informed and effective decisions to this end. This approach of sustainability literacy is consistent with several contributions in the ESD literature which highlight that, if knowledge is a first important step, integrating sustainability in higher education learning outcomes should also consider skills and mindsets as ways to empower individuals to initiate and conduct change (Cotsgrave, Kokkarinen, 2011; Wiek et al., 2011; Missimer, Connell, 2012; Rieckmann, 2012). This should enable students to develop competencies such as critical, holistic, systemic and interdisciplinary thinking (Kearins & Springett, 2003; Sipos et al., 2008; Thomas, 2009; Ryan et al., 2011; Lourenço, 2013).

A second limitation comes from the Sulitest format itself. Clearly, no test will ever guarantee that students, professionals and citizens will behave responsibly and make ethical decisions. Anyone can have knowledge about crucial social and environmental issues to obtain a score to a test and choose not to act; or worse, take unethical advantage of the situation. Similarly, "knowledge about the challenges" does not mean "knowledge of possible courses of responsible and ethical action".

The epistemological limits of the tool are acknowledged. At the same time a growing community is also convinced of its potential to further common good and value in education for sustainable development. At the very least, the Sulitest is a potentially powerful tool for raising awareness about these urgent issues and need for action and change in addressing sustainability challenges. Its wide use by a large community of diverse stakeholders is critical to realising this potential.

In the end, it is important to keep in mind that the Sulitest will always have limitations. Its mission and content are to evolve and improve regularly to remain relevant. One major strength is the diversity of the community and its active contribution with the help of a small team working daily to coordinate the initiative. The Sulitest is created by and for an open community of users. This collaborative and iterative process mobilizes local / regional communities and transnational communities of academics, professionals and students. It doesn't make it a tool without limitations, but a collaborative initiative that keeps on improving and adapting to the community's challenges and expectations.

Next steps towards adjusting and improving Sulitest

The richness of the indicators provided by the Sulitest database will increase from the results of the pilot phase presented in this chapter (based on the core subjects listed in Appendix C) to the architecture and tags of the new version of the Sulitest launched in September 2016 (see Appendix A). The wide use of the new matrix will provide a consolidated and stable list of indicators that will be followed over time to monitor sustainability literacy progress. The new matrix will at least extend these indicators in two main directions.

- Firstly, the new matrix provides a narrower interpretation of the results with a coherent and systemic framework to choose the questions in each session (see Appendix A) and a more comprehensive list of tags to develop thematic analysis using the Sulitest results (see Appendix B).
- Secondly, the new platform opens the Sulitest to other stakeholders beyond academics such as businesses, institutions or NGOs. This may allow for a broader development of sustainability literacy in different contexts but also for more indicators and comparative analysis to measure its development.

To develop these dimensions, Sulitest is reinforcing its collaboration with the Partnership Exchange for the UN SDGs. The new platform is attaching each question to one or several SDG(s) so that the Sulitest can be used to monitor the progression of core literacy in all field covered by the 17 SDGs. As a featured initiative among the SDGs partnership, Sulitest will be able to provide tangible indicators to help individuals and organizations assessing and improving their awareness and knowledge on the SDGs' agenda. These indicators will be communicated on a regular basis (at least during each edition of the UN High Level Political Forum) to estimate whether citizens are more equipped to face the challenges covered by the SDGs and to participate to the 2030 agenda.

Moreover, Sulitest and UN DESA have agreed to develop complementary modules to be used for training and assessment in the critical areas of the different SDGs. These complementary modules will be available for the community in addition to the *Core International* and *Specialized Local* modules. This means that each Sulitest user will be able to push his/her knowledge further on the specific topics addressed by each SDG during their learning process. A first *SDGs' Module* focused on the 6 SDGs highlighted during the 2017 edition of the High Level Political Forum (HLPF) will be offered to the Sulitest community in early 2017 so that the results can be displayed on the occasion of the HLPF. This will be repeated for each edition of the HLPF in order to obtain a comprehensive set of questions on the 17 SDGs.

The future developments of the tool will rely on the major strength of the initiative: the community. More than 300 volunteers from UN agencies and academic networks have at some point given their time, energy and good will to develop the tool, and they continue to do so. Among this community, RNECs are crucial for the dissemination and development of the initiative in their local environment. They contribute to scale-up the initiative by enhancing its geographical deployment, by creating additional content and by giving feedback to the general secretariat. However, every individual is encouraged to propose content and to contribute to the question bank and to the future evolutions of the tool.

The community of users also plays a key role. Using the Sulitest as an academic institution educating future decision-makers or as a company or any other organization to raise awareness and improve core literacy among your students, staff, executive board, suppliers or even clients or competitors is obviously the first way to contribute to the Sulitest's core mission.

Among the community of users, several organizations have chosen to be Sulitest's partners to support the development of the initiative and to help financing the online platform. Built to serve the common good and owned by its international community, Sulitest is piloted by an independent non-profit organization. However, launching this kind of initiative and especially developing the online platform implies some financial costs which has been covered thanks to donations and financial support from this partners. At the very beginning (2013-2015), Sulitest received major support from KEDGE Business School, notably from the Foundation for Sustainable Leadership and the IT company Degetel. Other partners, like the law firm Savin Martinet Associates and the communications agency Sidièse volunteered time and skills and contribute to the building and deployment of the pilot version. During

the second phase, a fund campaign has successfully financed the development of the new platform (2015/2016). Sulitest received financial and moral support from 11 higher education institutions ([EAUC](#), [Ecole des Ponts Paris Tech](#), [EFMD](#), [Institut Mines Telecom](#), [Kedge Business School](#), [Kingston University](#), [PRME Chapter UK & Ireland](#), [School of Business, Economics and Law at the University of Gothenburg](#), [COMUE Université Paris Seine](#), [Grenoble EM](#), [Conférence des Grandes Ecoles](#)) and 8 corporate or professional organizations ([Edf](#), [C3d](#), [La Banque Postale](#), [L'Occitane en Provence](#), [LVMH](#), [Onet](#), [Orange](#), [Pernod Ricard](#)). These donations have allowed the development of the new platform by a new IT partner, [Aleaur](#), with the help of the UX Design agency Welcome Max who volunteered time and skills.

Thanks to this new platform, the NGO will be able to build its financial independency towards a sustainable economic model by:

- Offering services and products to other stakeholders and organizations beyond academics (i.e. corporations, recruitment agencies, institutions, governments) and individuals.
- Receiving public grants/funds
- Receiving donation from corporations, institutions (foundations) and even individuals


Having a sustainable economic model will allow the NGO to dedicate financial resources to develop the tool and its online platform; to hire full-time employees to coordinate and scale-up the initiative which relies on a fast-growing community; to keep the tool as a common good offered for free to the education community. The aim of the NGO is of course to stay a non-for-profit organization so every income will be reinvested in these different tasks.

To ensure credibility and free academic inquiry, a clear separation is established between supporting partners and their influence on the content of the test. As the community regularly renews all sets of questions, partners are invited, like any citizen, to propose questions. But they can in no way directly impact the content of the test to serve their interests. The Sulitest community alone choses and validates the content of this collaborative tool. However, the relationship built between Sulitest and its “founding partners” is promising in terms of deployment. As these partners are also users of the Sulitest and its last improvements, this may contribute to improve sustainability literacy in the academic and business world.

Finally, another future improvement of the platform will be an open data portal so that the global database of the Sulitest results can be available for academic research. Of course strict anonymity will be guaranteed for respondents, universities and organizations, and the general terms of use will specify that the data should only be used for research purpose. Allowing academic researchers to access this growing database on sustainability literacy should improve our knowledge in this field and may accelerate change toward a sustainable future. Moreover, this development would be perfectly aligned with the Sulitest core value of being a common good contributing to the global sustainable agenda.

5. Conclusion

Sulitest as a multi-stakeholder initiative contributing to ESD and especially to the target 4.7 of the SDGs. This training and assessment tool is designed to raise awareness on sustainability issues and to improve sustainability literacy so that current and future decision-makers are sufficiently equipped to make informed and effective decisions to build a sustainable future. Sulitest has been firstly made for academic institutions, but it is now opening to other stakeholders such as businesses and other organizations in order to maximize its impact.



With more than 500 organizations from more than 50 countries, the Sulitest community is growing. As it is taken by huge cohorts of learners worldwide, it can be mined for data to map the current state of sustainability literacy and its progress over time. A first snapshot of sustainability literacy in higher education is displayed in this paper. The launch of the new Sulitest version in September 2016 will provide more tangible indicators to follow and assess progress on the integration of sustainability literacy in higher education and beyond academia.

To this end, Sulitest will provide detailed indicators on the progress of core literacy on the scope covered by the 2030 global agenda as one of the featured initiatives of the partnership exchange for the SDGs. In the context of its partnership with UN DESA, Sulitest will report on these indicators during the following editions of the UN High Level Political Forum and will develop specific modules on the SDGs.

Appendix A: Sulitest Matrix selecting the questions to ensure a coherent, pedagogical and systemic framework

	Knowledge	
	1	Ecosystems: Biosphere, global and local ecosystems, interdependent and diverse community of life, life supporting cycles, system closed (materials) / open (energy), etc.
	2	Humanity: Individual human needs, diversity, social fabric, cultures, local and global world, etc.
	3	Sustainability: Definition of Sustainability / Sustainable development
	4	Ecological perspective : where are we at, and why sustainability is both an urgency and an opportunity
	5	Social perspective : where are we at (demography, (in)equalities, gender equality, education, ...), and sustainability being an urgency and an opportunity
	6	Local and global social structures and governance: paradigms; positive results negative impacts; laws; how organisations work; land use; gender equality; etc.
	7	<i>Within local and global social structures and governance, zooms on : Education, and Culture</i>
	8	Local and global economic systems: paradigms; positive results negative impacts; production, distribution, consumption of goods and services; life cycles; value chains; finances; etc.
	9	<i>Within local and global economic system, zooms on : Water, Energy, and Food</i>
	10	How to start, reinforce, accelerate systems change
	11	Initiatives towards sustainability ... more from institution / int'l level (like UN MDGs, Global Compact, GIEC, GRI, ISO 26000, ESD, etc.)
	12	Concepts, tools, frameworks ... more from individual NGOs or smaller networks (like Cradle to Cradle, Natural Capitalism, The Natural Step, Ecological Footprint, etc.)
	13	Examples and ideas we can learn from: case studies of successes or failures ; technological, strategic, or social innovations
	14	How does one become aware of his own roles and impacts...? whoever "one "is (individual, organisation, south, north, etc.)
	15	How does one efficiently act to create both individual and system change...? whoever "one "is (individual, organisation, south, north, etc.)
↑ Themes ↑		↑ Subjects ↑

Knowledge of Skills		
	16	Ability to reflect/self-evaluate alone and in a group; Ability to constantly renew energy; Ability to continuously to learn/develop; Creativity; Critical thinking
	17	Capacity for empathy, compassion, solidarity; Futures-oriented and strategic thinking
	18	Dealing with complexity and uncertainty; Practical problem-solving / management / planning skills
	19	Networking; Communication skills; building effective coalitions for systemic change
	20	Catalysing / managing change; Inspire a shared vision; Enable/Motivating others to act/participate
	21	Teamwork; Work in multi-cultural and interdisciplinary (diverse) settings; Participatory skills, decision-making; Conflict resolution skills/consensus building; Focus on process, dialogue, listening;
	22	Ability to put in practice systems thinking concepts; identify and use leverage points
	23	Ability to zoom in and out in time and details, and to keep the desired future and global perspective in mind
	24	Ability to understand formal and informal structures, power dynamics, and interactions

↑ Themes ↑

↑ Subjects ↑

Mindset	
25	Respect and care for the community of life, now and in the future
26	Humans as part of nature and not separate from it
27	Holistic versus mechanistic worldview
28	Golden rule (treat others as you would like them to treat you)
29	Belief one can initiate and reinforce personal and systemic changes towards sustainability
30	Active commitment to solve sustainability problems

Appendix B: List of Tags

This tag list has been strongly influenced by the Sustainability Literacy Test's pilot version architecture, the Earth Charter, and the UN SDGs (Sustainable Development Goals).

1. Basic definitions 2. Future generations 3. Innovation, creative leadership, and vision of a sustainable way of life 4. Interconnected challenges 5. Global interdependence and universal responsibility 6. Biodiversity 7. Climate 8. Pollution 9. Energy 10. Material resources 11. Water and sanitation 12. Demography 13. Health and basic needs 14. Human rights 15. Inequality and poverty 16. Discrimination of all sorts 17. Labour practices 18. Wellbeing and social progress 19. Cultural diversity and heritage preservation	20. Formal education and life-long learning 21. Agriculture and feeding human society 22. Cities and human settlements 23. Transportation and infrastructures 24. Housing 25. Tourism 26. Local and global economic systems 27. Global finance and debt 28. Trade (local, international, fair, etc.) 29. Production and consumption systems 30. Taxation systems 31. Corruption 32. Underground economy 33. International Governance and institutions 34. Democratic institutions at all levels 35. Peace and Justice	36. Information and role of mass media 37. Data and how it is used 38. Knowledge and technology exchanges 39. Stakeholder/communities involvement 40. Decision making process 41. Indicators 42. Transparency and accountability 43. Reporting 44. Solidarity and cooperation
--	--	---

Appendix C: Sulitest's matrix of core subjects during the pilot phase

			SD-DEF	Basic definitions
			SD-G	Governance (international and national institutions)
			SD-ENV1	Stake 1 : Biodiversity
			SD-ENV2	Stake 2 : Climate
			SD-ENV3	Stake 3 : Pollution
			SD-SOC1	Stake 1 : Fundamental Rights
			SD-SOC2	Stake 2 : Health & Basic needs (including education & Equal opportunities)
			SD-SOC3	Stake 3 : Inequality & poverty
			SD-SOC4	Stake 4 : wellbeing and social progress
			SD-ECO1	Stake 1 : Economic Growth & development
			SD-ECO2	Stake 2 : Global finance (financialization of the economy, short term), debt
			SD-ECO3	Stake 3 : Green economy , circular economy, resource dependency
			SD-ECO4	Stake 4 : Taxation (tax havens) and corruption
			SD-ECO5	Stake 5 : underground economy (Black market, criminal activity)

Core subjects and issues of social responsibility addressed in ISO 26000	Organizational governance	SR-GOV	For instance : Values, stakeholder engagement, diagnostic and strategy, decision making process, control and continuous improvement, accountability and reporting
		SR-HR1	Issue 1 : Due diligence
		SR-HR2	Issue 2 : Human rights risk situations
		SR-HR3	Issue 3 : Avoidance of complicity
		SR-HR4	Issue 4 : Resolving grievances
		SR-HR5	Issue 5 : Discrimination and vulnerable groups
		SR-HR6	Issue 6 : Civil and political rights
		SR-HR7	Issue 7 : Economic, social and cultural rights
		SR-HR8	Issue 8 : Fundamental principles and rights at work
		SR-LP1	Issue 1 : Employment and employment relationships
		SR-LP2	Issue 2 : Conditions of work and social protection
		SR-LP3	Issue 3 : Social dialogue
		SR-LP4	Issue 4 : Health and safety at work
		SR-LP5	Issue 5 : Human development and training in the workplace
		SR-ENV1	Issue 1 : Prevention of pollution
		SR-ENV2	Issue 2 : Sustainable resource use
		SR-ENV3	Issue 3 : Climate change mitigation and adaptation
		SR-ENV4	Issue 4 : Protection of the environment, biodiversity and restoration of natural habitats
		SR-FAIR1	Issue 1 : Anti-corruption

		SR-FAIR2	Issue 2 : Responsible political involvement
		SR-FAIR3	Issue 3 : Fair competition
		SR-FAIR4	Issue 4 : Promoting social responsibility in the value chain
		SR-FAIR5	Issue 5 : Respect for property rights
		SR-CONS1	Issue 1: Fair marketing, factual and unbiased information and fair contractual practices
		SR-CONS2	Issue 2 : Protecting consumers' health and safety
		SR-CONS3	Issue 3 : Sustainable consumption
		SR-CONS4	Issue 4 : Consumer service, support, and complaint and dispute resolution
		SR-CONS5	Issue 5 : Consumer data protection and privacy
		SR-CONS6	Issue 6 : Access to essential services
		SR-CONS7	Issue 7 : Education and awareness
		SR-COMMU1	Issue 1 : Community involvement
		SR-COMMU2	Issue 2 : Education and culture
		SR-COMMU3	Issue 3 : Employment creation and skills development
		SR-COMMU4	Issue 4 : Technology development and access
		SR-COMMU5	Issue 5 : Wealth and income creation
		SR-COMMU6	Issue 6 : Health
		SR-COMMU7	Issue 7 : Social investment

6. Bibliography

CARTERON, J. C. & DÉCAMPS, A. 2014. Can Universities be sure they are producing sustainability literate graduates? One Year Report of the Sustainability Literacy Test, presented on the occasion of the UNESCO World Conference on Education for Sustainable Development, Nagoya (Japan), Nov 2014.

COTGRAVE, A. & KOKKARINEN, N. 2011. Promoting sustainability literacy in construction students Implementation and testing of a curriculum design model. *Structural Survey*, 29, 197-212.

KEARINS, K. & SPRINGETT, D. 2003. Educating for sustainability: Developing critical skills. *Journal of Management Education*, 27, 188-204.

LOURENÇO, F. 2013. To challenge the world view or to flow with it? Teaching sustainable development in business schools. *Business Ethics: A European Review*, 22, 292-307.

MISSIMER, M. & CONNELL, T. 2012. Pedagogical approaches and design aspects to enable leadership for sustainable development. *Sustainability: The Journal of Record*, 5, 172-181.

RIECKMANN, M. 2012. Future-oriented higher education: Which key competencies should be fostered through university teaching and learning? *Futures*, 44, 127-135.

RYAN, A., TILBURY, D., MATHER, G., DENBY, L., WOOD, L. N. & HARRISON, B. 2011. Business graduate skills in sustainability. *Journal of Global Responsibility*, 2, 188-205.

SIPOS, Y., BATTISTI, B. & GRIMM, K. 2008. Achieving transformative sustainability learning: engaging head, hands and heart. *International Journal of Sustainability in Higher Education*, 9, 68-86.

SVANSTRÖM, M., LOZANO-GARCÍA, F. J. & ROWE, D. 2008. Learning outcomes for sustainable development in higher education. *International Journal of Sustainability in Higher Education*, 9, 339-351.

THOMAS, I. 2009. Critical thinking, transformative learning, sustainable education, and problem-based learning in universities. *Journal of Transformative Education*, 7, 245-264.

WIEK, A., WITHYCOMBE, L. & REDMAN, C. L. 2011. Key competencies in sustainability: a reference framework for academic program development. *Sustainability science*, 6, 203-218.